MARMARA ÜNİVERSİTESİ YAYINEVİ

Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye



MARMARA UNIVERSITY PRESS

MARMARA ÜNİVERSİTESİ YAYINEVİ

Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Marmara University Publications: No. 901

Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye

Project Coordinator
Prof. Dr. Ayşe Nilüfer Özaydın

ISBN: 978-975-400-468-7
E-ISBN: 978-975-400-467-0
DOI: http://dx.doi.org/10.29228/MUBooks.3

MARMARA UNIVERSITY PRESS

Göztepe Campus, , Kadıköy / İstanbul
Telephone: +90 216 777 14 00 **Fax:** +90 216 777 14 01
E-Mail: yayinevi@marmara.edu.tr
Publisher Certificate No: 40023

Printing Press: Aprint İstanbul - Bahadır Özcan
Litros Yolu 2. Matbaacılar Sitesi ZD12 Zeytinburnu - İstanbul
Telephone: 0532 244 03 39
E-Mail: aprintistanbul@gmail.com
Printing Certificate No: 79064

Suggested citation:
Ozaydin A.N. (Ed.) (2025). *Perceptions, beliefs, and behaviors affecting early diagnosis of breast cancer in Türkiye.* Marmara University Press. İstanbul, Türkiye
http://dx.doi.org/10.29228/MUBooks.3

This work is licensed under Creative Commons Attribution-NonCommercial 4.0 International.

Perceptions, beliefs, and behaviors affecting early diagnosis of breast cancer in Türkiye /
project coordinator Prof. Dr. Ayşe Nilüfer Özaydın.__ İstanbul : Marmara University, 2025.
192 sayfa: picture, map, table; 29,7 x 21 cm.__ (Marmara University Press ; No. 901)
ISBN: 978-975-400-468-7
1. Breast - Cancer – 2. Prevention and Control – 3. Breast - Cancer - Diagnosis
4. Medical screening
RA645.C3
616.99
QZ200

MARMARA ÜNİVERSİTESİ YAYINEVİ

Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye

MARMARA ÜNİVERSİTESİ

MARMARA UNIVERSITY

Istanbul, 2025

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA
ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

CONTENTS:

List of Tables and Figures v
Abbreviations vii
Foreword ix
Acknowledgements xi
Summary xiii
A. INTRODUCTION 1
1. Global cancer control programmes 1
1.1 Breast cancer incidence worldwide 1
1.2 Breast cancer incidence in Türkiye 3
2. Türkiye: General Characteristics 11
2.1 Population 13
2.2 Income status 15
2.3 Education status 17
3. Key Steps in Cancer Control in Türkiye 18
4. Development of Cancer Early Diagnosis, Screening, and Education Centres (KETEM) in Türkiye 21
5. Türkiye's National Cancer Control Programme 22
6. National Cancer Screening Programs and Standards in Türkiye 23
7. Mammography Imaging and Reporting Process in KETEM 27
8. Family Physicians and the Cancer Appointment System 28
9. Post-Screening Diagnostic Centres 29
10. Breast Cancer Screening in Türkiye in 2023 30
B. PROJECT ON PERCEPTIONS, BELIEFS, AND BEHAVIORS AFFECTING EARLY DIAGNOSIS OF BREAST CANCER IN TÜRKİYE 33
1. OBJECTIVE OF THE STUDY 33
2. METHODOLOGY 33
3. RESULTS 39
A. RESULTS OF WOMEN WHO HAVE NOT HAD A MAMMOGRAM IN THE LAST 2 YEARS 39
1. PERCEIVED SEVERITY 44
1.1. Perception of breast cancer as a severe illness 44
1.2. Seriousness/Importance of breast cancer compared to other cancers 44
1.3. Self-breast examination (SBE) 45
1.4. Clinical breast examination (CBE) 46

MARMARA ÜNİVERSİTESİ YAYINEVİ

2. PERCEIVED SUSCEPTIBILITY 46
2.1. Perceptions of breast cancer risk factors and prevalence 46
2.2. Misconceptions and lack of awareness about breast cancer 47
2.3. Psychological and environmental factors in breast cancer 48
3. PERCEIVED BARRIERS 48
3.1. Knowledge and communication issues among women 48
3.2. Personal and psychological barriers to breast cancer screening 49
3.3. Barriers for in accessing to breast cancer screening services 52
3.4. Social and emotional barriers for breast cancer screening 54
4. PERCEIVED BENEFITS 55
4.1. Awareness of the benefits of early diagnosis 55
5. CUES TO ACTION 56
5.1. Women's education and physicians recommendations 56
5.2. Ease of access to screening services 56
5.3. Reminding women about screenings and encouraging participation 57
5.4. Women feeling safe 58
6. SYSTEM: 59
6.1. Women's education and awareness 59
6.2. Screening service and access issues 59
6.3. Gender perception in healthcare 61
6.4. Technological issues in screening service delivery 62
B. RESULTS OF WOMEN WHO HAVE HAD A MAMMOGRAM IN THE LAST 2 YEARS 62
1. PERCEIVED SEVERITY 67
1.1 Perception of severe illness 67
1.2 Seriousness of breast cancer compared to other cancers 67
1.3 Self-breast examination (BSE) 67
1.4 Clinical breast examination (CBE) 68
2. PERCEIVED SUSCEPTIBILITY 68
2.1 Risk factors for breast cancer 68
2.2 Perceptions and personal beliefs about breast cancer 69
3. PERCEIVED BARRIERS 69
3.1 Comfort issues encountered during breast cancer screenings 69
3.2 Issues related to healthcare personnel 70
3.3 Impact of the earthquake 72
4. PERCEIVED BENEFITS 72
4.1 Knowledge of the benefits of early diagnosis 72
5. CUES TO ACTION 72
5.1 Informing and guiding women 72
5.2 Reminding and encouraging women 73

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

5.3 Personal and family factors 74
5.4 Ease of access to screening services 75
5.5 Comfort of screening and women's sense of security 76
6. SELF-EFFICACY 76
6.1 Women undergoing screening/check-ups 76
C. RESULTS OF FAMILY PHYSICIANS AND FAMILY HEALTH WORKERS 77
1. FAMILY PHYSICIANS / FAMILY HEALTH WORKERS' OPINION ON BREAST CANCER SCREENING 79
1.1 Opinions of family physicians 79
1.2 Opinions of family health workers 82
1.3 Preventive medicine 82
2. BREAST CANCER SCREENING PRACTICES 83
2.1 Implementation of breast cancer screening 83
2.1.1 Information dissemination 83
2.1.2 Self breast examination (SBE) 84
2.1.3 Clinical breast examination (CBE) 84
2.1.4 Mammography 84
2.2 Operation of screenings in family medicine 85
2.2.1 Access 85
2.2.2 Coordination 87
2.2.3 Follow-up 89
2.2.4 Communication 90
2.3. Achieving targets 92
3. FACTORS AFFECTING BREAST CANCER SCREENINGS 92
3.1. Workload in family medicine 92
3.1.1. The size of registered popülatıon and patient load of family physicians 92
3.1.2. The burden of other duties for which the family physicians is responsible 93
3.1.3. Workload of family health workers 94
3.1.4. Factors affecting the functioning of family medicine 94
3.2. Cultural/regional characteristics 95
3.3. Barriers and motivating factors 97
3.4. Gender perception 98
3.5. Impact of the pandemic/earthquake 99
4. RECOMMENDATIONS 100
4.1. Recommendations for policymakers (system-related) 100
4.1.1. System renewal 101
4.1.2. Reducing the registered population of family physicians 101
4.1.3. Revising the pay-for-performance system of the family physician system 101
4.1.4. Meeting the need for additional healthcare personnel 102
4.1.5. Implementing some sanctions 102

MARMARA ÜNİVERSİTESİ YAYINEVİ

4.2. Recommendations related to training....102
4.2.1. Recommendations for public....103
4.2.2. Recommendations for all healthcare providers....104
D. RESULTS FROM KETEM HEALTHCARE PERSONNEL....104
1. KETEM HEALTHCARE RESONNEL'S VIEWS ON THE BREAST CANCER SCREENING PROGRAM....106
1.1 Accessibility and ease of screening services....106
1.2. Quality and reliability of screening services....107
1.3. Women's satisfaction with KETEM services....108
1.4. Women's education and awareness....109
1.5. Systemic shortcomings....110
2. MOTIVATORS AND BARRIERS FOR KETEM HEALTHCARE PERSONNEL IN THE BREAST CANCER SCREENING PROGRAM....111
2.1. Personnel motivation and teamwork....111
2.2. Training and professional development of healthcare workers....112
2.3. Personnel issues....112
2.4. Regional and cultural barriers....112
2.5. Attitudes and behaviors of healthcare workers....113
3. KETEM HEALTHCARE PERSONNEL'S SUGGESTIONS REGARDING THE BREAST CANCER SCREENING PROGRAM....114
3.1. Systemic and technological improvements....114
3.2. Increasing public education and awareness....116
3.3. Personnel management....117
3.4. Physician referrals for women's screenings....118
4 DISCUSSION....120
Women's Perspectives....120
Family Physicians and Family Health Workers' Perspectives....124
Perspectives of KETEM Healthcare Personnel....127
5 CONCLUSION....129
6 RECOMMENDATIONS....133
REFERENCES....135
APPENDICES:
Appendix 1: The Team Members of the Project....142
Appendix 2: Informed Consent Forms and Questionnaires....149
Appendix 3: Conference Participation....160
Appendix 4: Participant Lists....166

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

LIST OF TABLES AND FIGURES:

Figure A.1: The 10 most common cancers in the world, 2018, WHO.

Figure A.2: Estimated age-standardized incidence and mortality rates of the top 10 most common cancers in the world, in both genders and all age groups, per 100,000 person-years in 2020, WHO.

Figure A.3: Goals of the Global Breast Cancer Initiative, GBCI, 2023.

Figure A.4: Incidence rates of the most common cancer in women in İzmir (1993-1994), IARC, 1999.

Figure A.5: Distribution of age-standardized rates of the top 10 most common cancers in women (Combined database, 2009, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2009.

Figure A.6: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2010, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2010.

Figure A.7: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2011, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2011.

Figure A.8: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2012, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2012.

Figure A.9: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2013, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2013.

Figure A.10: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2014, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2014.

Figure A.11: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2015, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2015.

Figure A.12: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2016, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2016.

Figure A.13: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2017, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2017.

Figure A.14: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2018, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2018.

Figure A.15: Distribution of age-standardized incidence rates of breast cancer in women between 2014-2018 (Combined database, 2014-2018, World Standard Population, per 100,000 population), Türkiye Cancer Statistics, 2018.

Figure A.16: Age-specific rates of the most common cancers in women, (Combined database, 2018), Türkiye Cancer Statistics, 2018.

Table A.1: Percentage distribution of histological types of female breast cancers (Combined database, 2018), Türkiye Cancer Statistics, 2018.

Figure A.17: SEER summary stage distributions of the most common cancers at diagnosis, SEER 01 Localized, SEER 02, 03, 04, 05 Regional, SEER 07 Distant organ involvement, (Combined database, 2018), Türkiye Cancer Statistics, 2018.

Figure A.18: Map of Türkiye (2024), population density, crude birth rate, crude death rate, population growth rate, TURKSTAT, 2023.

Figure A.19: Türkiye population pyramid, 2023, TURKSTAT.

Figure A.20: Türkiye, distribution of the female population in the 40-69 age group by age groups, 2023, TURKSTAT.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Figure A.21: Türkiye, distribution of female population by province, 2023, TURKSTAT.

Table A.2: Distribution of annual equivalent household disposable individual income in Türkiye, by sequential 20% groups (%), 2014-2023, TURKSTAT, 2023.

Table A.3. Annual average main job income (TRY) of women and men according to education level in Türkiye, 2022, 2023, TURKSTAT.

Table A.4. Some selected indicators by gender in Türkiye, 2021, TURKSTAT.

Figure A.22: Labour force participation rates by gender and education level in Türkiye, 2021, TURKSTAT.

Figure A.23: Active cancer registry centres and reference dates in Türkiye, T.R. MoH.

Figure A.24: Distribution of KETEMs in Türkiye, 2023.

Figure A.25: Türkiye Cancer Control Program.

Figure A.26: Number of mammographic breast cancer screenings in Türkiye by years, T.R. MoH.

Figure A.27: Cancer screening rates in Türkiye by year, T.R. MoH.

Figure A.28: Centres providing population-based cancer screening in Türkiye,T.R. MoH.

Figure A.29: Mammographic screening system in Türkiye.

Figure A.30: Family physicians-KETEM appointment system algorithm in Türkiye, T.R. MoH.

Table B.1: KETEMs selected as samples for the project.

Figure B.1: Türkiye-5 regions.

Table B.2: Women who have not had a mammogram in the last 2 years.

Table B.3: Characteristics of women who have not had a mammogram in the last 2 years.

Figure B.2: Health Belief Model.

Table B.4: List of the main themes and sub-themes obtained in the analysis of women who have not had a mammography in the last 2 years.

Table B.5: Women who have had a mammogram in the last 2 years.

Table B.6: Characteristics of women who had mammography in the last 2 years.

Table B.7: List of the main themes and sub-themes obtained in the analysis of women who had mammography in the last 2 years.

Table B.8: Family physicians and family health workers.

Table B.9: List of the main themes and sub-themes obtained in the analysis of family physicians and family health workers.

Table B.10: Features of KETEMs.

Table B.11: List of the main themes and sub-themes obtained in the analysis of KETEM personnel.

Table Appendix 1: List of women who have not had a mammogram in the last 2 years.

Table Appendix 2: List of women who have had a mammogram in the last 2 years.

Table Appendix 3: List of family physicians and family health workers.

Table Appendix 4: Characteristics of visited KETEMs.

MARMARA ÜNİVERSİTESİ YAYINEVİ

ABBREVIATIONS:

ASR	Age-standardized Rate
BI-RADS	Breast Imaging Reporting and Data System
BSE	Breast Self-Examination
KRS	Cancer Appointment System
KETEM	Cancer Early Diagnosis, Screening, and Education Centre
CIFAL	Center for Training and Development of International Authorities and Leaders
MHRS	Central Physician Appointment System
CBE	Clinical Breast Examination
CD	Compact Disk
CHC / TSM	Community Health Centre
SAHU	Contracted Family Medicine Specialist
DMP / HYP	Disease Management Platform
DHD / ISM	District Health Directorate
EBYS	Electronic Document Management System
FOBT	Faecal Occult Blood Test
FHC /ASM	Family Health Centre
FHW	Family Health Worker
FMIS / AHBS	Family Medicine Information System
FMS	Family Medicine Specialist
FP	Family Physician
F	Female
HSGM	General Directorate of Public Health
PFP	General Practitioner Family Physician
GBCI	Global Breast Cancer Initiative
HLC / SHM	Healthy Life Centre
HYBS	Hospital Management Information System
HPV-DNA	Human Papillomavirus DNA
IARC	International Agency for Research on Cancer
M	Male
MMSCREEN	Mammographic Screening Registration System
MG	Mammography
MoH	Ministry of Health
NCD	Non-Communicable Disease
HSYS	Public Health Management System
SGK	Public Insurance
PHI	Private Health Insurance
T.R.	Republic of Türkiye
SGK	Social Security Institution
TURKSTAT	Turkish Statistical Institute
USG	Ultrasonography
UN	United Nations
UNITAR	United Nations Institute for Training and Research
VBHC	Value-Based Health Care
WHO	World Health Organization
Y	Years of Age

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

FOREWORD:

The research project titled "Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye" was conducted in Türkiye between August 2023 and October 2024 as part of the United Nations Institute for Training and Research Value-Based Healthcare Projects.

The project coordinator is the United Nations Institute for Training and Research (UNITAR), an organisation founded in 1963 to equip diplomats from United Nations (UN) member states with the necessary knowledge and skills. UNITAR operates on a project-based model, and its funding comes from voluntary contributions by UN member states, other UN agencies, international and intergovernmental organisations, foundations, non-governmental organisations (NGOs), and the private sector.

The Value-Based Healthcare Project (VBHC) began in collaboration with UNITAR and the Global Surgery Foundation, with UNITAR serving as the coordinating body for this project. All decisions made under this project were approved by the Turkish Ministry of Health and the academic institution hosting the project, Marmara University.

Within the scope of this project, UNITAR selected Türkiye, and Rwanda. Projects addressing breast cancer in Türkiye and cervical cancer in Rwanda have been conducted or are ongoing.

UNITAR closely monitored Türkiye's cancer initiatives and considered the country's advanced healthcare system suitable for implementing this new project. UNITAR emphasized the importance of support from the Turkish Ministry of Health, noting that the Ministry's involvement would contribute significantly to the project.

The first phase of the project began in September 2021 with stakeholder mapping and project documentation. Initially, the International Center for Formation of Authorities and Leaders (CIFAL) was held in İstanbul on October 4, 2021, followed by an informational meeting at the Turkish Permanent Mission in Geneva on October 13, 2021. Introduction meetings with project participants in Türkiye were held from October 20-25 and on November 11, 2021. The VBHC launch event took place on November 23, 2021, followed by a meeting with the Turkish Permanent Mission in Geneva on February 1, 2022. On March 15, 2022, a representative was appointed from the General Directorate of Public Health, and the General Directorate of Health Services of the Turkish Ministry of Health joined the project on May 24, 2022.

In the second phase, six online meetings organised by UNITAR identified stakeholders involved in feasibility studies, and the resulting projects were evaluated. A core working group for Türkiye's initiatives was established, holding three additional online meetings and deciding on three distinct projects: (i) Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye; (ii) Etiological Causes of Delays in Breast Cancer Diagnosis and Treatment - A Nationwide Research Study; (iii) Guideline Development for the Diagnosis, Follow-up, and Treatment of Patients with BRCA Mutations in Türkiye.

These projects were presented to UNITAR officials on May 9, 2023, and the first two were approved.

The first project, "Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye," was signed by both UNITAR and the Marmara University Rectorate, officially starting on August 16, 2023. Although the final report and research findings were scheduled for publication in May 2024, the delay in receiving KETEM data from the Ministry of Health by the end of 2023 and the extended process of obtaining permissions for KETEM visits to collect qualitative data led UNITAR to propose extending the project and the project was completed at the end of 2024.

Prof. Dr. Ayşe Nilüfer Özaydın
Project Coordinator

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

ACKNOWLEDGMENTS:

I am delighted to have completed **UNITAR**'s first project in **Türkiye** under the **Value-Based Healthcare Project**, which aims to make the best use of available resources to improve outcomes for breast cancer patients.

UNITAR's first project in **Türkiye** was made possible with the support of **Project Manager Ms. Nefti Bempong-Ahun** (MPH) from the **Global Surgery Foundation, Project Coordinator Ms. Yuval Cohen** (MSc) from the **United Nations Institute for Training and Research**, and **Senior Technical Officer Ms. Mélanie Samson** (PhD, MPH) from department of Women's Health-The Global Surgery Foundation. Without their guidance and support, this study under the Value-Based Healthcare Project would not have been possible.

I extend my sincere gratitude to **Prof. Dr. Mustafa Kurt**, **Rector of Marmara University**; **Prof. Dr. Ömer Akgiray**, Vice Rector; **Lecturer Sema GÜNDÜZ** from the **Marmara University Innovation and Technology Transfer Application and Research Center** (MITTO); **Ms. Çiğdem Karayıl** and Ms. **Burcu Acar** from the Scientific Research Projects Coordination Unit (BAPKO); and Ms. **Hayriye Özkan** from the **Strategy Development Department.**

I also thank the **Provincial Health Directors**, the **District Health Directors**, and staff of the provinces selected impartially from **Türkiye**'s five socio-demographic regions, as well as the healthcare personnel at **Cancer Early Diagnosis, Screening, and Education Centres** (KETEM), for their invaluable support of the project.

This project report was written with the contributions of **Prof. Dr. Ayşe Nilüfer Özaydın**, Project Coordinator (from the Department of Public Health, Marmara University Faculty of Medicine), Project Execution Officer **Prof. Dr. Arzu Uzuner** (from the Department of Family Medicine, Marmara University Faculty of Medicine), **Dr. Fatma Burcu Doğanç, Dr. Beyza Nur Ataoğlu, Dr. Cemre Hilal Kesen Yurtcanlı** (from the Department of Public Health, Marmara University Faculty of Medicine), and **Dr. Kirstin Öztürk.** I extend my deepest gratitude to **Prof. Dr. Arzu Uzuner, Dr. Fatma Burcu Doğanç, Dr. Beyza Nur Ataoğlu, Dr. Kirstin Öztürk**, and **Dr. Cemre Hilal Kesen Yurtcanlı** for their dedicated, meticulous, and intense efforts in conducting this project through in-depth qualitative interviews with each stakeholder in Türkiye's breast cancer screening and early diagnosis program.

This qualitative research would not have been possible without the participation of all stakeholders in **Türkiye**'s breast cancer screening and early diagnosis program. I am immensely grateful to all participants for taking the time to share their sincere and candid insights. I extend my heartfelt hope that the findings from this project, as shared in this report, will help to enhance breast cancer screening and early diagnosis programmes and contribute to healthier lives for all women.

Prof. Dr. Ayşe Nilüfer Özaydın
Project Coordinator

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

SUMMARY:

Introduction: Türkiye, bridging Europe and Asia in the Middle East, is classified as an upper-middle-income nation with a population of 86 million. Similar to many other countries, Türkiye faces a growing burden of non-communicable diseases, with cancers playing a significant role. According to WHO and GLOBOCAN data, in 2022, 240,013 people in Türkiye were diagnosed with cancer, and 129,672 (25.2%) people died from it. Among cancers affecting women, breast cancer ranks first, with an age-standardized rate of 48.6 per 100,000 (2018). Every year, 15,000 women in Türkiye are newly diagnosed with breast cancer.

In 2017, the World Health Assembly (WHA 70.12) adopted a resolution for an integrated approach to accelerate cancer prevention and control actions. WHO emphasizes that a well-designed and well-managed National Cancer Control Program can reduce cancer cases and improve the lives of those living with cancer, regardless of a country's resources or challenges. At least one-third of newly diagnosed cancer cases each year are preventable.

In 2020, WHO launched the Global Breast Cancer Initiative (GBCI) in response to breast cancer becoming the most diagnosed cancer among both sexes. This initiative aims to empower women, build capacity, improve access to healthcare, and strengthen breast cancer control through global advocacy and strategic partnerships. The GBCI seeks to reduce breast cancer deaths by 2.5% annually, potentially saving 2.5 million women over a 20-year period. GBCI has set three priority goals: (1) Health Promotion and Early-Stage Diagnosis: Ensuring that at least 60% of invasive breast cancers are diagnosed at stages 1 and 2; (2) Timely Diagnosis Goal: Completing assessment, imaging, tissue sampling, and pathology within 60 days; (3) Comprehensive Breast Cancer Management Goal: Ensuring that 80% of patients undergoing multi-modal treatment successfully reintegrate into society.

Cancer control efforts in Türkiye began institutionalizing in the 1940s. Cancer Screening Project studies commenced in 1995, and the first Cancer Early Detection Centre (KTEM) was established at İstanbul Bakırköy State Hospital. By 2004, KTEMs in 31 provinces were integrated into KETEM, and as of 2023, 381 KETEMs (46 of which are mobile) provide free cancer screening services.

Türkiye's first National Cancer Control Program, along with the publication of the first National Screening Standards, was implemented in 2007. The programme aimed to reduce the number of new cases through preventive strategies, reach at least 70% of the target age group with community-based screenings, improve treatment opportunities and quality of life for existing cases through early detection, and reduce the cancer burden. The first phase of Türkiye's Cancer Control Program was implemented from 2009 to 2015, followed by the second phase for 2016-2018, and the third phase for 2019-2023.

Objective: This study aims to examine the barriers, challenges, and the perspectives of all stakeholders (women aged 40-69, family physicians, family health workers, and KETEM healthcare personnel) involved in implementing the National Breast Cancer Screening Program under Türkiye's Cancer Control Program, to facilitate achieving GBCI's goal of health promotion and early-stage diagnosis.

Methodology: This is a qualitative study. Permissions were obtained from the Clinical Research Ethics Committee of Marmara University (dated 03.03.2023 / no. 09.2023.405), from ten selected Provincial Health Directorates, and informed consent was obtained from all participants.

Data were collected through in-depth interviews with women aged 40-69, both those who had and had not undergone mammography, from urban and rural areas in five socio-demographic regions of

MARMARA ÜNİVERSİTESİ YAYINEVİ

Türkiye, as well as with family physicians, family health workers, and KETEM healthcare personnel through focus group discussions. The interviews took place from June 2023 to September 2024, with each session lasting an average of 20–40 minutes. Topics included general information about breast cancer, sources of information on breast cancer, knowledge of Türkiye's breast cancer screening program, and insights into the diagnosis/treatment process and barriers to access.

The audio recordings of the interviews were transcribed using the Transgate program and analysed using the Atlas.ti program. During the analysis, codes, sub-themes, and main themes were identified. The study's data evaluated participants' knowledge, attitudes, and behaviours regarding breast cancer screening through the Health Belief Model framework, including perceived susceptibility, severity, benefits, and attitudes.

Results: The study included 51 women who had not undergone mammography in the past two years (mean age 54.2 ± 7.8 years, range: 41-69), 39 women who had undergone mammography in the past two years (mean age 52.8±1.1 years, range: 42-69), 40 family physicians (mean age 42.8±10.2 years, range: 30-64), 11 family health workers (mean age 38.4±8.2 years, range: 28-50), and 52 healthcare personnel (physicians, nurses, midwives, radiology technicians, and administrative staff) from one KETEM in each of ten provinces.

Analysis revealed 89 codes from interviews with women who had not undergone mammography, 92 codes from interviews with those who had, and 489 codes from interviews with family physicians and family health workers. Codes were grouped into main and sub-themes, and the Health Belief Model was taken into account in the reporting.

The most common barriers to mammography screening among women who had not undergone it in the past two years included lack of health motivation, accessibility issues, feelings of shame, lack of awareness regarding where to go, and lack of information on how to schedule appointments.

Among those who had undergone mammography, most were aware of the life-saving potential of early cancer detection and the importance of screening. They recommended more engaging and empowering health promotion initiatives to increase awareness about screening programmes, and emphasized the importance of developing less cumbersome technologies and a more efficient appointment system. For this group, pain was not seen as a barrier to re-screening.

Family physicians noted that they viewed breast cancer screenings as their primary duty and responsibility within the framework of preventive healthcare, directing women of the specified age range for mammography and teaching breast self-examinations. They highlighted the importance of KETEM's accessibility, proximity, and transportation facilities in providing access to mammography. Identified barriers included insufficient time due to patient and administrative paperwork overload, staff shortages, the lack of a patient tracking system to follow the results of referred women, cultural barriers for female patients seeing male physicians, and low awareness among women about cancer screenings, as well as challenges in providing mammography services to women in remote areas. Recommendations for more effective screening programmes included reducing patient volumes, providing regular in-service training on screenings for healthcare staff, addressing staffing shortages, improving access to mammography services, raising early breast cancer awareness in the community, enhancing health literacy, and imposing measures to encourage women who do not participate in screenings.

KETEM staff reported that most mammography screenings were scheduled by appointment but without menstrual cycle inquiries for painless procedures.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Physicians could perform breast exams, though they had limited time to teach breast self-examinations. They noted that women who worked or lived far away could access services only if transported to KETEMs, and that women preferred female radiology technicians and shorter waiting times for mammography reports. Long waits for ultrasound appointments following BI-RADS referrals were cited as a barrier to early diagnosis, negatively impacting patient motivation. They recommended awareness-raising activities and continuous, interactive, face-to-face in-service training for KETEM's healthcare personnel.

Conclusion: In this study, women who had undergone mammography in the past two years described breast cancer as a "silent and rapidly progressing disease." They emphasized that physician referrals for mammography were an important motivator for participating in screenings.

Although women understood the importance of early breast cancer detection, many lacked sufficient knowledge of institutions providing screening services, and most were unaware of KETEMs and the availability of free screenings. It was found that a large portion of women in Türkiye were unaware of breast self-examination or did not perform it adequately or regularly even when they were aware.

Barriers to mammography screening included lack of knowledge, insufficient information and referrals from physicians, neglect, only seeking healthcare for symptoms, fear of what might be found, shame and embarrassment, pain, and discomfort. Concerns about radiation exposure were noted by a few women.

Preferences in selecting screening institutions included ease of access, the ability to quickly and easily schedule appointments, faster access to mammography reports, and expedited scheduling for further tests at diagnostic centres. Family physicians saw breast cancer screenings as a core part of preventive healthcare, understanding their responsibility to refer women for mammography according to the Ministry of Health's screening guidelines. However, due to workload, these referrals were often made opportunistically, rather than through systematic population-based screening. Family physicians reported that they performed clinical breast exams only when discussing screenings but could not do so systematically. This study also revealed that clinical breast exams were rarely performed by family physicians, and those delays in receiving mammography results led to decreased interest and confidence in screenings.

The proximity of KETEMs to District Health Directorates or Healthy Life Centres, as well as periodic updates from Public Health Directorates requesting lists of eligible women, were identified as factors facilitating mammography access. KETEM healthcare personnel highlighted that the free and accessible breast cancer screening services had a positive impact on participation, noting the importance of KETEM locations for ease of access. Although some KETEMs used an appointment system, many operated without appointments. Low public awareness of KETEM and cancer screening programmes, and the benefits of in-service training for healthcare personnel, were emphasized. The main operational issues included integration and referral system gaps between Family Health Centres, KETEM, and Diagnostic Centres, chronic staff shortages, and low wages.

Recommendations: The most valuable result of this study is that no serious, widespread, complex, or challenging obstacles were identified within the "BSE-CBE-mammography" service chain, extending from family physicians to KETEMs and from there to diagnostic centres. Common recommendations from service providers (Family Health Centres, Family Physicians, Family Health Workers, and KETEM healthcare personnel) and service users (women aged 40-69) include creating a service chain that is efficient, accessible, and easy to use.

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA
ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

INTRODUCTION:

1. Global Cancer Control Programmes:

The World Health Organization (WHO) aims to "reduce the burden of cancer and improve the quality of life for cancer patients and their families in regions with a high burden of cancer or where cancer risk factors are on the rise". WHO emphasizes that, regardless of a country's resources and challenges, a well-designed and well-managed National Cancer Control Programme can reduce cancer cases and improve the lives of those living with cancer. A comprehensive national cancer control programme should evaluate various methods to control the disease, implementing cost-effective and beneficial strategies for a large portion of the population.

Since at least one-third of newly diagnosed cancer cases each year are preventable [1], the key elements of the programme include developing cancer treatment guidelines, preventing and treating cancers through early diagnosis, and providing the highest possible comfort to patients with advanced cancer.

In 2017, at the World Health Assembly [2], an integrated approach to the "Prevention and Control of Cancer" resolution was adopted, encouraging governments and WHO to accelerate actions to meet the targets outlined in the Global Action Plan to prevent and control cancers. This resolution aims to meet the targets set in WHO's 2013-2020 Global Action Plan for the prevention and control of non-communicable diseases (NCDs) and also to achieve Target 3.4 of the United Nations Sustainable Development Goals (SDGs) by 2030 [3].

WHO's primary mission in cancer control is to promote National Cancer Control policies, plans, and programmes that align with NCDs and other related health issues. WHO's core functions in cancer control include establishing norms and standards for evidence-based prevention, early diagnosis, screening, treatment, and palliative and survivorship care programmes. It also encourages monitoring and evaluation through cancer registries and research adapted to the local disease burden and available resources [2].

1.1 Breast cancer incidence worldwide:

According to the latest global cancer estimates from the International Agency for Research on Cancer (IARC), the global cancer burden rose to 19.3 million new cases and 10.0 million deaths in 2020 [4]. Worldwide, one in five people will develop cancer in their lifetime, and one in eight men and one in eleven women will die from the disease. One of the most striking developments in the latest IARC estimates is that female breast cancer, with 2.3 million cases diagnosed in 2020, has surpassed new lung cancer cases to become the most frequently diagnosed cancer type globally [4]. Breast cancer now accounts for 11.7% of all new cancer cases in both sexes [4].

Addressing inequalities in breast cancer cases requires systematic improvements to ensure access to quality services that are appropriate to available resources. The World Health Organization's Global Breast Cancer Initiative (GBCI), established in 2021, brings together stakeholders from around the world and across various sectors with the shared goal of reducing breast cancer incidence by 2.5% annually, aiming to save 2.5 million lives over 20 years. GBCI employs three primary strategies to achieve these goals:

- **i.** Health promotion and early diagnosis;
- **ii.** Timely breast diagnosis; and
- **iii.** Comprehensive breast cancer management [4].

MARMARA ÜNİVERSİTESİ YAYINEVİ

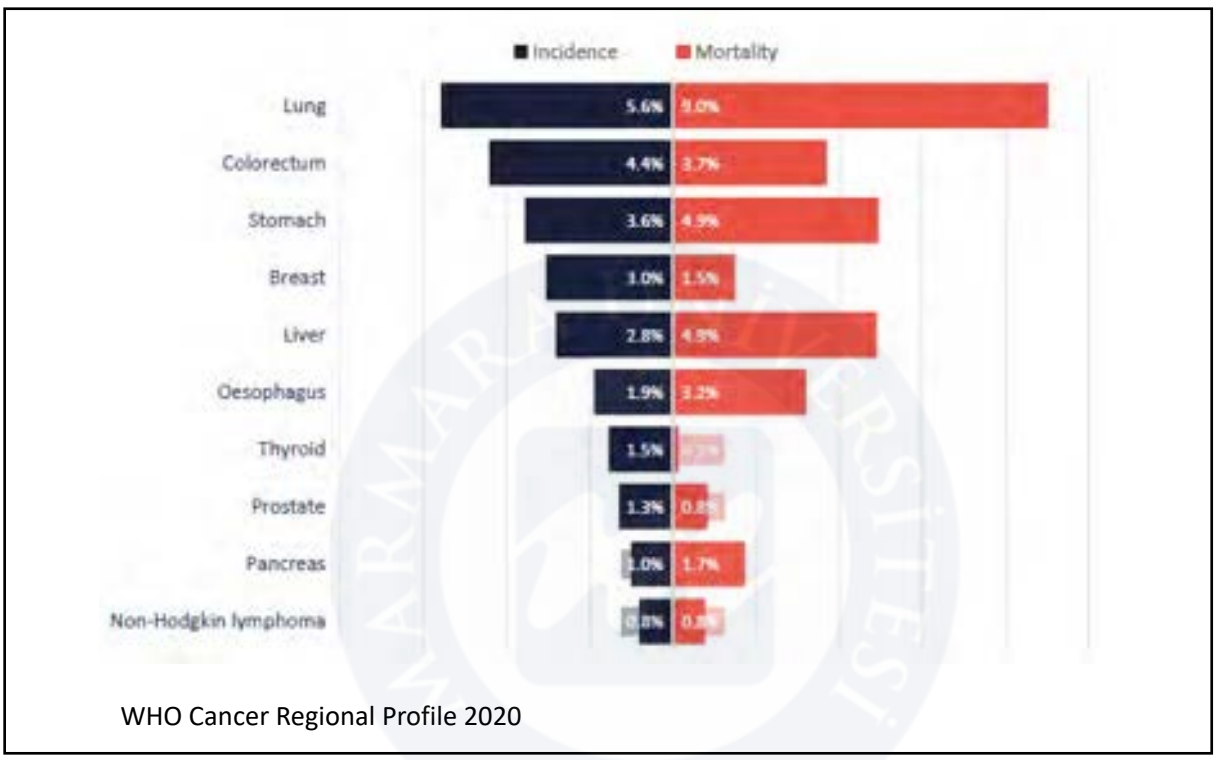


Figure A.1: The 10 most common cancers in the world, 2018, WHO.

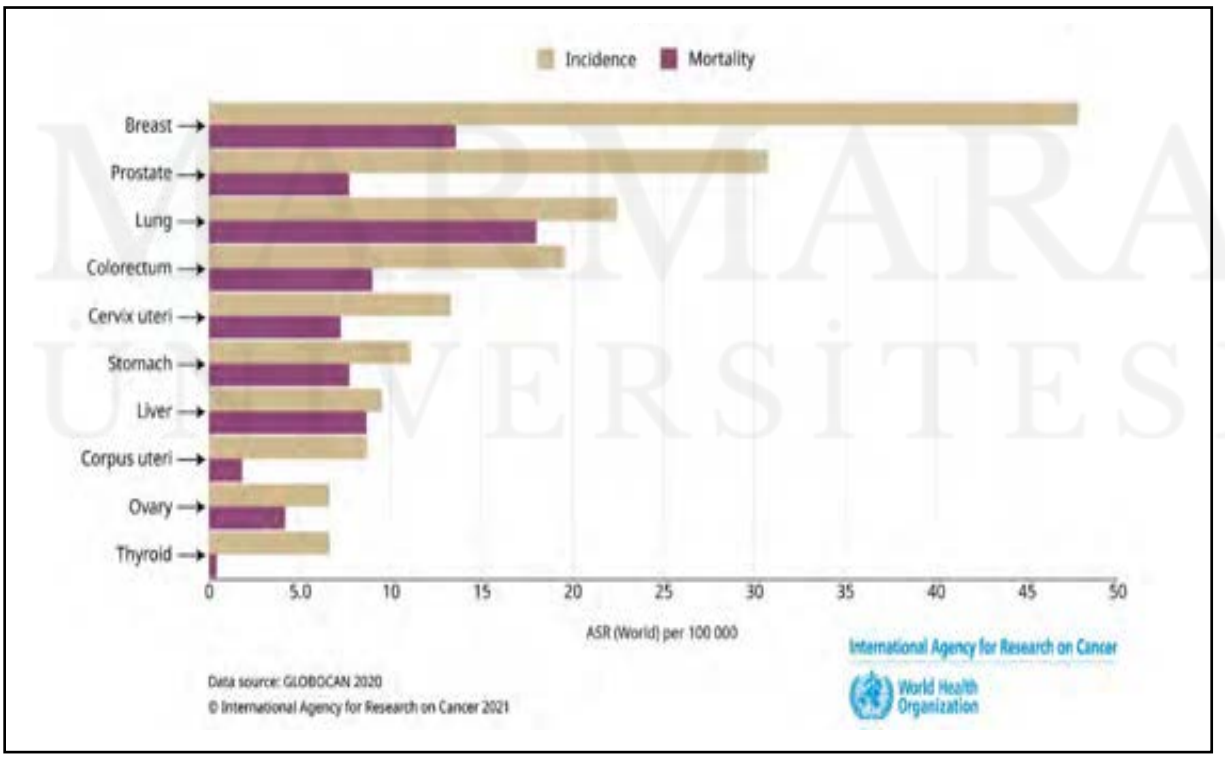


Figure A.2: Estimated age-standardized incidence and mortality rates of the top 10 most common cancers in the world, in both genders and all age groups, per 100,000 person-years in 2020, WHO.

MARMARA ÜNİVERSİTESİ YAYINEVİ

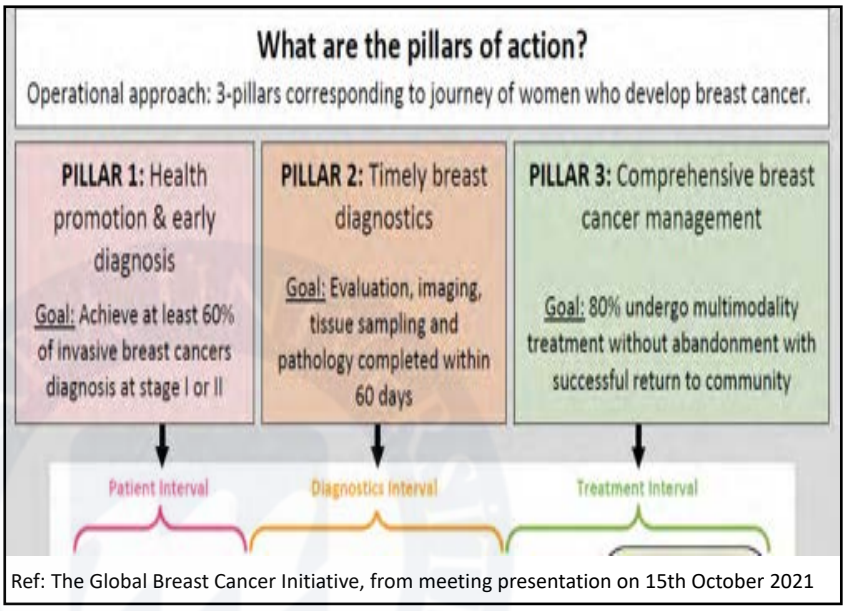


Figure A.3: Goals of the Global Breast Cancer Initiative, GBCI, 2023 [4].

1.2 Breast cancer incidence in Türkiye:

The first actively collected and evaluated data in Türkiye, meeting WHO standards, were presented in the 1993–1994 results [5]. As in previous non-population-based series, overall cancer incidence is higher in men than in women, with age-standardized rates of 157.5 per 100,000 in men and 94.0 per 100,000 in women. The leading cancers in men were tobacco-related, including lung cancer (age-standardized incidence rate (ASR) of 61,6), bladder cancer (ASR of 11,0), and laryngeal cancer (ASR of 10,6), which is consistent with the high prevalence of smoking and the traditional use of high-tar tobacco. In women, breast cancer was by far the most common malignancy (ASR of 24,4), while cervical cancer was relatively rare (ASR of 5,4) [6].

According to the 2018 Cancer Statistics Report for Türkiye, published by the Turkish Ministry of Health's General Directorate of Public Health in 2022, the incidence of breast cancer is 48,6 per 100,000, with approximately 15,000 women diagnosed with breast cancer each year [6].

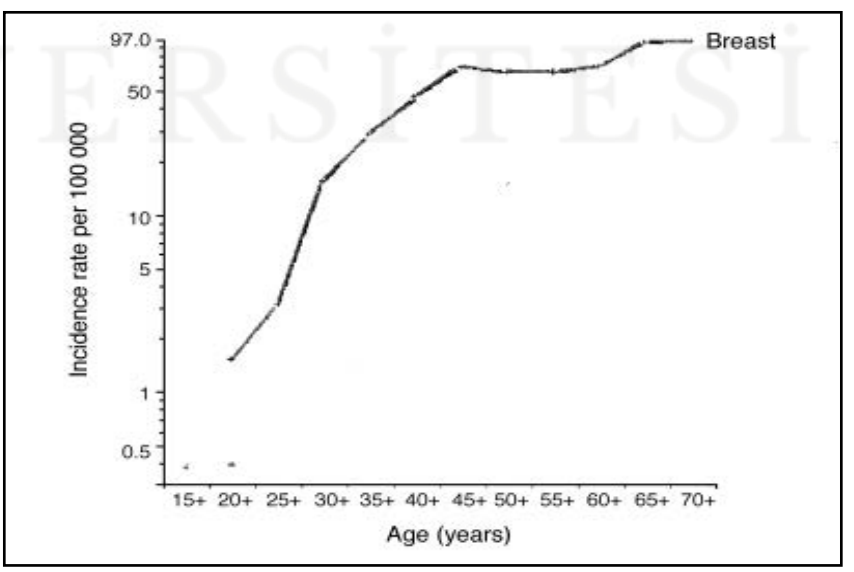


Figure A.4: Incidence rates of the most common cancer in women in İzmir (1993-1994). IARC, 1999.

MARMARA ÜNİVERSİTESİ YAYINEVİ

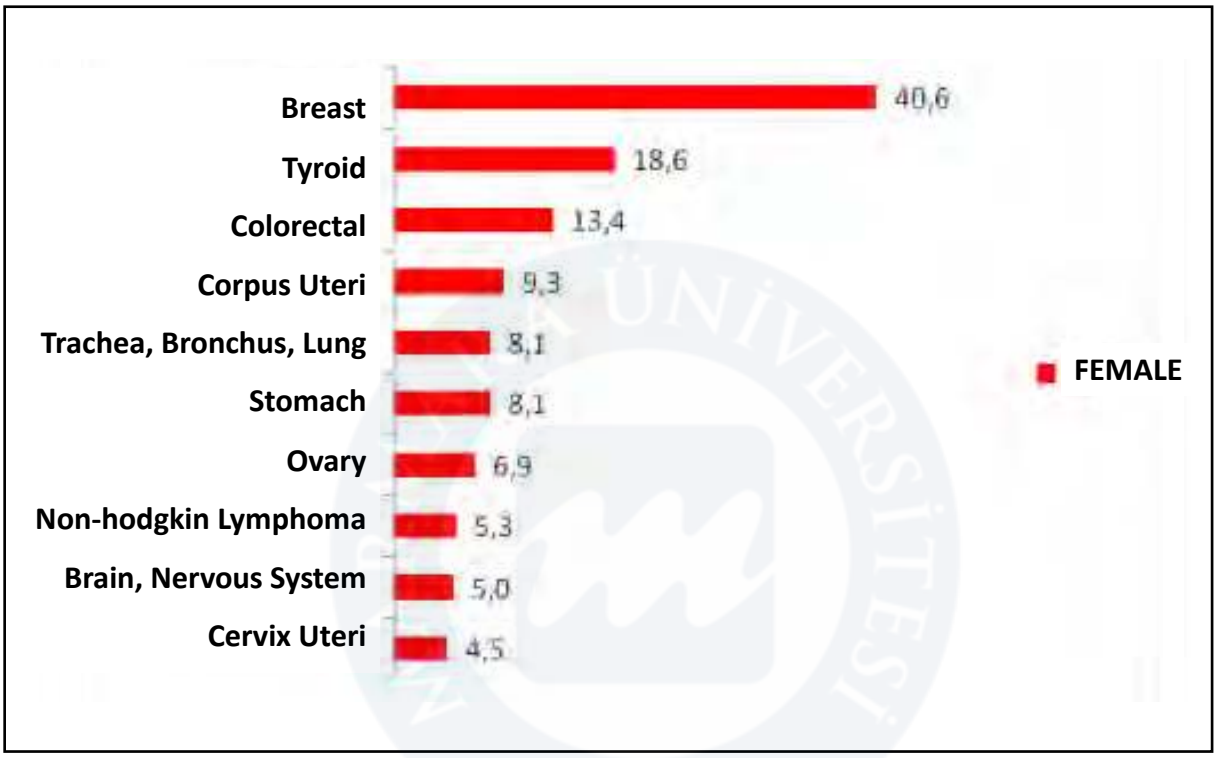


Figure A.5: Distribution of age-standardized rates of the top 10 most common cancers in women (Combined database, 2009, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2009 [7].

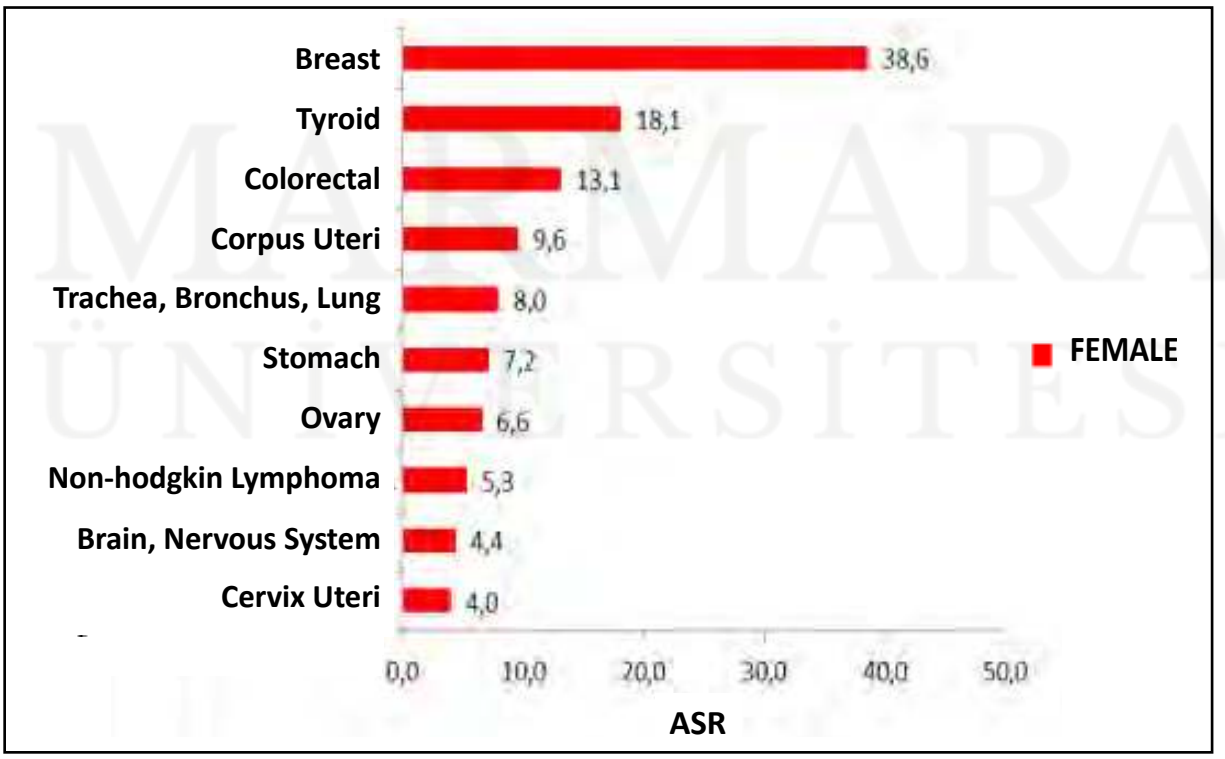


Figure A.6: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2010, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2010 [8].

MARMARA ÜNİVERSİTESİ YAYINEVİ

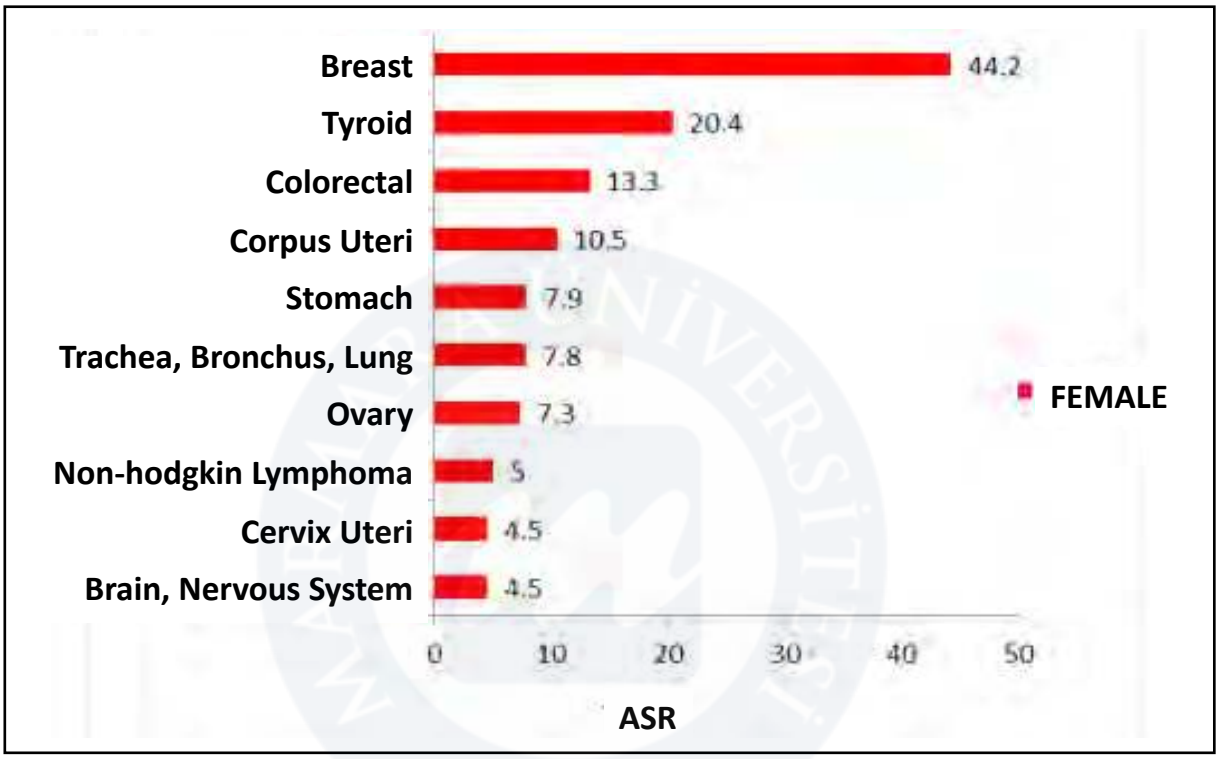


Figure A.7: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2011, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2011 [9].

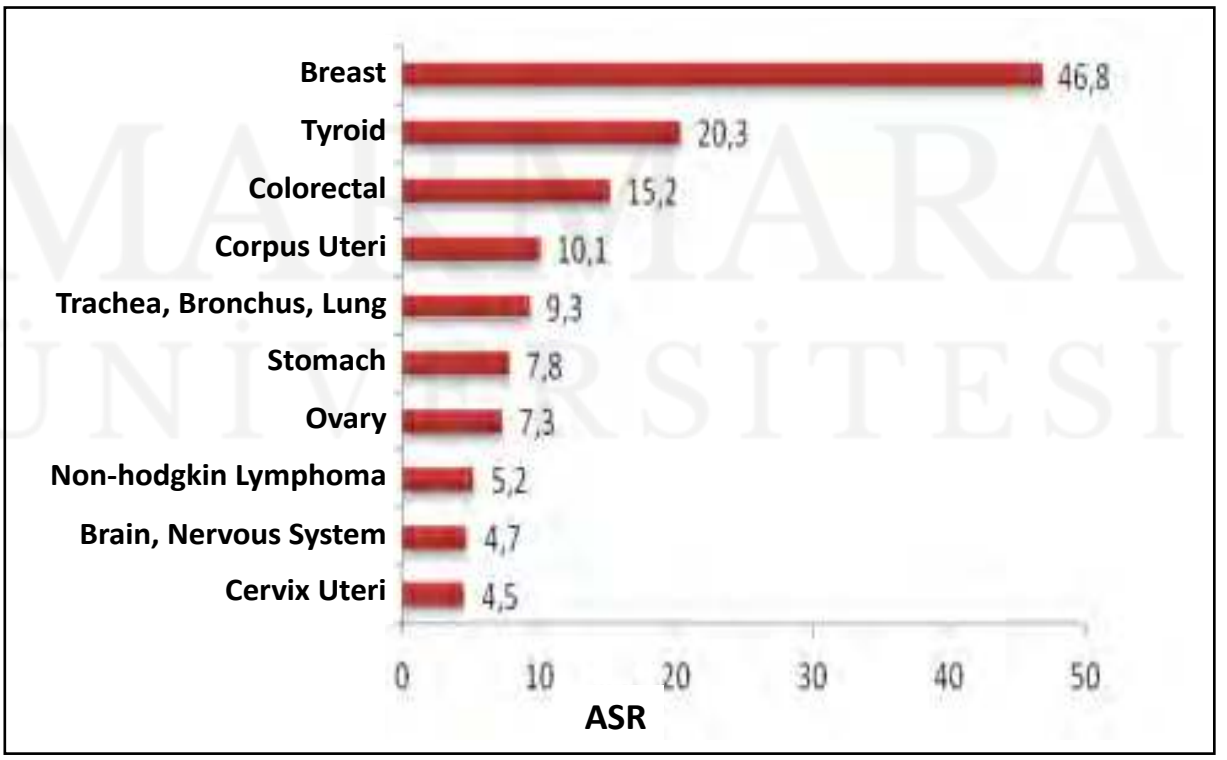


Figure A.8: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2012, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2012 [10].

MARMARA ÜNİVERSİTESİ YAYINEVİ

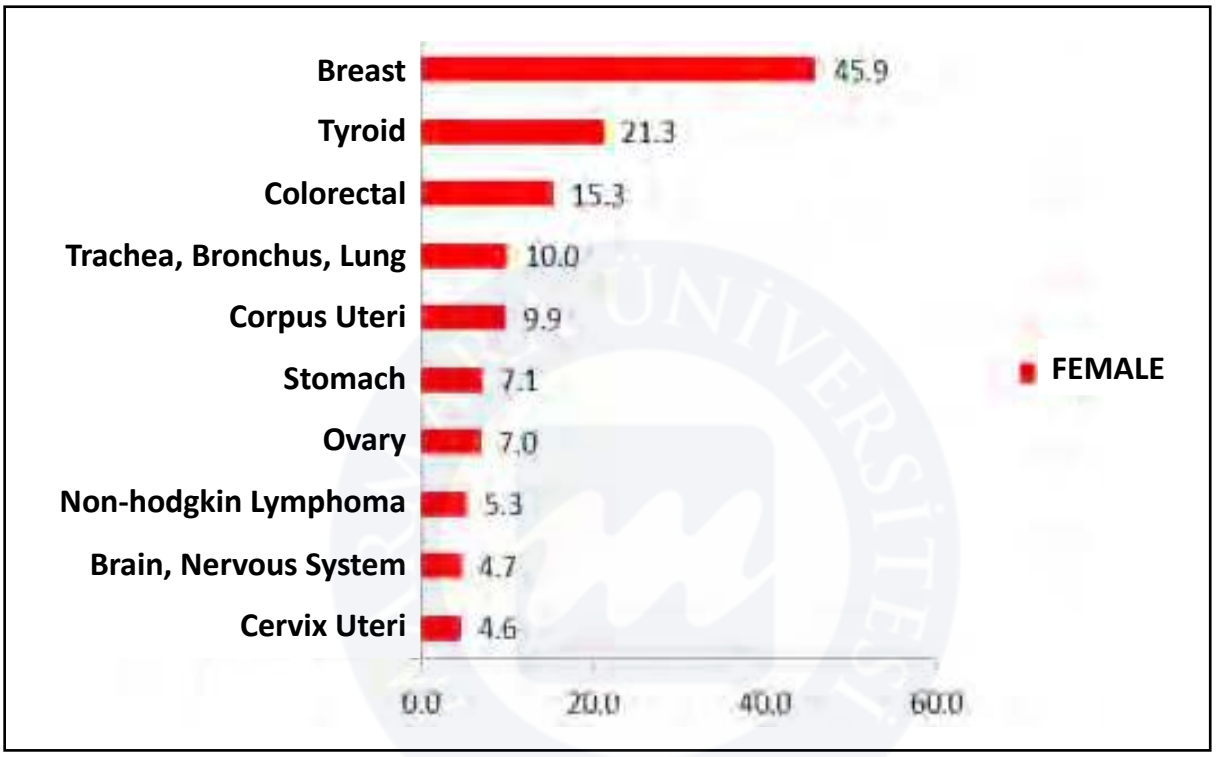


Figure A.9: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2013, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2013 [11].

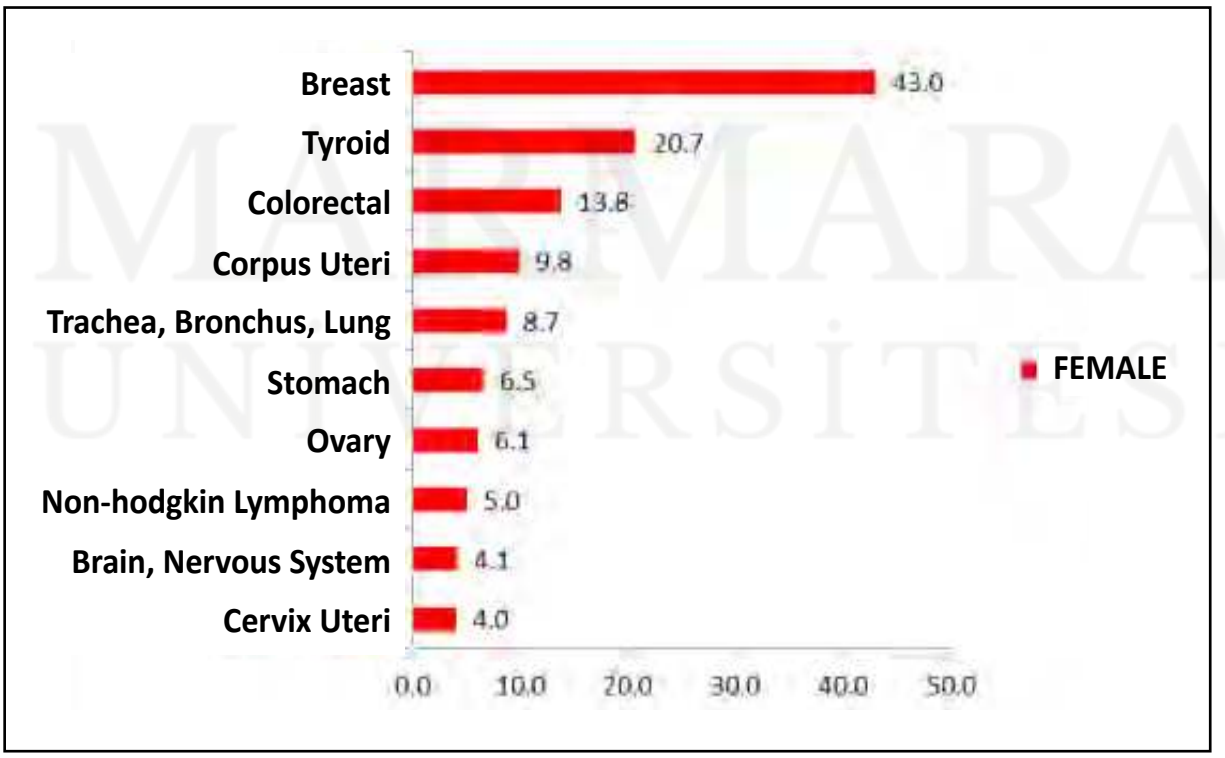


Figure A.10: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2014, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2014 [12].

MARMARA ÜNİVERSİTESİ YAYINEVİ

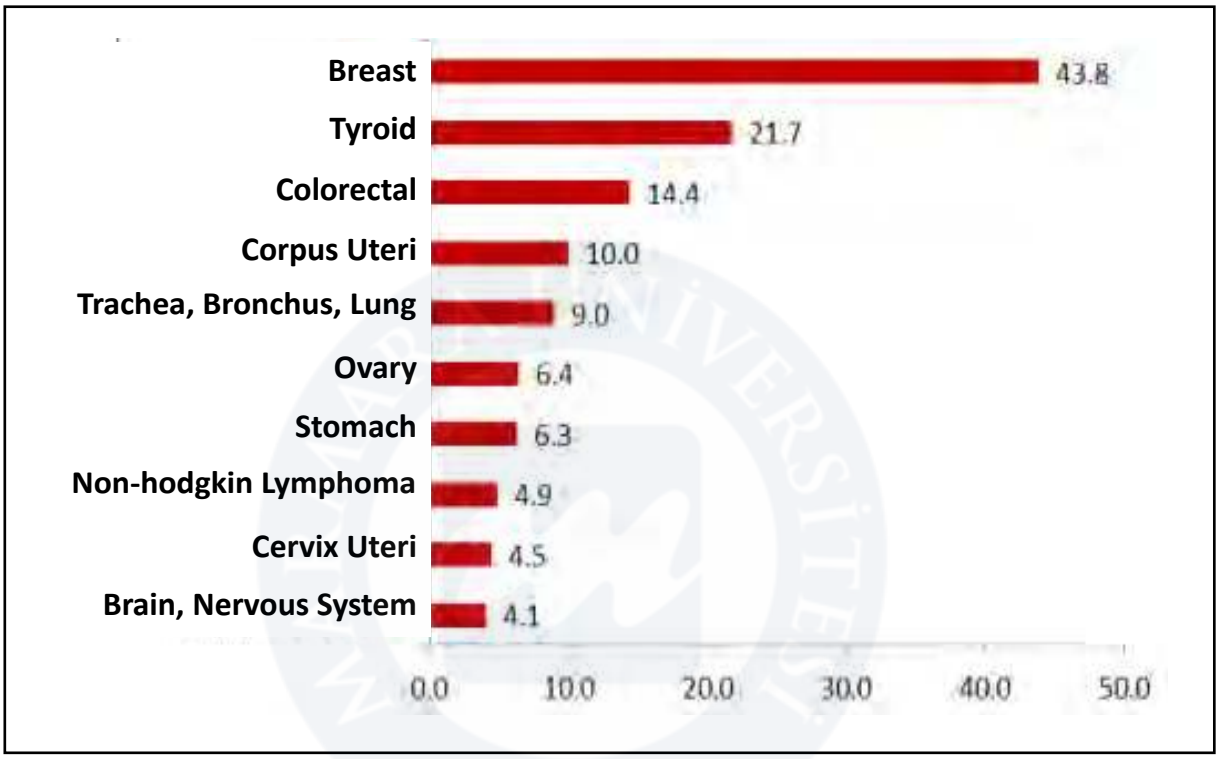


Figure A.11: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2015, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2015 [13].

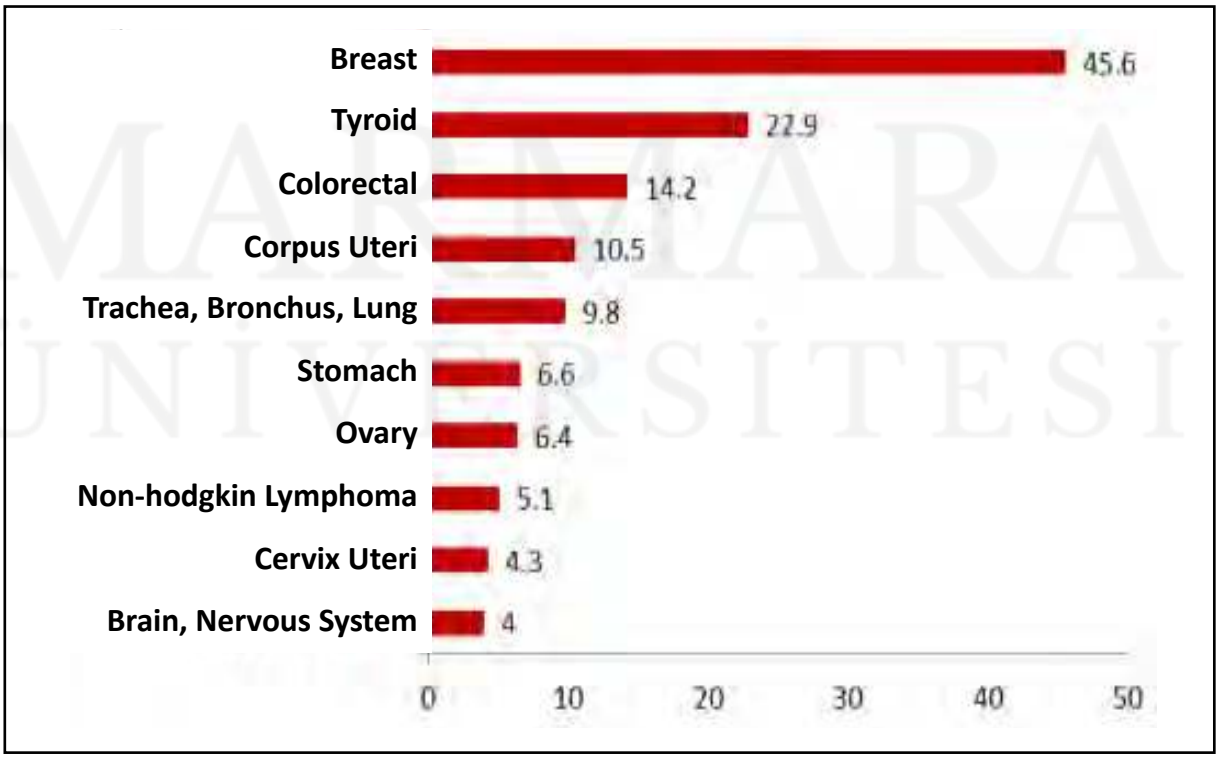


Figure A.12: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2016, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2016 [14].

MARMARA ÜNİVERSİTESİ YAYINEVİ

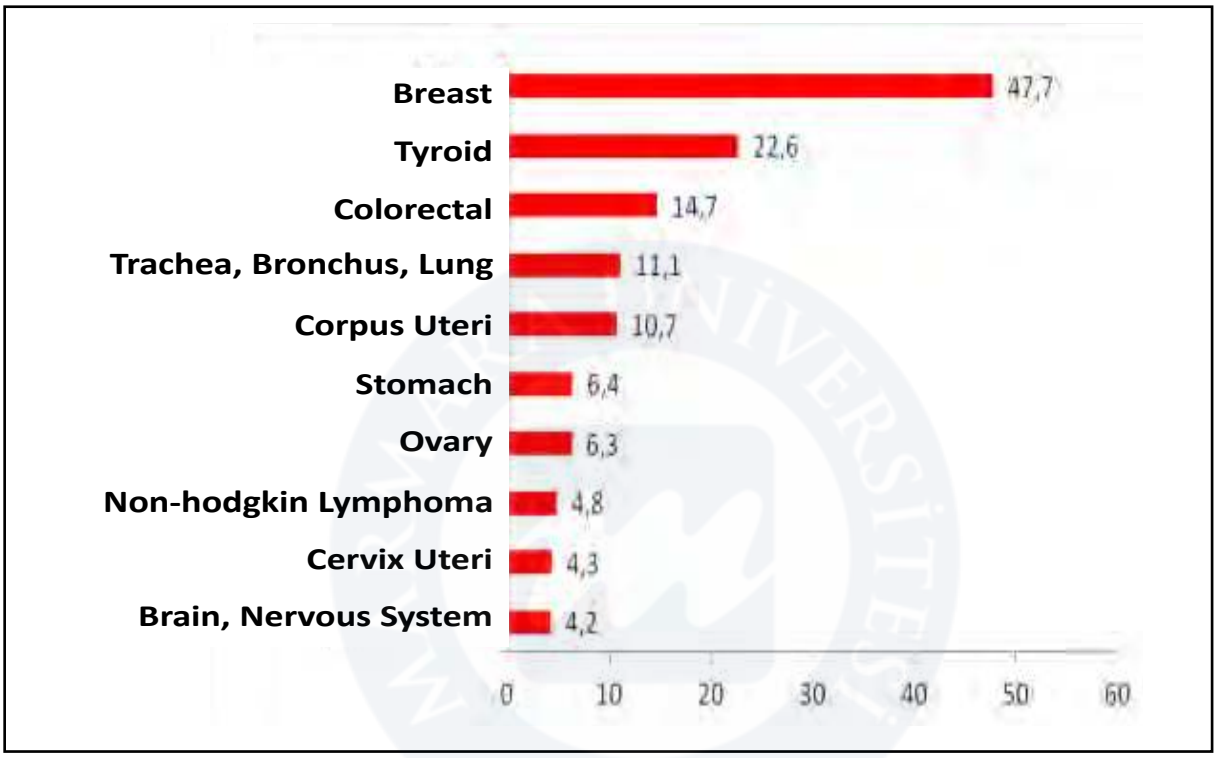


Figure A.13: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2017, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2017 [15].

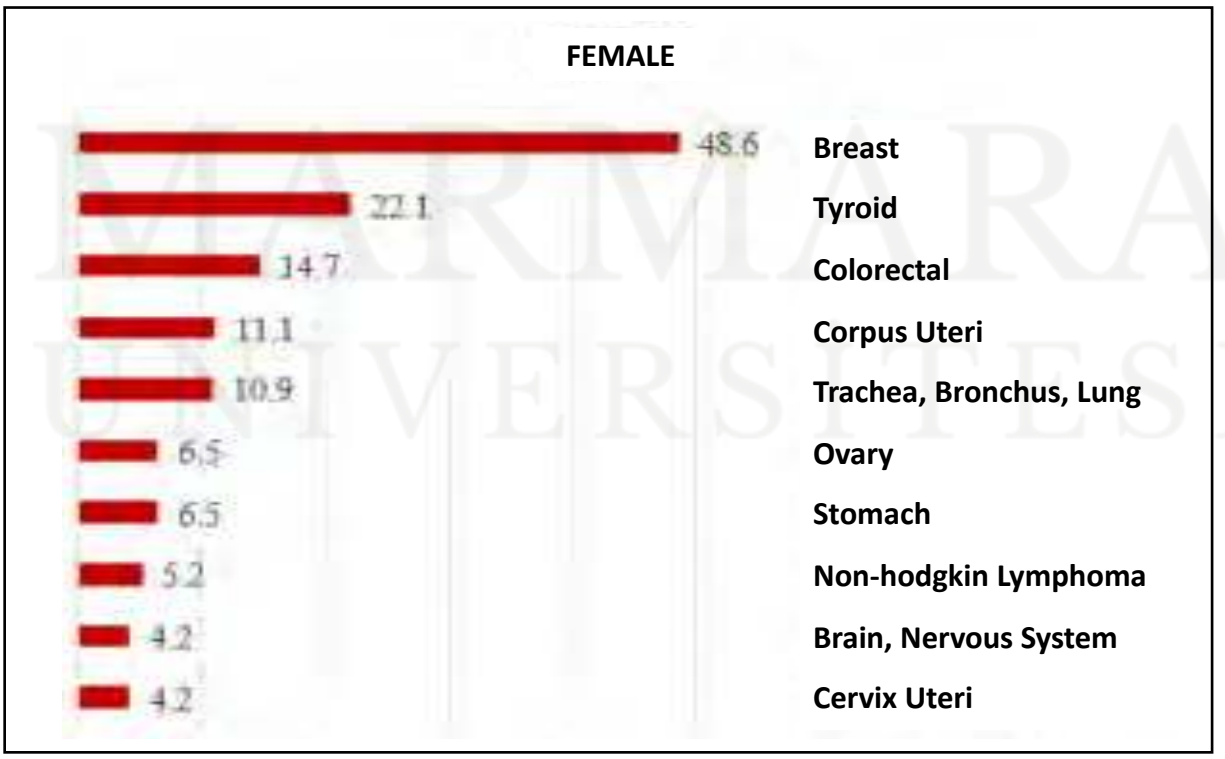


Figure A.14: Age-standardized rates of the top 10 most common cancers in women (Combined database, 2018, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2018 [6].

MARMARA ÜNİVERSİTESİ YAYINEVİ

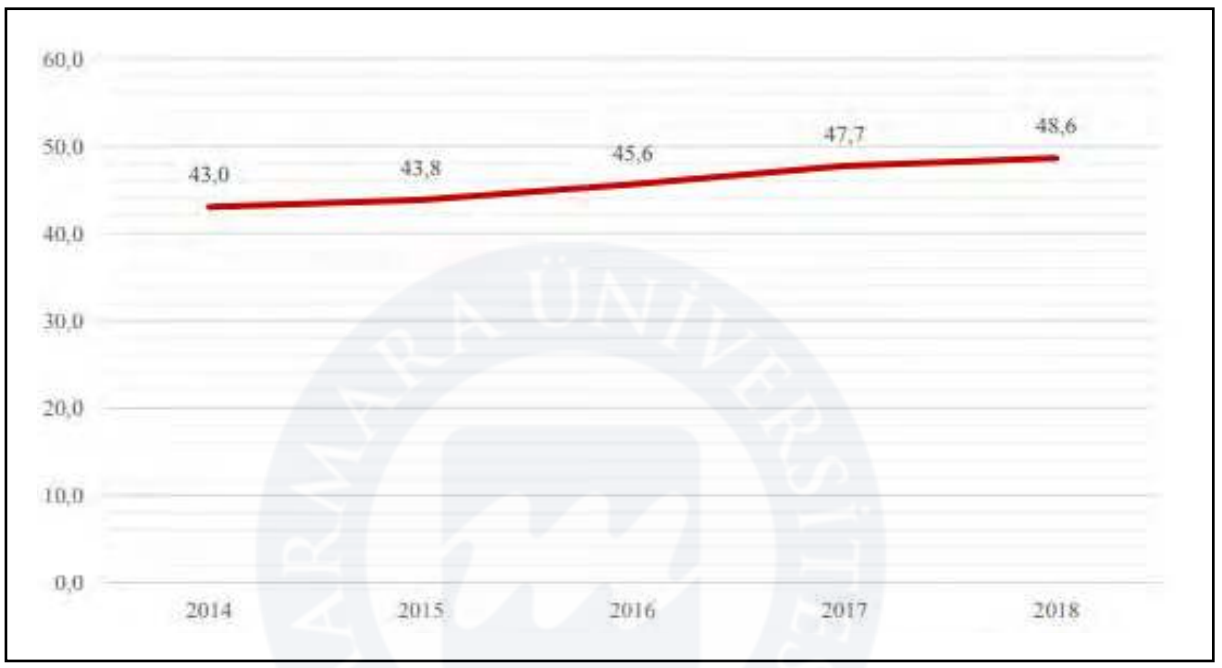


Figure A.15: Distribution of age-standardized incidence rates of breast cancer in women between 2014-2018 (Combined database, 2014-2018, world standard population, per 100 000 people), Türkiye Cancer Statistics, 2018 [6].

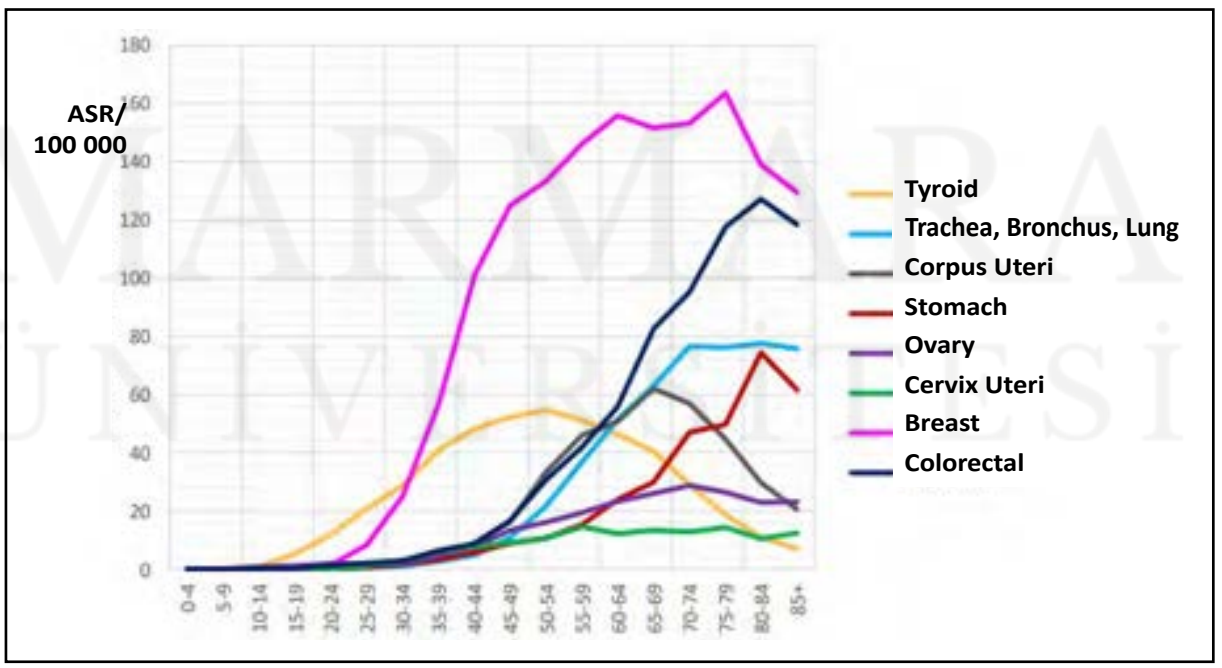


Figure A.16: Age-specific rates of the most common cancers in women, (Combined database, 2018), Türkiye Cancer Statistics, 2018 [6].

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table A.1: Percentage distribution of histological types of female breast cancers (Türkiye Combined Database, 2018), Türkiye Cancer Statistics, 2018 [6].

Histological Types (n=10090)		%
Ductal ve Lobular		94,5
	Infiltrative Ductal Carsinoma	84,2
	Lobular Carcinoma	7,1
	Intraductal Carcinoma and In situ Lobular Carcinoma	1,9
	Infiltrative Ductal Mixed Other Type Carsinoma	3,1
	Infiltrative Ductular Carsinoma	0,2
	Medullary Carsinoma	0,8
	Infiltrative Lobular Mixed Other Type Carsinoma	0,4
	Other	2,2
Mucinous		1,6
Adenocarcinoma		1,6
Complex Epithelial		1,3
Squamous Cell		0,5
Fibroepithelial		0,2
Skin etc.		0,1
Other		0,2
Total		100,0

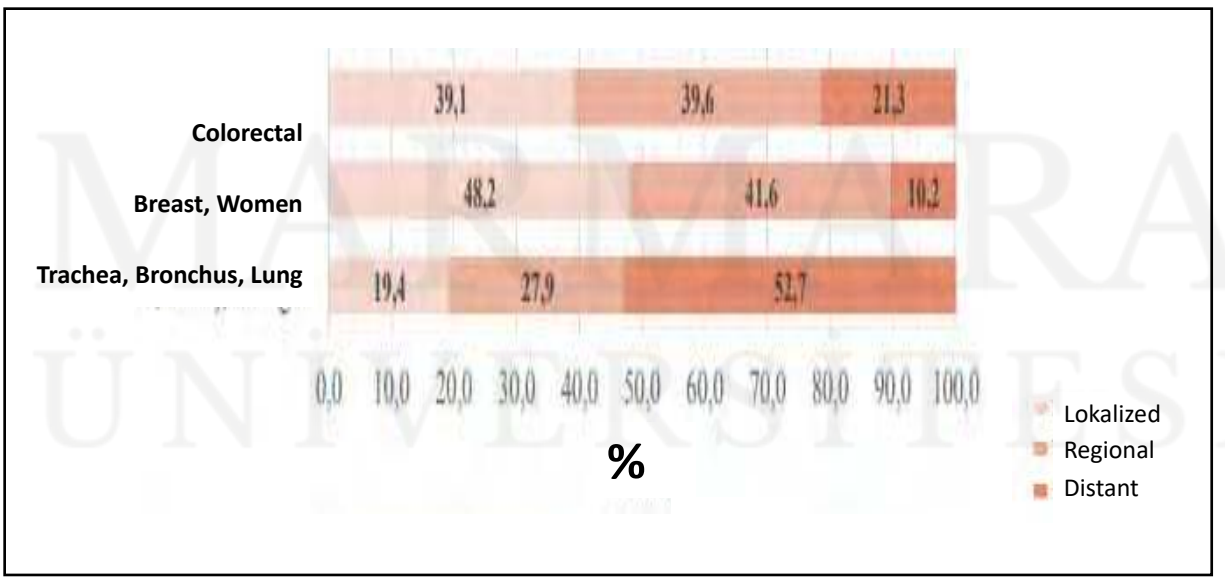


Figure A.17: SEER summary stage distributions of the most common cancers at diagnosis SEER 01 Localized, SEER 02, 03, 04, 05 Regional, SEER 07 Distant Metastasis, (Combined database, 2018), Türkiye Cancer Statistics, 2018 [6].

MARMARA ÜNİVERSİTESİ YAYINEVİ

2. Türkiye: General Characteristics

Türkiye is a country spanning an area of 774,815 square kilometres, situated between the continents of Asia and Europe. Approximately 3% of its total area lies in Europe (Thrace), while the rest is located in Asia (Anatolia).

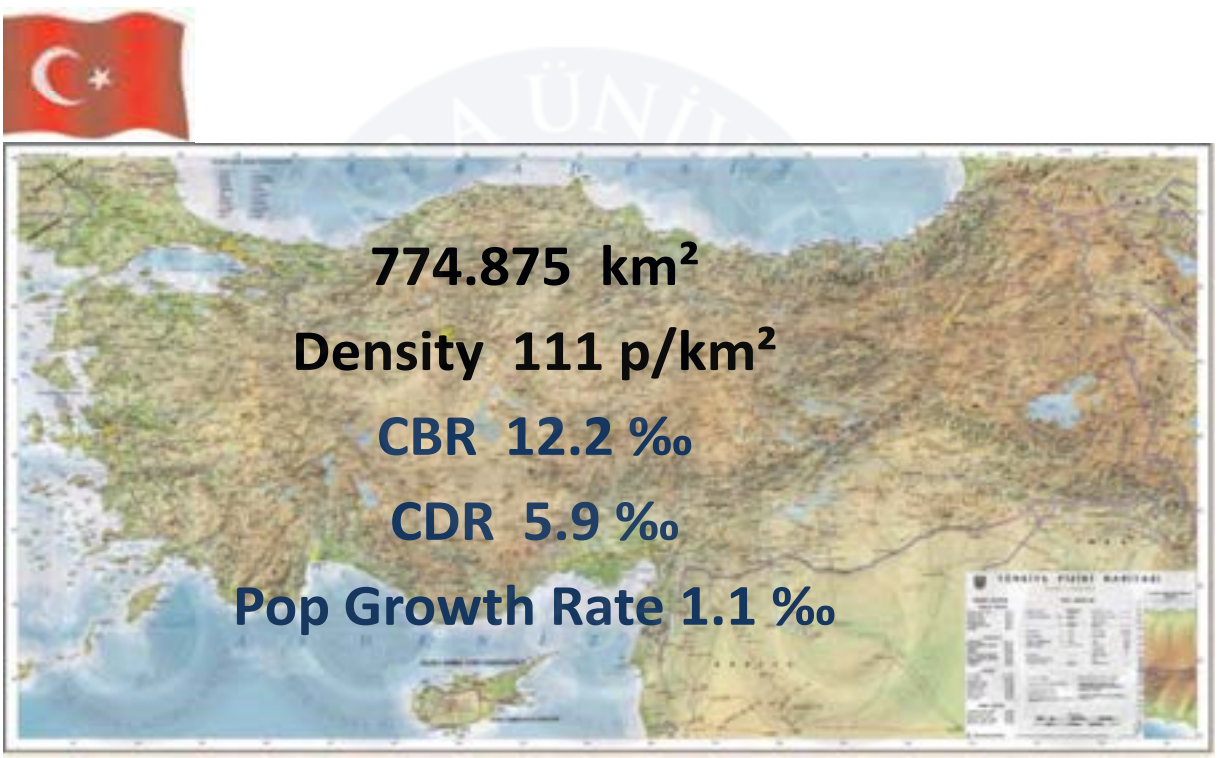


Figure A.18: Map of Türkiye (2024), population density, crude birth rate, crude death rate, population growth rate, TURKSTAT, 2023.

[5]

The Treaty of Lausanne, signed on July 24, 1923, recognized the establishment and full independence of the Turkish State, and the Republic was declared on October 29, 1923. The country's current borders were finalized in 1939, with the inclusion of the Hatay province.

Administratively, Türkiye is divided into 81 provinces, which are further subdivided into districts, sub-districts, and villages. Türkiye has 922 districts, 32,254 neighbourhoods, 18,255 villages, and 23,800 towns [16].

Türkiye is characterized by its diverse social and cultural structure, where modern and traditional lifestyles coexist. Family ties remain strong and significantly influence the formation of societal values, attitudes, aspirations, and goals.

Following the establishment of the Republic of Türkiye, the Law on the Unification of Education (Tevhid-i Tedrisat Kanunu) was enacted in 1924, unifying education under a single system and providing equal educational opportunities for both men and women.

The Hat Law of 1925 and the Turkish Civil Code of 1926 changed the legal status of women, granting them equal rights both within the family and as individuals.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Women in Türkiye gained the right to vote and run for office in municipal elections in 1930 and in general elections in 1934.

Subsequent legislation favourable to women's rights includes the Family Protection Law of 1998, the New Civil Code of 2002, amendments to the Labour Law in 2003, and amendments to the Penal Code in 2005.

Türkiye is also a signatory to the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), often referred to as the "Universal Declaration of Women's Rights" [17]. This is one of the eight fundamental human rights treaties within the United Nations framework, emphasizing that human rights apply equally to women as to men. Known as the "International Bill of Rights for Women," CEDAW calls for not only legal but also practical equality between men and women [18].

In Türkiye, primary education is provided at elementary schools, is compulsory for both boys and girls, and is free in public schools [17,19]. Compulsory primary education covers children aged 6-14. With Law No. 4306, an uninterrupted eight-year primary education process was established by combining five years of elementary school with three years of middle school, starting from the 1997-1998 academic year. In 2012, a legislative change extended the compulsory education period from 8 to 12 years, structured as "4+4+4," making 12 years of education mandatory for all citizens, both male and female [19].

In 2023, the literacy rate was calculated to be 97.6%. Among women, the literacy rate was 96.0%, while among men, it was 99.2% [20].

As of 2023, the average length of education for the population aged 25 and over in Türkiye was 9.3 years. The average duration of education was 8.6 years for women and 10.1 years for men. Among the provinces, Ankara had the highest average education duration at 10.7 years, followed by İstanbul, Eskişehir, Kocaeli, and İzmir. The province with the lowest average education duration was Ağrı, with 7.4 years, followed by Şanlıurfa, Muş, Kastamonu, and Van [20].

According to the Household Labour Force Survey, the unemployment rate for individuals aged 15 and older was estimated at 7.7% for men and 12.6% for women. The labour force participation rate was 71.2% for men and 35.8% for women. Of those employed, 14.8% worked in agriculture, 21.2% in industry, 6.3% in construction, and 57.6% in the service sector. Among employed women, 63.3% worked in the service sector [21]. Factors such as traditional social norms, household responsibilities, care giving roles, gender discrimination, the glass ceiling effect, wage inequality, and access to education contribute to the low employment rates among women. Despite recent increases in female employment, Türkiye still has the lowest female employment rate among the European Union (EU) and Organization for Economic Co-operation and Development (OECD) countries [22].

In the United Nations Development Program's (UNDP) 2023-2024 Human Development Report, Türkiye ranked 45th among 193 countries on the Human Development Index (HDI: 0.855). However, when adjusted for inequalities, overall human development levels for men are higher than for women in Türkiye. Consequently, when gender inequalities are factored in, Türkiye's ranking drops to 63rd among 166 countries.

MARMARA ÜNİVERSİTESİ YAYINEVİ

2.1 Türkiye's Population:

According to the Address-Based Population Registration System (ADNKS) results, Türkiye's total population at the end of 2023 was 85,372,377 people [16].[1] Of this population, 49.9% (42,638,306) are women. The population density is 111 people per square kilometre [16].

The median age in Türkiye is 34, with 33.2 for men and 34.7 for women. The median age is projected to reach 44.8 by 2050, 51.5 by 2075, and 52.2 by 2100.

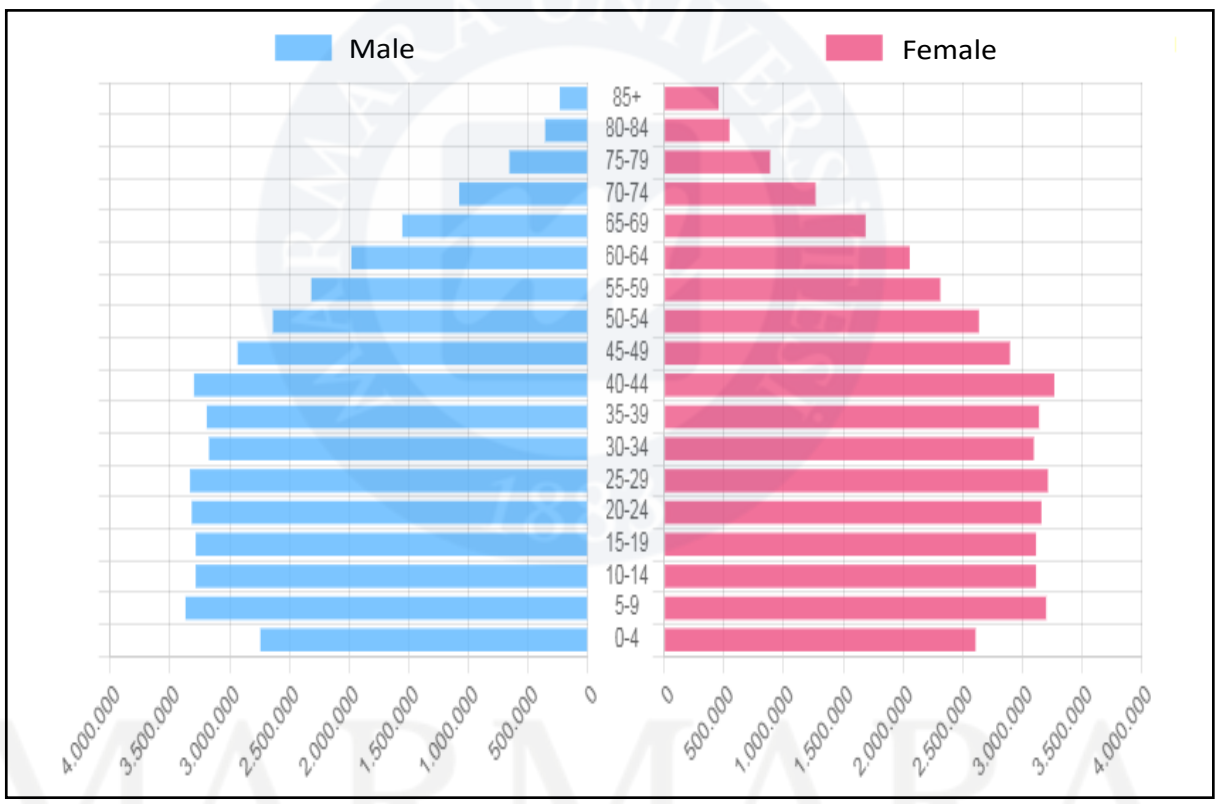


Figure A.19: Türkiye's population pyramid (TURKSTAT, 2023) [16].

In Türkiye, the female population aged 40-69 was 14,848,141 in 2023.

The provinces with the highest female population density are İstanbul and Ankara.

[1] *TURKSTAT has been announcing population censuses annually on the basis of the Address-Based Population Registration System (ADNKS) since 2007. ADNKS keeps population information up to date according to their place of residence, allowing for population movements to be monitored. It is a registration system in which residential addresses are matched according to the ID Numbers of citizens/residents.*

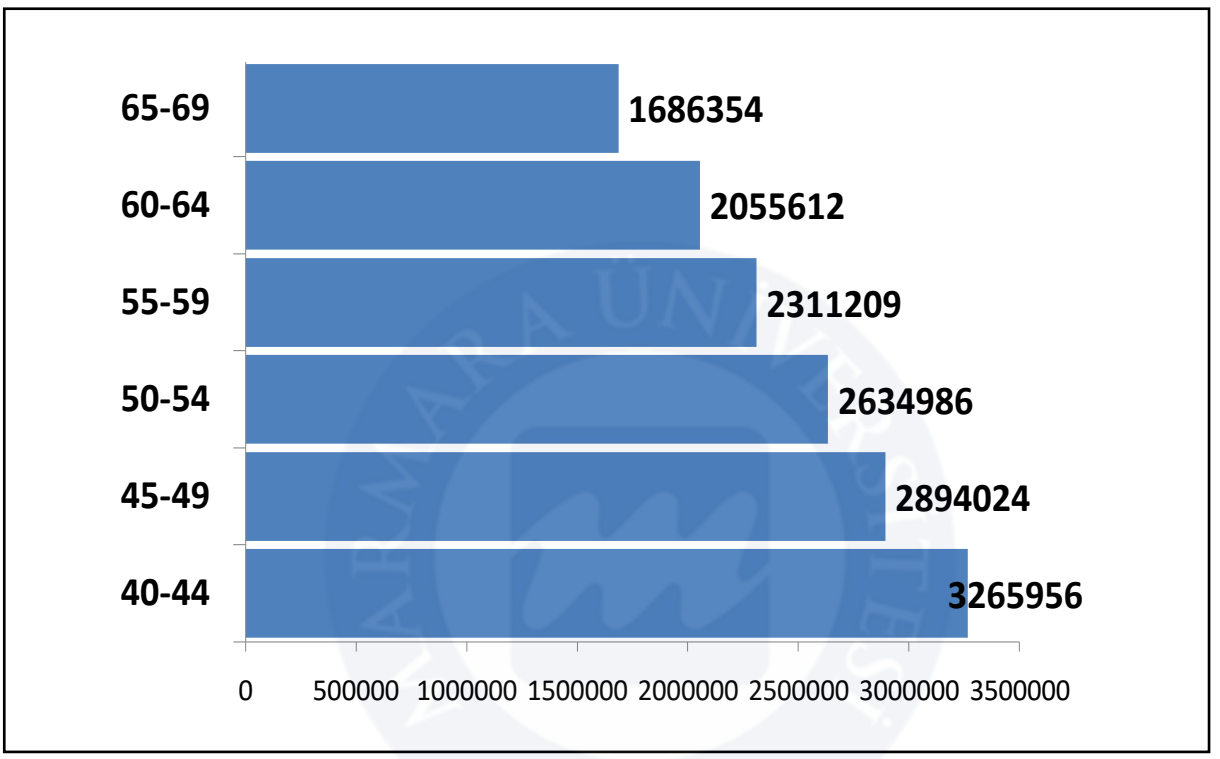


Figure A.20: Türkiye, distribution of the female population in the 40-69 age group by age groups, 2023, TURKSTAT [16].



Figure A.21: Türkiye, distribution of female population by province, 2023, TURKSTAT [16].

MARMARA ÜNİVERSİTESİ YAYINEVİ

According to marriage statistics, the average age at first marriage for women who legally married in 2022 was 25.6, while for men it was 28.2 [23].

The "life expectancy at birth," defined as the average number of years a newborn is expected to live under current mortality rates, was 78.6 years in Türkiye for the period 2017-2019. This figure declined to 77.7 years for 2019-2021, 77.5 years for 2020-2022, and 77.3 years for 2021-2023. In Türkiye, life expectancy at birth for men was 75 years for 2019-2021, decreasing to 74.8 years for 2020-2022. For women, life expectancy was 80.5 years for 2019-2021 and 80.3 years for 2020-2022. Generally, women live longer than men, with a life expectancy gap of 5.5 years between the sexes.

The proportion of the elderly population (65+) within the total population increased from 8.8% in 2018 to 10.2% in 2023. In 2023, 44.5% of the elderly population was male, and 55.5% was female. According to population projections by TURKSTAT, the elderly population ratio is expected to reach 12.9% in 2030, 16.3% in 2040, 22.6% in 2060, and 25.6% in 2080 [16].

2.2 Income Status:

According to the results of the 2023 Türkiye Income and Living Conditions Survey, the share of total income held by the top 20% of households with the highest equivalent disposable income increased by 1.8 points from the previous year to 49.8%, while the share for the lowest 20% of households decreased by 0.1 points to 5.9% [24].[2]

The Gini coefficient, which measures income inequality, indicates greater equality as it approaches zero and greater inequality as it approaches one. Based on the latest survey results, the Gini coefficient was estimated at 0.433, marking an increase of 0.018 points from the previous year. When excluding all social transfers, the Gini coefficient was estimated at 0.520, and when excluding all social transfer incomes except retirement and widow's/orphan's pensions, it was 0.445 [24].

The P80/P20 ratio, calculated as the income share of the top 20% of earners divided by that of the lowest 20%, increased from 7.9 to 8.4. Similarly, the P90/P10 ratio, which compares the income share of the top 10% to that of the lowest 10%, rose from 14.2 to 15.0 [24].

The annual average main income was calculated as 157.851 TL for those with higher education, 114.374 TL for high school graduates, 89.012 TL for those with less than high school education, 63.425 TL for individuals without a formal education, and 45.637 TL for illiterate individuals. Compared to the previous year, the highest increase in annual average main income was 89,7% for individuals with less than high school education, while the lowest increase was 79,6% for illiterate individuals. Women's average annual income was significantly lower than men's at each level of education [24].

[2] *In income calculations, household incomes are converted into equivalent household disposable individual income, taking into account their size and composition.*

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table A.2: Distribution of annual equivalent household disposable individual income in Türkiye, by sequential 20% groups (%), 2014-2023, TURKSTAT, 2023.

Survey Years	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Income reference years	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
First 20% (Lowest)	6.2	6.1	6.2	6.3	6.1	6.2	5.9	6.1	6.0	5.9
Second 20%	10.9	10.7	10.6	10.7	10.6	10.9	10.6	10.8	10.4	9.8.
Third 20%	15.3	15.2	15.0	14.8	14.8	15.2	14.9	15.1	14.7	14.0
Fourth 20%	21.7	21.5	21.1	209	20.9	21.4	21.1	21.3	20.9	20.5
Last 20% (Highest)	45.9	46.5	47.2	47.4	47.6	46.3	47.5	46.7	48.0	49.8

Table A.3: Annual average main job income (TRY) of women and men according to education level in Türkiye, 2022, 2023, TURKSTAT.

	Total			Male			Female		
Educational Status	2022	2023	Percent Change	2022	2023	Percent Change	2022	2023	Percent Change
All education levels	62 826	116297	85.1	68 047	125 709	84.7	48 745	91 693	88.1
Illiterate	25 406	45 637	79.6	30 799	54 886	78.2	21 181	38 574	82.1
No graduate from school	34 755	63 425	82.5	39 994	73 258	83.2	23 141	42 123	82.0
Less than high school	46 916	89 012	89.7	50 953	95 710	87.8	30 233	61 845	104.6
High school	62 835	114 374	82.0	69 085	126 147	82.6	40 276	74 188	84.2
Higher education	87 451	157 851	80.5	99 836	179 521	79.8	68 026	124 372	82.8

MARMARA ÜNİVERSİTESİ YAYINEVİ

2.3 Educational Status:

According to the National Education Statistics Database, the proportion of the population aged 25 and over who have completed at least one level of education increased between 2008 and 2021. When examined by gender, the rate of individuals aged 25 and over who completed at least one level of education was 72,6% for women and 89,8% for men in 2008. By 2021, this rate had increased to 87,3% for women and 97,1% for men [20].

When looking at individuals aged 25 and over with higher education (associate degree, bachelor's degree, master's degree, or doctorate) by gender, the rate of higher education graduates was 7,6% for women and 12,1% for men in 2008. By 2021, this rate had increased to 20,9% for women and 25.1% for men.

According to the Household Labour Force Survey, in 2021, the labour force participation rate for individuals aged 15 and over was 32,8% for women and 70,3% for men [21].

When examining labour force participation by educational level, it was found that as women's education levels increased, their participation in the labour force also increased. The labour force participation rate was 12,8% for illiterate women, 25,3% for women with less than a high school education, 32,5% for high school graduates, 38,5% for vocational or technical high school graduates, and 67,6% for women with higher education.

Table A.4: Some selected indicators by gender in Türkiye, 2021, TURKSTAT.

	Total (%)	Male (%)	Female (%)
Illiterate population rate (25+ years old)	*3.5*	*1.0*	*6.1*
Population rate with higher education graduates (25+ years old)	*23.0*	*25.1*	*20.9*
Employment rate (ages 15+)	*45.2*	*62.8*	*28.0*
Labour force participation rate (15+ years)	*51.4*	*70.3*	*32.8*
Unemployment rate (ages 15+)	*12.0*	*10.7*	*14.7*

MARMARA ÜNİVERSİTESİ YAYINEVİ

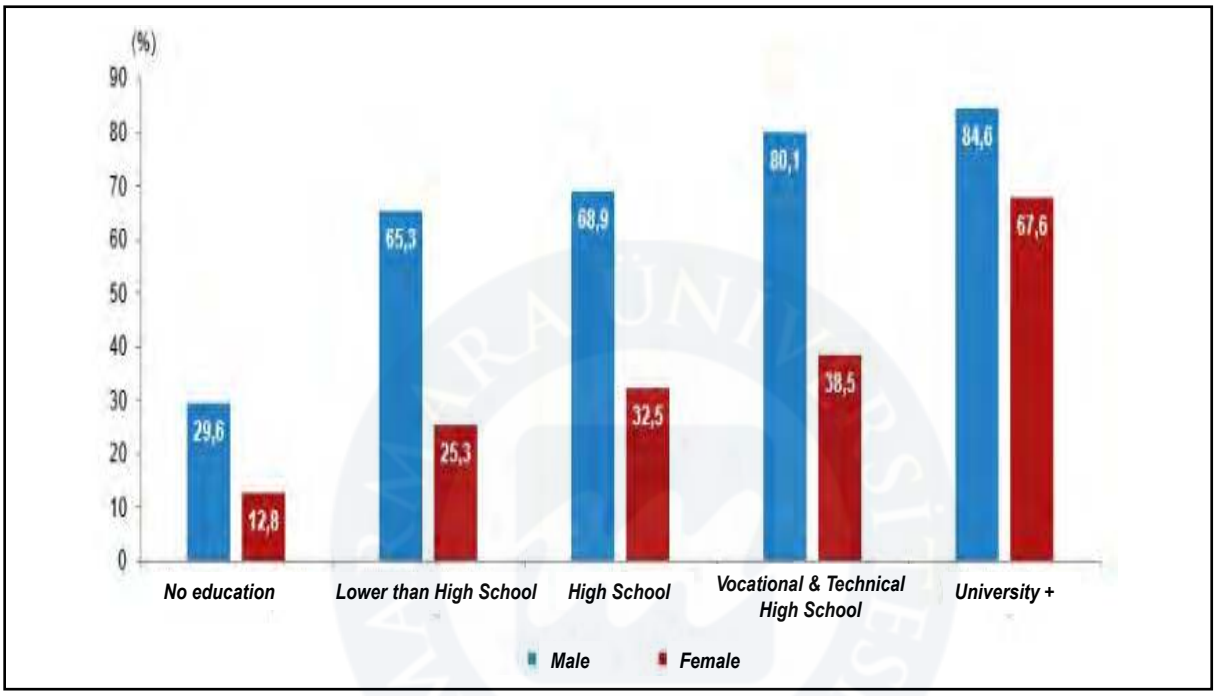


Figure A.22: Labour force participation rates by gender and education level in Türkiye, 2021, TURKSTAT.

3. Key Steps in Cancer Control in Türkiye:

The history of cancer-related activities in Türkiye is relatively recent, with the institutionalization of cancer control efforts beginning in the 1940s.

1947: The Turkish Cancer Research and Fight Society were established, marking the first cancer regulations in Türkiye [25].

1955: Construction of Türkiye's first oncology hospital, Ankara Ahmet Andiçen Oncology Hospital, began.

1962: The Ahmet Andiçen Hospital was transferred to the Turkish Ministry of Health for public health service. Cancer, which had previously been categorized among other diseases, began to be addressed separately with the establishment of the "Cancer Department" within Primary Health Services.

1967: The Etimesgut Oncology Hospital was established by the Ministry of Health [25].

1970: The "Directorate of Cancer Control" was established within the General Directorate of Primary Health Services under the Ministry of Health, and the week of April 1-7 was designated as "Cancer Week."

1977: The Turkish Cancer Control Council was formed.

1982: Cancer was included among notifiable diseases for the first time, with mandatory reporting enacted by the Ministry of Health directive No. 5621 dated September 14, 1982, adding cancer cases to the list of mandatory notifiable diseases outlined in Article 57 of Public Health Law No. 1593 [26].

1983: With cancer now classified as a mandatory notifiable disease, cancer registration began on a passive system, and the "Department of Cancer Control" was established within the Ministry of Health under Decree Law No. 181 to conduct cancer case registration activities. One of its primary duties was to accurately and reliably collect qualified cancer data [26].

1983: The Cancer Control Science Board was established on May 14, and oncology was recognized as a subspecialty.

MARMARA ÜNİVERSİTESİ YAYINEVİ

1989: Türkiye joined the Union for International Cancer Control (UICC).

1992: The Cancer Registration and Incidence Project established cancer registration centres in İzmir and Diyarbakır, marking the first time that data collection met international standards [26]. Note that epidemiological studies on the incidence of organ-specific cancers and data collection via establishment of a "passive cancer registry system" for the whole country began in 1983. Despite various initiatives, real cancer incidence data could not be obtained for a defined population. Since reporting cancer cases across the country was a passive system, only approximately one quarter of the total predicted cancer cases could be obtained [5].

1992: The İzmir Active Cancer Registry Centre (ICR) was launched as Türkiye's first population-based cancer registry, established in collaboration with the Ministry of Health, Ege University, and the University of Massachusetts through Turkish-American Health Research and Programming. Located in İzmir, it operates under the İzmir Provincial Health Directorate and is part of the European Network of Cancer Registries (ENCR).

A population-based cancer registry covering İzmir Province (population 2.7 million, 1993–1994) was established. The first active data collection that met WHO standards was presented in 1993–1994. Consistent with previous non-population-based series, overall cancer incidence was higher in men than in women, with age-standardized rates of 157,5 per 100 000 for men and 94,0 for women. Major cancers in men included tobacco-related lung cancer (ASR 61,6), bladder cancer (ASR 11,0), and laryngeal cancer (ASR 10,6). In women, breast cancer was the most common malignancy (ASR 24,4), while cervical cancer was relatively rare (ASR 5,4). Limited data sources, such as the unavailability of data from death certificates, may have resulted in underestimation.

1992: Data collection systems were established in ten provinces.

1995: Cancer Screening Project studies commenced, and the first Cancer Early Detection Centre (KTEM) was established at İstanbul Bakırköy State Hospital.

1996: The Ahmet Andicen Oncology Service Building in Ankara and the Tülay Aktaş Cancer Early Detection Centres in İzmir Narlıdere were opened.

1998: The Antalya Cancer Registry Centre was opened, and cancer data collection launched.

2000: The Cancer Early Detection Centre Regulation and Cancer Registry Centres Regulation (December 14, 2000 - Official Gazette No. 24260) were published, initiating data collection.

2002: WHO's International Agency for Research on Cancer (IARC) used data from the İzmir cancer registry for GLOBOCAN, validating the quality of data from this region.

2003: Türkiye's membership was accepted at the Middle East Cancer Consortium (MECC) meeting in Geneva.

2004: With European Union grants, Cancer Early Detection, Screening, and Education Centres (KETEM) were established in 11 provinces, and existing KTEMs in 31 provinces were integrated into the system. These centres met EU standards.

National standards for breast cancer screening for women were published (Circular No. 2004/99, July 20, 2004) [27].

2005: The National Cancer Advisory Board and subcommittees were established by directive.

2007: National cancer screening standards for breast, cervical, and colorectal cancers were published. Data from İzmir and Antalya were published in the book Cancer Incidence in Five Continents [28].

2009: An additional 34 Women and Family Health Centres operated by İstanbul Metropolitan Municipality began functioning as KETEMs, alongside 88 others in 81 provinces.

- Phase I '2009-2015': Türkiye's National Cancer Control Program was published.

MARMARA ÜNİVERSİTESİ YAYINEVİ

2010: Professional cancer registration began, with 10 Active Cancer Registry Centres covering at least 20% of the country's population[3], as required for internationally representative data. These centres included Ankara, Antalya, Edirne, Eskişehir, Erzurum, İzmir, Kocaeli, Samsun, Trabzon, and Bursa, reaching 23.4% of the population [26].

2010: Gaziantep and Malatya were added to the Active Cancer Registry Centres.

2011: The Cancer Department within the Türkiye Public Health Institution, restructured under Decree Law No. 663.

- The Cancer Department became part of the International Agency for Research on Cancer (IARC) on November 2, 2011.

2012: İstanbul and Mersin joined the Active Cancer Registry System, bringing the number of cancer registry centres to 13.

Following the Ministry of Health's reorganisation under Decree Law No. 663, KETEMs were reorganised as units under Community Health Centres on March 19, 2012.

2013: Active Cancer Registration was implemented in all 81 provinces.

- The Family Medicine Implementation Regulation integrated family physicians into cancer screening programmes.
- Revised National Cancer Screening Standards for breast, cervical, and colorectal cancers were published.

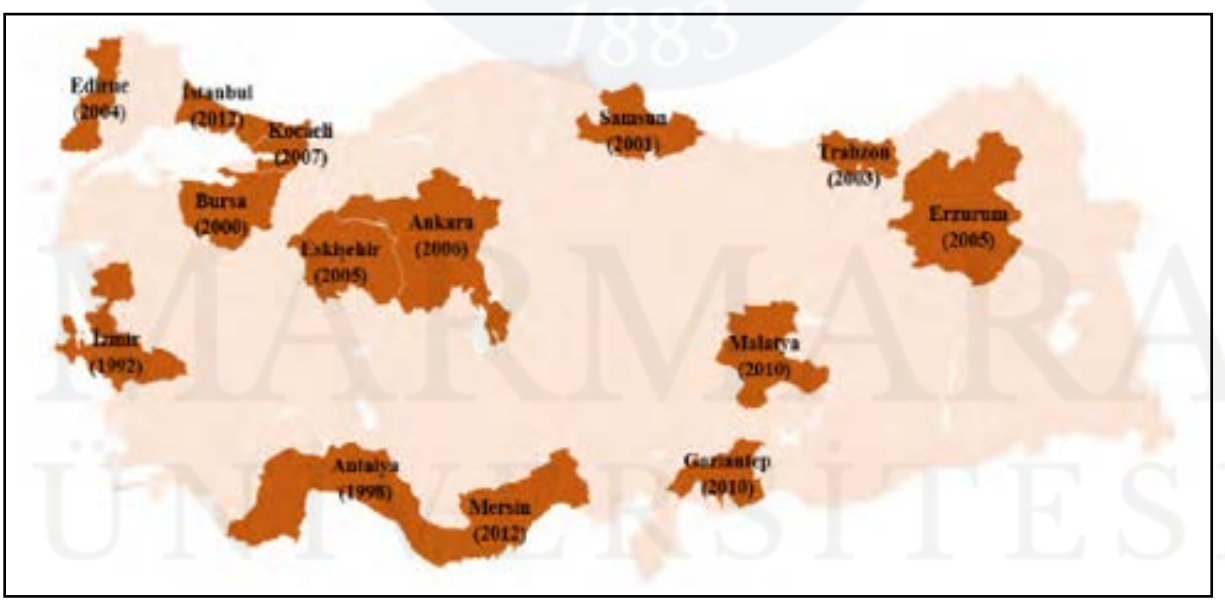


Figure A.23: Active Cancer Registry Centres and reference dates in Türkiye, T.R. MoH.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022.

---

[3] *Scientific cancer registry studies worldwide require data collection from a population area representing at least 20% of a country's total population to accurately reflect that country's data.*

MARMARA ÜNİVERSİTESİ YAYINEVİ

2013: Due to its 20 years of experience and continuity, the İzmir Cancer Registry Centre was designated by the IARC as the Training and Technical Support Centre for cancer registry centres in 29 countries across North Africa, Central, and West Asia.

2014: The integration of the Family Medicine Information System (AHBS) used by family physicians with the Hospital Information Management System (HYBS) was completed.

- The HYBS database was activated for use by primary healthcare providers.

2015: The Cancer Registry Centres Regulation was published in the Official Gazette No. 29375 on June 3, 2015.

2016: To improve the effectiveness of the population-based breast cancer screening programme conducted via mammography at primary healthcare facilities, the Mobile Mammography Pilot Program and Centralized Reporting Project were launched.

- Phase II '2016-2018': The National Cancer Control Program was published.

2017: Structural changes were made in the Ministry of Health's central organisation, and the General Directorate of Public Health Services was established. Subsequently, the Department of Cancer Control was set up under the General Directorate of Public Health with the Directive No. 04.495 dated October 2, 2017, on the Duties and Units of HSGM.

- The Public Health Management System (HSYS) database was activated.

2018: In the 10th edition of the Cancer Incidence in Five Continents series published by the International Agency for Research on Cancer (IARC), data from the Trabzon and Edirne Cancer Registry Centres for the 2003-2007 period were included alongside İzmir and Antalya data. Data from Bursa, Eskişehir, Erzurum, and Samsun were also included in the 11th edition, accrediting eight cancer registry centres in Türkiye with IARC.

2019: The Cancer Registration Circular was updated and distributed to provinces (April 16, 2019, No. 23776858-157.99.242).

4. Development of Cancer Early Diagnosis, Screening, and Education Centres in Türkiye:

Beyond diagnosis and treatment approaches, the first official efforts related to cancer by the Turkish Ministry of Health began with the establishment of the Cancer Screening Centre (KTEM) in İstanbul in 1995.

KTEMs were established with the aim of reducing the incidence and mortality rates of preventable and early-detectable cancers, raising public awareness about cancer, promoting the importance of early detection and screening through education, and conducting population-based screening activities for cancers that allow for early detection.

In 2004, 11 Cancer Early Diagnosis, Screening, and Education Centres (KETEM) were launched with European Union grants to conduct population-based cancer screenings according to EU standards [28].

- 2018: 202 centres (including 25 mobile units)
- 2019: 254 centres (including 36 mobile units)
- 2020: 283 centres (including 39 mobile units)
- 2021: 336 centres (including 42 mobile units)
- 2022: 364 centres (including 44 mobile units).

MARMARA ÜNİVERSİTESİ YAYINEVİ

As of December 2023, there are 381 KETEMs operational nationwide, with at least one in each province. Of these, 46 are mobile cancer screening units serving rural and disadvantaged groups.



Figure A.24: Distribution of KETEMs in Türkiye, 2023.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022.

5. Türkiye's National Cancer Control Programme:

Türkiye's first National Cancer Control Programme was implemented in 2007, developed following an evaluation of global targets and national priorities. The program's goals were as follows:

i. Reducing the number of new cases through preventive strategies,

ii. Increasing treatment opportunities and improving quality of life for current cases through screening and early diagnosis,

iii. Reducing the overall cancer burden.

Priorities for collaboration between the World Health Organization/Europe and the Turkish Ministry of Health were defined under a two-year cooperation agreement signed between Türkiye and WHO Regional Office for Europe. Through the 2008-2009 Cooperation Agreement, five priority areas were identified to "strengthen the Ministry of Health's capacity to develop and implement policies for non-communicable diseases." These priority areas included cancer control, prevention, palliative care, obesity prevention, and tobacco control [26].

Türkiye renewed its National Cancer Control Program in 2013 after first publishing it in 2007; the second phase of the programme was developed for the 2016-2018 period, and the third phase was established for the 2019-2023 period [25].

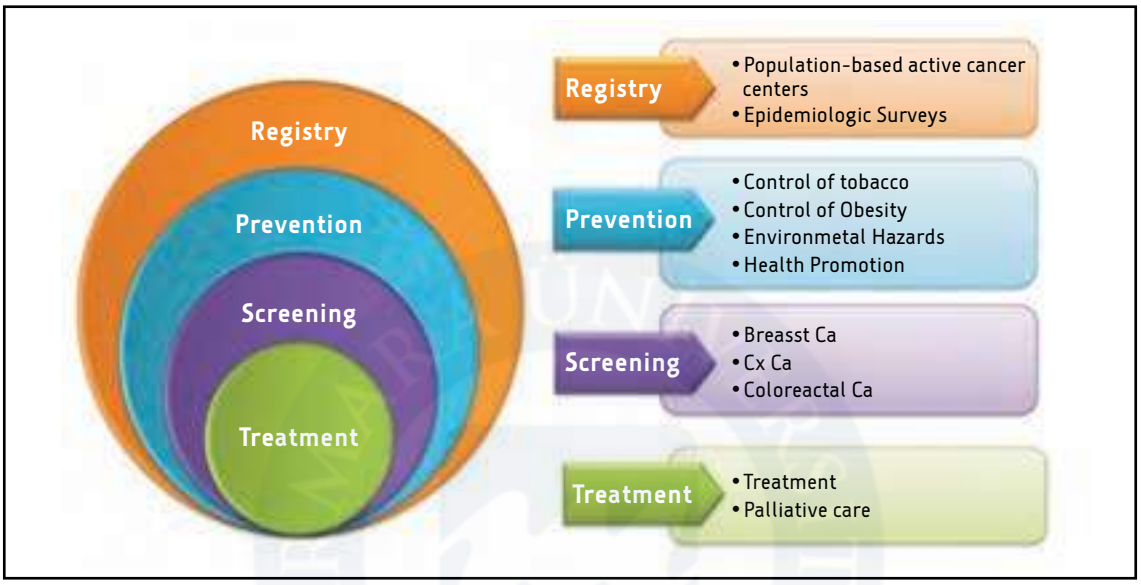


Figure A.25: Türkiye Cancer Control Program.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022.

The Türkiye National Cancer Control Program is compatible with control programmes prepared and carried out by other departments of the Ministry of Health. It also includes plans to combat chronic diseases other than cancer, such as the "Türkiye Obesity Control Program", "Tobacco Control Program" and "Diabetes Control Program".

6. National Cancer Screening Programs and Standards in Türkiye

Cancer screenings are conducted as either population-based or opportunistic screenings. In Türkiye, population-based screenings are conducted by the Ministry of Health's Cancer Early Diagnosis, Screening, and Education Centres (KETEM), aiming to reach at least 70% of the target age group, although opportunistic screenings are also conducted by other institutions and reported to the Ministry of Health.

In Türkiye, cancer screenings are performed by KETEM, which operates screening programmes for breast, cervical, and colorectal cancers under the principle, "Early diagnosis saves lives!"

KETEMs employ trained physicians, nurses, midwives, radiology technicians, and medical technologists who are skilled in cancer prevention and screening methods. For cervical and breast cancer screenings, women within the age groups defined by the National Screening Guide are invited through various methods (letters, phone calls) to undergo necessary examinations and tests. Colorectal cancer screenings also began in 2013 [25, 26].

Breast cancer screenings are conducted to support breast cancer prevention, which involves three levels of prevention:

i) Primary prevention,

ii) Secondary prevention, and

iii) Tertiary prevention.

MARMARA ÜNİVERSİTESİ YAYINEVİ

i) Primary Prevention: Involves preventing individuals from becoming ill by reducing exposure to risk factors or enhancing their resistance to these factors (e.g. through vaccination or chemoprevention).

ii) Secondary Prevention: Focuses on early diagnosis and treatment after individuals have been exposed to risk factors, but before clinical symptoms have appeared, at the biological onset of the disease. At this stage, screening activities are crucial for early detection. Individuals perceive themselves as healthy due to the lack of clinical symptoms, yet "preclinical lesions and findings" can be detected through appropriate screening examinations and tests.

iii) Tertiary Prevention: Aims to prevent the progression and complications of the disease. In individuals diagnosed with the disease, this phase includes treatment and rehabilitation processes to prevent further deterioration or reduce complications. Specifically for breast cancer, tertiary prevention involves long-term follow-up, treatment, and care practices to improve the quality of life for those treated for or living with cancer, prevent recurrence, and minimize the disease's adverse effects.

Screening involves examining and assessing asymptomatic individuals for disease control purposes. The purpose of screening is not to make a "diagnosis" but rather to identify any potential positive findings (if present) at an early stage in seemingly healthy individuals before clinical symptoms appear, to be confirmed by more advanced methods. Instead of waiting for symptomatic individuals to present themselves, screening asymptomatic patients is crucial for both individuals and society. Through screening, individuals diagnosed at an early stage can be directed swiftly to appropriate treatments in qualified centres.

"Population-based screening" refers to examining and assessing all individuals or groups at risk of a specific disease (for example, women in age groups with a high incidence of breast cancer) within a programme to facilitate early diagnosis and treatment. In contrast, "opportunistic screening" involves screening within routine medical consultations for individuals in potentially high-risk situations (e.g., those with a family history or other known risk factors). Population-based screenings actively seek cases, while opportunistic screening is a passive application not conducted within a formal program. Consequently, many women screened in opportunistic settings may not belong to the high-risk group, while high-risk individuals might not be screened. Additionally, screening intervals may not be consistent [29]. To maximize benefit and minimize harm, cancer screenings should be implemented solely within population-based programmes. These programmes must be organised with adequate resources for planning, training, defining the target population, quality assurance, and inviting the target group for screening, all within a structured population-based screening programme that includes monitoring and evaluation [30].

The examinations/tests used in screenings are not expected to be "diagnostic." Instead, the goal is to identify "possible-suspect" cases. "Possible-suspect" cases identified through screening are confirmed through more advanced examinations and tests. Through systematic screenings for breast cancer, it is possible to reduce current breast cancer mortality rates and decrease the prevalence of the disease by detecting patients in an early stage while still asymptomatic, utilizing effective diagnostic methods and optimal treatments. The primary objective of breast cancer screening programmes is to reduce breast cancer mortality through early diagnosis. A high-quality screening programme can lead to long-term mortality reduction if the treatment of women detected through screening is equally high-quality. A reduction in breast cancer mortality requires a more favourable stage distribution when comparing cancers diagnosed clinically to those identified through screening.

MARMARA ÜNİVERSİTESİ YAYINEVİ

The National Breast Cancer Screening Standards recommend the following:

i. Every woman aged 20 and older should perform a regular monthly Breast Self-Examination (BSE).

ii. Every woman aged 20 and older should undergo a Clinical Breast Examination (CBE) by a physician at least once every two years, and women aged 40 and older should have this examination at least annually.

iii. Every woman aged 40 and older should have a mammographic examination every two years. Initially, due to the lack of national data, the recommended starting age for mammographic screening was set at 50, based on European Commission recommendations. However, following the initial findings from the "Population-Based Mammographic Screening Project" conducted by the Breast Health Society in Bahçeşehir, İstanbul, between 2009 and 2019, data showed that half of the women diagnosed with breast cancer were under 50. This information was presented to the Cancer Department of the Ministry of Health, reviewed by National Scientific Boards, and the screening age was subsequently lowered to 40.

For the cervical cancer screening program:

- Women aged 30-65 are advised to have a pap-smear and HPV-DNA test every five years [31].

For colorectal cancer screenings:

- Both men and women aged 50-70 are recommended to have a faecal occult blood test every two years, and
- A colonoscopy every ten years between the ages of 50-70 [31].

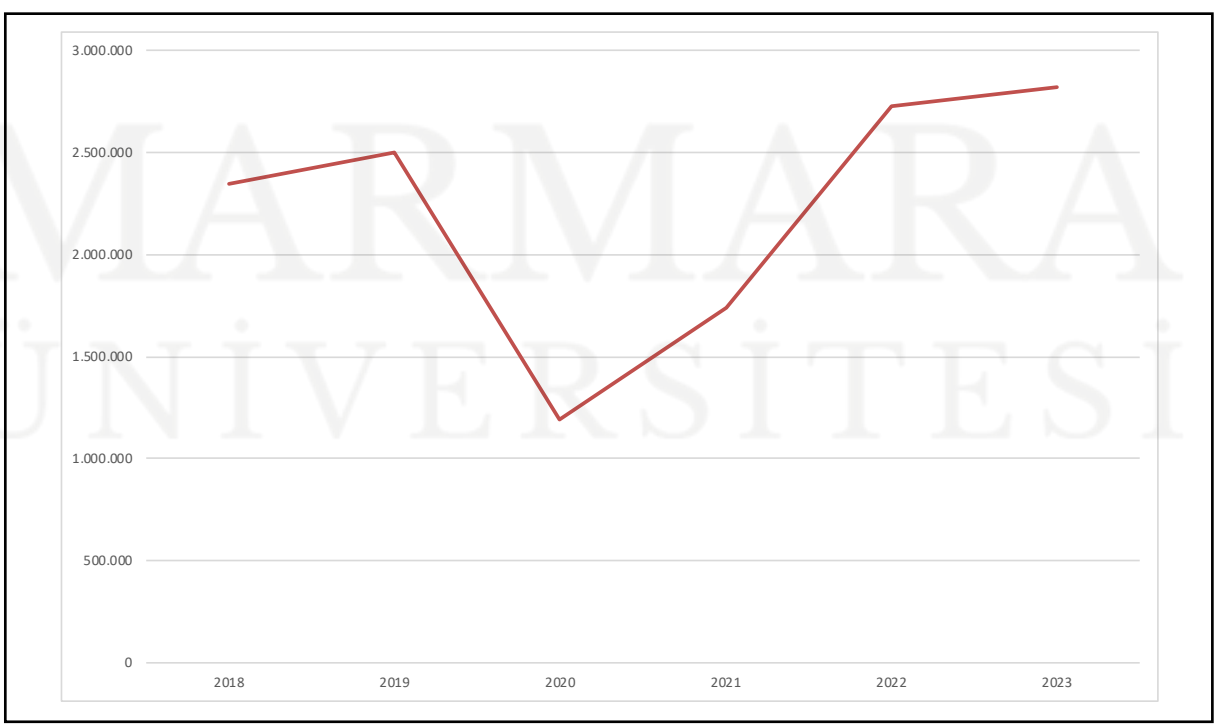


Figure A.26: Number of mammographic breast cancer screenings in Türkiye by years, T.R. MoH [28].

MARMARA ÜNİVERSİTESİ YAYINEVİ

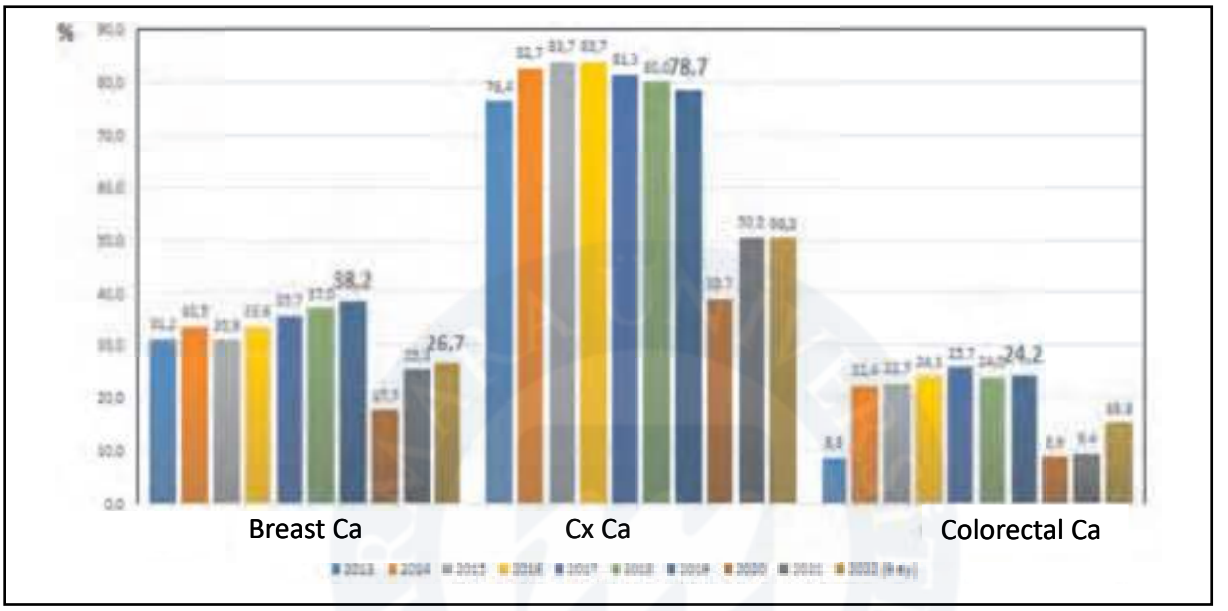


Figure A.27: Cancer screening rates in Türkiye by year, T.R. MoH.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022.

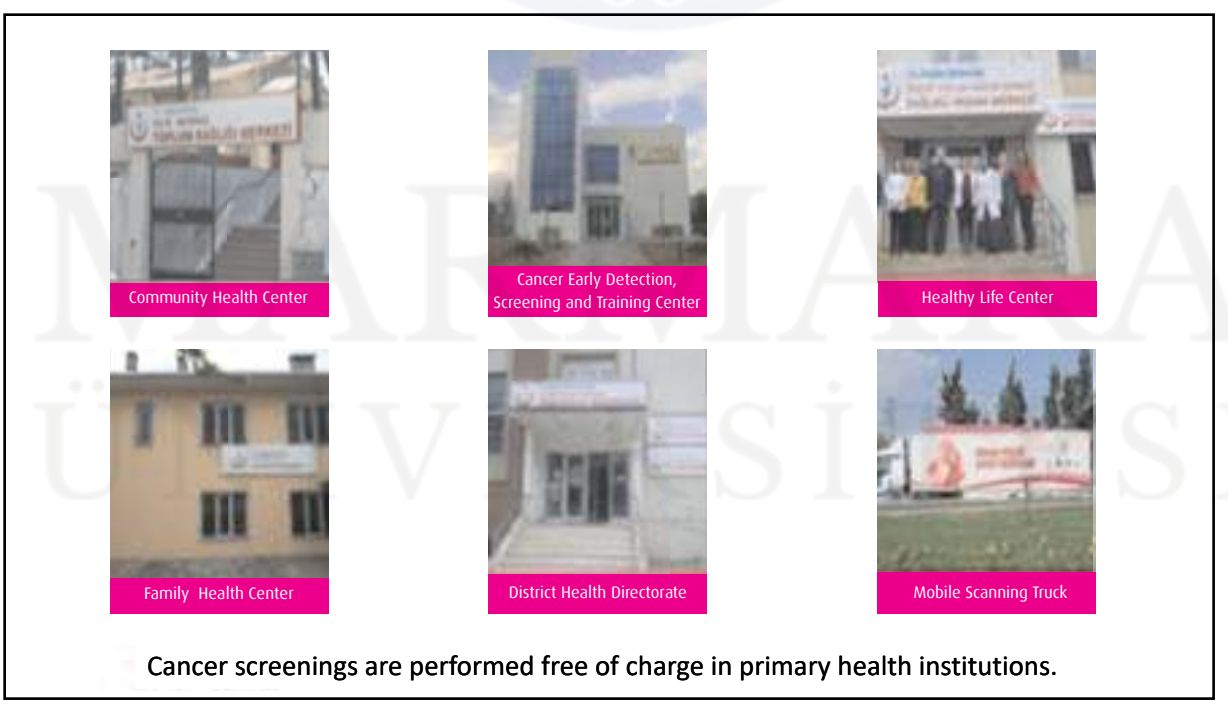


Figure A.28: Centres providing population-based cancer screening in Türkiye, T.R. MoH.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022.

MARMARA ÜNİVERSİTESİ YAYINEVİ

7. Mammography Imaging and Reporting Process in KETEM:

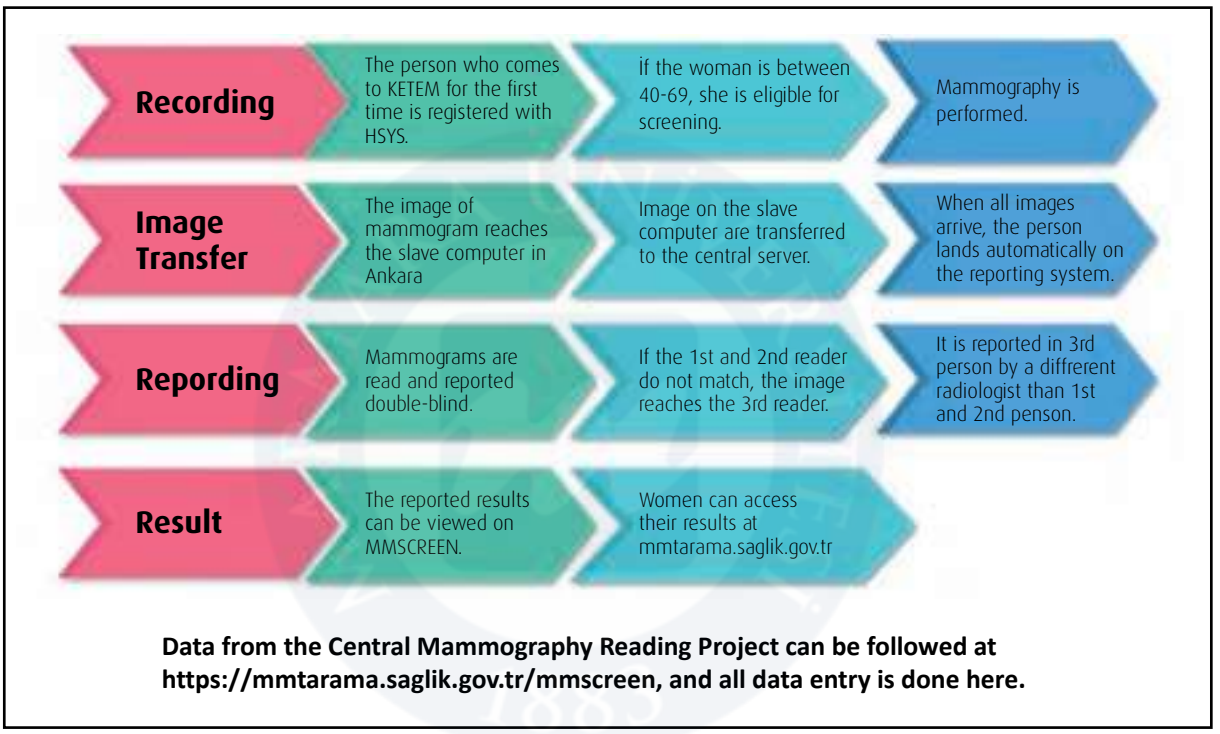


Figure A.29: Mammographic screening system in Türkiye.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022.

KETEMs operate under the Cancer Department of the General Directorate of Public Health of the Turkish Ministry of Health. Women aged 40-69 residing in Türkiye can receive mammography screenings every two years free of charge at KETEM. Standard mammography imaging includes craniocaudal (CC) and mediolateral oblique (MLO) views for both breasts. Medical monitors with a minimum resolution of 5 MP are used in mammography assessment workstations.

Since March 2016, a centralized reporting project has been in place. Mammograms performed in KETEMs across all 81 provinces in Türkiye are sent to Ankara, where they are evaluated through double-blind reading in a centralized reporting system. Reporting is conducted according to the BI-RADS system. If the mammography result is BI-RADS 1-2, the patient is invited back for routine screening in two years. If the result is BI-RADS 4-5-0, the woman is referred for further diagnostic investigation to the General Surgery departments of secondary-level state hospitals designated as Diagnosis Centres [32].

MARMARA ÜNİVERSİTESİ YAYINEVİ

8. Family Physicians and the Cancer Appointment System

Throughout the history of the Republic, efforts to deliver healthcare services to the broader population have continued with the introduction of the family medicine model through Law No. 5258, as a primary healthcare delivery approach. As of 2020, 26.594 family medicine units were operational in Türkiye, and by the end of 2022, there were 8.172 Family Health Centres (ASMs) across the country. Family Health Centres account for 97% of visits to primary healthcare facilities and 41.1% of all healthcare visits nationwide [33]. With over 247 million visits, Family Health Centres and the family physicians serving in them represent the cornerstone of the Turkish healthcare system.

Law No. 5258 on Family Medicine and the 2013 Family Medicine Implementation Regulation (AHUY) assign family physicians the duty, authority, and responsibility to provide a broad range of health services, from individual preventive health services to diagnostic, therapeutic, and rehabilitative primary healthcare. The first pilot application in Türkiye began on September 15, 2005, in Düzce. In subsequent years, family medicine practices were rolled out to additional provinces, with implementation reaching all 81 provinces in 2010[4].

Residents of Türkiye can freely choose and register with a family physician and change their family physician as desired. Family medicine services are provided free of charge during a 40-hour work week, with each family physician responsible for serving a population of 2.500-4.000 individuals. The family medicine system is population-based rather than region-based.

To support family physicians in inviting or referring individuals within the recommended age and gender groups specified in the National Cancer Screening Guide to screening programmes, the "Cancer Appointment System" was developed and integrated with Family Medicine Information Systems. Initiated as a pilot in 2018, the Cancer Appointment System was made available in all 81 provinces in August 2021 and began active use across the country in 2022. Through this system, family physicians contact individuals within the target population to invite them to screenings, inform those who agree about the screening locations (KETEM, SHM, ASM), and schedule appointments.

MARMARA ÜNİVERSİTESİ

[4] *Law No. 5258 on the Family Medicine Pilot Implementation, published in the Official Gazette on December 9, 2004 (No. 25665), and the Regulation on Family Medicine Pilot Implementation, published on July 6, 2005 (No. 25867), along with the Regulation on Payments and Contract Conditions for Personnel Employed by the Ministry of Health within the Scope of Family Medicine Pilot Implementation, published on August 12, 2005 (No. 25904), completed the legal framework for the implementation. Following the legal framework, the first pilot programme began on September 15, 2005, in Düzce. Six provinces were included in 2006, seven in 2007, 17 in 2008, four in 2009, and 46 in 2010, leading to the nationwide application of family medicine by the end of 2010 (Ministry of Health, 2022c). After coverage was extended to all provinces, Law No. 5258 was renamed the Family Medicine Law (AHK) through Decree Law No. 663 dated October 11, 2011 (Dağlaraştı, 2017:65). Once family medicine was implemented nationwide, the Family Medicine Implementation Regulation was added to this legislation, published in the Official Gazette No. 28539 on January 25, 2013.*

MARMARA ÜNİVERSİTESİ YAYINEVİ

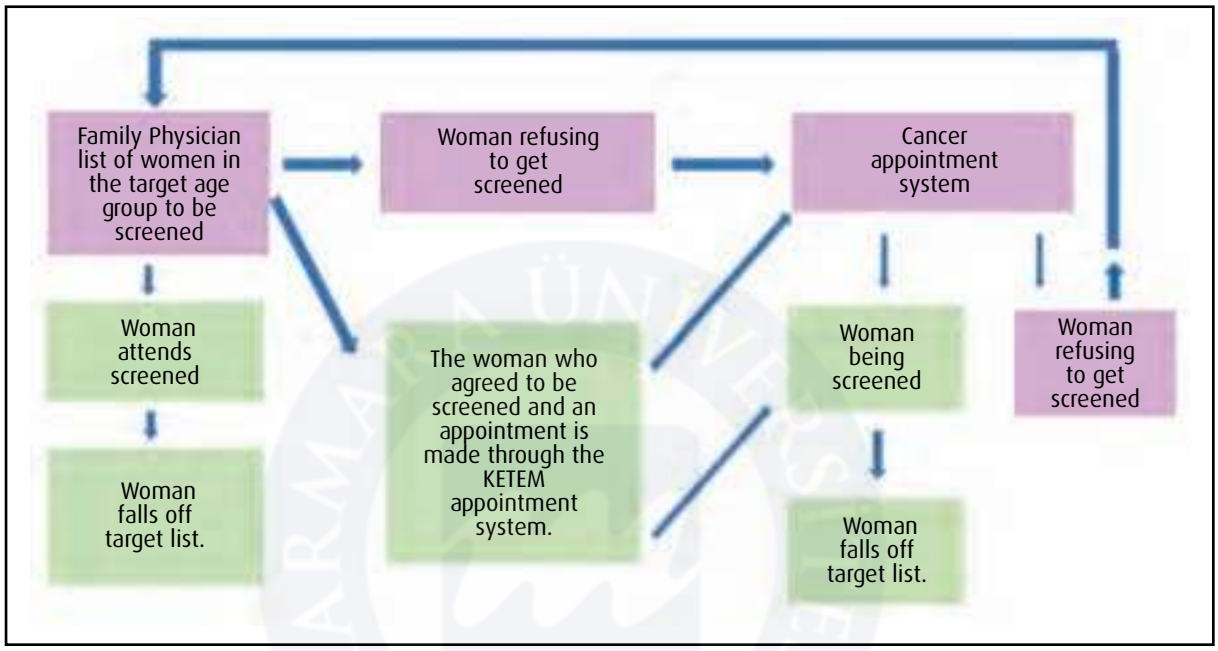


Figure A.30: Family physician-KETEM appointment system algorithm in Türkiye, T.R. MoH.

Ref: Dr. Fahriye Ünlü, "National Breast Cancer Screening Program, Reference Centres, and Referral Processes," Diyarbakır Presentation, December 10, 2022..

9. Post-Screening Diagnostic Centres

To run a successful screening program, it is essential to ensure that "suspected" cases detected through screening are provided with advanced diagnostic evaluations and subsequent treatment. In line with European guidelines for quality assurance in breast cancer screening and diagnosis, "Post-Screening Diagnostic Centres" were established in 2016 across all 81 provinces in Türkiye. Cases with positive screening results (BI-RADS 4-5-0) are referred to these centres, where priority appointments are provided for further diagnostics.

In each province, the Provincial Health Directorate has designated secondary-level state hospitals as "Diagnostic Centres" for breast cancer, which meet the following requirements of having at least:

- a radiologist,
- a pathologist,
- a general surgeon,
- mammography equipment capable of additional imaging, such as spot magnification and compression,
- Tru-cut needle biopsy, fine-needle biopsy and ultrasound-guided wire localization capabilities,
- high-resolution ultrasound equipment.

Screening tests are offered free of charge at primary healthcare facilities.

MARMARA ÜNİVERSİTESİ YAYINEVİ

However, Post-Screening Diagnostic Centres are secondary healthcare facilities, and access may depend on individuals' health insurance status. As of January 1, 2012, all Turkish citizens residing in Türkiye are required to have general health insurance[5] exceptions to this requirement include individuals under 18, those medically dependent on others, cases of traffic accidents, emergencies, work-related accidents and occupational diseases, and certain notifiable infectious diseases. General health insurance beneficiaries and their dependents must have paid at least 30 days of insurance premiums in the past year to receive services [34].

10. Breast Cancer Screening in Türkiye in 2023

Within the framework of the Cancer Control Program, the National Breast Cancer Screening Guide recommends that women aged 40-69 undergo mammography every two years [27]. In Türkiye, national breast cancer screenings are coordinated and provided free of charge through Cancer Early Diagnosis, Screening, and Education Centres (KETEM), Community Health Centres, and Family Health Centres. The target of Türkiye's population-based breast cancer screening programme is to screen 70% of the population in the 40-69 age group [27]. Unfortunately, this target has not been reached since the programme began in 2007. In 2020, 3.5 million individuals were screened, and this number increased to 4.5 million in 2021.

A population-based cross-sectional study conducted in 2014 with 1.271 women aged 40-69 in the Moda district of İstanbul found that "54% of women had undergone a mammogram in the past two years." Higher rates of screening were observed among women with higher education, higher monthly income, social security coverage, and a habit of reading newspapers daily. The most commonly reported reason for not participating in mammography screening was a "lack of knowledge about the necessity of screening" [35]. In a national cross-sectional study conducted in 2019, 65,1% of women aged 15 and older reported never having had a mammogram [36]. Additionally, in another cross-sectional study conducted with 180 women aged 40-69 in an urban and semi-urban area of a city in Türkiye, 37,2% of women had a mammogram within the last two years. The study found that women aged 40-50, those without health insurance, those with low knowledge scores, and those with low attitude scores were significantly less likely to undergo mammography, with non-participation rates being 2.3 times higher among women aged 40-50; 3,8 times higher among those without health insurance; 2,3 times higher among those with low knowledge scores; and 2,1 times higher among those with low attitude scores [37].

---

[5] *Individuals who are either compulsorily or voluntarily insured, those receiving income or pensions under Law No. 5510 on Social Insurance and General Health Insurance or previous social security laws, stateless individuals, citizens whose household income per person is less than one-third of the minimum wage, as well as Turkish citizens who are not required to undergo income testing or who have no dependents, including children under 18, persons receiving unemployment and short-term work benefits, foreign nationals who have resided continuously in Türkiye for at least one year and apply, foreign students who apply, trainee lawyers, individuals under protective measures, individuals performing military service as privates or non-commissioned officers, reserve officer students and candidates, military school candidates, and candidates at the Gendarmerie and Coast Guard Academy, as well as all uninsured citizens residing in Türkiye, are covered by general health insurance and can access health care services. For those within comes above one-third of the gross minimum wage, the general health insurance premium is set at 3% of the gross minimum wage. For these general health insurance beneficiaries, the monthly premium required for January 2024 and beyond is 600.08 TL.*

MARMARA ÜNİVERSİTESİ YAYINEVİ

In a population-based cross-sectional study conducted in 2009 in Bahçeşehir, İstanbul, with 908 healthy women aged 40-69, factors associated with increased likelihood of undergoing mammography included being over the age of 50, higher education level, and regular gynaecological examinations. Women aged 40-49 with higher education, those who underwent periodic gynaecological exams, and those with a first- or second-degree family history of breast cancer were more likely to participate in breast cancer screening within the past two years. This study highlighted the need and importance of awareness activities, specifically targeting women with lower education levels and those who do not routinely visit gynaecologists [38].

According to a population-based cross-sectional study conducted in Brazil (2015), 73.8% of women aged 50-69 had undergone mammography in the last two years. A comparison between the most educated individuals and those with the lowest educational levels (less than seven years of schooling) revealed significant inequalities in mammography utilization [39]. Another study conducted in the United States in 2009 found that age, family history, hormone replacement therapy, physician recommendation, and cancer stage at diagnosis were significant predictors of previous mammography [40]. Women with higher access to mammography facilities were found to have a lower likelihood of previous mammography compared to those with limited access. Physical distance to mammography facilities was not the only factor affecting utilization; socio-economic and cultural barriers imposed constraints, indicating that increased access to facilities did not necessarily result in increased usage [40].

In Türkiye, some barriers have been identified to the National Breast Cancer Screening Program, which has been offered free of charge by the Ministry of Health since 2007. Fear, concerns about losing a breast, the possibility of a cancer diagnosis, fear of death, and pain or discomfort are among the reasons that hinder behaviours conducive to early detection of breast cancer. Additionally, mammography awareness may be a critical determinant for adherence to screening recommendations. There is a need for scientific and rapid assessment to determine whether these barriers stem from the healthcare system, healthcare providers, or the women invited to screenings. Identifying these issues will help guide the planning of effective interventions to address these challenges.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

B. PROJECT ON PERCEPTIONS, BELIEFS, AND BEHAVIORS AFFECTING EARLY DIAGNOSIS OF BREAST CANCER IN TÜRKIYE

Under an agreement signed between UNITAR and the Rectorate of Marmara University, a study titled "Perception, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye" was planned. The research was conducted from August 16, 2023, to the end of 2024 under the project code "G2023.TARDCO42.TURMARUN."

UNITAR, established in 1963, aims to educate diplomats from UN member states and equip them with the necessary knowledge and skills. As a project-based organisation, UNITAR is financed by voluntary contributions from UN member states, other UN agencies, international and intergovernmental organisations, foundations, NGOs, and the private sector.

This Health Project began in collaboration with UNITAR, the Global Surgery Foundation, aiming to provide a healthier and brighter future for people worldwide.

1. OBJECTIVE OF THE STUDY

The aim of this study is to identify the barriers, challenges, and issues in implementing the National Breast Cancer Screening Program under Türkiye's Cancer Control Program from the perspectives of all stakeholders involved in the process (women aged 40-69, family physicians, family health workers, and KETEM healthcare personnel)

Hypotheses:

a. Among women aged 40-69 living in rural or urban areas in different regions of Türkiye, those who have had a mammogram in the last 2 years and those who have not had it, there is no difference in access to free mammography services provided by the Ministry of Health through KETEM, Community Health Centres (TSM), and Family Health Centres (ASM).

b. Among family physicians and family health workers at Family Health Centres in various regions of Türkiye, whether in rural or urban areas, there is no difference in their support within their roles for the Ministry of Health's free mammography services provided through the coordination of KETEM, TSM, and ASM.

c. Among healthcare personnel working in KETEMs across various regions of Türkiye, whether rural or urban, there is no difference in their support within their roles for the Ministry of Health's free mammography services provided through the coordination of KETEM, TSM, and ASM.

2. METHODOLOGY

Study Type: This is a qualitative study.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Study Population:

It covers four study groups in both rural and urban areas within Türkiye's five demographic regions (East, West, North, South, and Central).

The population comprises women registered with family physicians in:

- Study A: Women in the 40-69 age group who have attended mammography screening in the last 2 years,
- Study B: Women in the 40-69 age group who have not participated in mammography screening in the last 2 years,
- Study C: Family physicians and family health workers,
- Study D: KETEM healthcare personnel.

Sample:

Study A – Women Participating in Screening

Participants are targeted across all age groups (40-49, 50-59, 60-69) and educational levels (literate/elementary-middle school, high school, and above). A minimum of 36 women-participants was targeted:

- Ages 40-49: 6 individuals (5 urban + 1 rural)
- Ages 50-59: 6 individuals (5 urban + 1 rural)
- Ages 60-69: 6 individuals (5 urban + 1 rural)

Participants were selected through snowball sampling methodology.

Study B – Women Not Participating in Screening

Similarly, at least 36 participants were targeted across all age groups (40-49, 50-59, 60-69) and educational levels:

- Ages 40-49: 6 individuals (5 urban + 1 rural)
- Ages 50-59: 6 individuals (5 urban + 1 rural)
- Ages 60-69: 6 individuals (5 urban + 1 rural)

Participants were selected through snowball sampling methodology.

Study C – Family Physicians and Family Health Workers:

Collecting data from a minimum of 40 health workers by selecting at least six family physicians and/or family health workers from each of Türkiye's five demographic regions (East, West, North, South, and Central) both rural and urban areas (5 urban + 1 rural) targeted.

Participants were selected through snowball sampling methodology.

Study D – KETEM Healthcare Personnel:

A minimum of 30 KETEM healthcare personnel were targeted, from at least two KETEMs per region—one located in a provincial centre and the other in a district centre.

This study classified the KETEM in the most populous settlement as "urban", in contrast, the KETEM in the least populous settlement is classified as "rural" in each region because KETEMs are established in settlements with a population of at least 100.000.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table B.1: KETEMs selected as a sample for the project.

Region	Province	Rural/Urban	KETEM Name
West	İstanbul	Urban	Ümraniye KETEM
	Kırklareli	Rural	Lüleburgaz KETEM
Central	Ankara	Urban	Çankaya Çayyolu KETEM
	Çankırı	Rural	Çankırı KETEM*
East	Gaziantep	Urban	Şahinbey KETEM*
	Bayburt	Rural	Bayburt KETEM
South	Antalya	Urban	Konyaaltı KETEM
	Burdur	Rural	Bucak KETEM
North	Samsun	Urban	İlkadım KETEM
	Gümüşhane	Rural	Gümüşhane KETEM

*Note: The Provincial Health Directorates of Çankırı and Gaziantep did not grant permission for KETEM visits to be conducted within the scope of this research. Consequently, the next KETEMs listed for each of the five regions were selected; thus, Kars KETEM replaced Gaziantep, and Çorum KETEM replaced Çankırı in the study.



Figure B.1: Türkiye-5 Regions,

Ref: Demographic and Health Survey, 2018 [41].

MARMARA ÜNİVERSİTESİ YAYINEVİ

- **Ethics:**

i. Ethical approval was obtained from the Marmara University Faculty of Medicine Clinical Research Ethics Committee with the reference number "03.03.2023/09.2023.405".

ii. Written permissions were obtained separately from the Provincial Health Directorates of each KETEM scheduled for visits.

iii. Participants were informed and provided their consent.

- **Data collection method:**

In-depth interviews were conducted either online or face-to-face with voluntary female participants identified via the snowball sampling method. During KETEM visits, focus group discussions were conducted in person with the healthcare personnel, while in Kars, interviews were held online due to transportation challenges. Interviews with Family Physicians and Family Health Workers were conducted online. The interviews took place between June 2023 and September 2024, with each session lasting approximately 20-40 minutes (total 67 hours).

During the interviews, participants were asked questions from an information form and a semi-structured interview form prepared by the researchers based on prior literature (Appendix 2). Participants were informed about the interview process (recording, confidentiality, timing), and with their informed consent, the interviews were recorded. In locations where recording permission could not be obtained, written notes were taken. Interviews continued until no new themes emerged, and data saturation was achieved, after which the interview concluded.

Data collected from participants covered the following topics:

- General knowledge about breast cancer,
- Sources of information on breast cancer,
- Knowledge of the breast cancer screening programme in Türkiye,
- Information on the breast cancer diagnosis/treatment process,
- Barriers to access and expectations.

- **Data analysis:**

The audio recordings from the interviews were transcribed using the Transgate program and digitized. These transcripts were then subjected to content analysis using the Atlas.ti program. In the analysis process, codes, sub-themes, and main themes were identified from the interviews.

In presenting the findings, direct quotes from participants were included. Identified concepts, themes, and relationships between themes were compared and interpreted within the context of the research topic. This process facilitated an in-depth analysis of the data and enhanced the understanding of the research findings.

In the analysis process, codes, sub-themes, and main themes were identified from the interviews and the report was prepared considering the Health Belief Model (HBM).

HBM is a foundational framework in health behaviour research. It was conceptualized to help understand preventive health behaviour by social psychologists, specifically "the widespread failure of people to accept disease preventives or screening tests for the early detection of asymptomatic disease".

MARMARA ÜNİVERSİTESİ YAYINEVİ

The Health Belief Model focuses on how individuals perceive health threats and decide to act based on the value individuals place on a particular goal and the likelihood that actions taken toward that goal will be successful in achieving the goal.

It consists of 6 primary cognitive constructs, or "dimensions" that influence behavior:

i. perceived susceptibility,

ii. perceived severity,

iii. perceived benefits,

vi. perceived barriers,

v. self-efficacy, and

vi. cues to action.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

- **Work schedule:**

Activity	Implementation Timeline
PLANNING PHASE	
Literature review	March 2023 - October 2024
Development of data collection tools	March 2023
Pilot study	June 2023
Application for permission from the Ministry of Health	August 2023
IMPLEMENTATION PHASE	
Signing of the UNITAR's Letter of Agreement	August 2023
Establishing official contact with the Marmara University research team	August 2023
Opening a bank account for this project by Marmara University	August 2023
Procuring a new computer and necessary software	February 2024
Appointing a data analyst	June 2024
Conducting field visits for data collection	June 2023 - March 2024
Holding project evaluation meetings	August 2023 - October 2024
DATA ANALYSIS PHASE	
Data analysis	April 2024 - October 2024
Writing of the project report	April 2024 - October 2024
Sharing of project results	April 2024 - November 2024
Participation in scientific conferences: • European Forum on Prevention and Primary Care • World Cancer Congress	 April 25-26, 2024 September 17-19, 2024

- **Budget:**

The budget is 37,029 USD.

MARMARA ÜNİVERSİTESİ YAYINEVİ

3. RESULTS

A. RESULTS OF WOMEN WHO HAVE NOT HAD A MAMMOGRAM IN THE LAST 2 YEARS:

Between June 16, 2023, and March 1, 2024, in-depth telephone interviews were conducted with a total of 51 women from rural and urban areas across five regions of Türkiye (West, North, Central, East, and South) who had not had a mammogram in the last 2 years (Table B.2). The average age of the women was 54.2 years (±7.8 years, range: 41-69 years). Additional socio-demographic characteristics of the women are provided in Table B.3.

Table B.2: Women who have not had a mammogram in the last 2 years.

Region	Urban/Rural	n	%
West	Urban	13	27,5
	Rural	1	
Central	Urban	7	15,7
	Rural	1	
East	Urban	6	15,7
	Rural	2	
North	Urban	7	21,6
	Rural	4	
South	Urban	8	19,6
	Rural	2	
Total		51	100,0

MARMARA ÜNİVERSİTESİ YAYINEVİ

Characteristic	n	%
Age groups (years)		
40-49	16	31,4
50-59	19	37,3
60-69	16	31,4
Marital status		
Married	44	86,3
Widowed/Divorced	6	11,7
Single	1	2,0
Education level		
Primary school or below	22	43,1
Middle school/High school	14	27,5
University and above	15	29,4
Occupation		
Housewife	27	52,9
Retired	6	11,8
Teacher	5	9,8
Cleaning staff	3	5,9
Public servant	7	13,7
Other*	3	5,9
Social security (SGK)		
Yes	49	96,1
No	2	3,9
Private health insurance (PHI)		
No	48	94,1
PHI only	2	3,9
SGK and PHI	1	2,0
Income level		
Income less than expenses	7	13,7
Income equal to expenses	35	68,6
Income more than expenses	9	17,6
Menopause status		
Yes	33	64,7
No	18	35,3
Total	**51**	**100,0**

Table B.3: Characteristics of women who have not had a mammogram in the last 2 years.

*Other:
Financial advisor (n=1),
academic (n=1),
lawyer (n=1).

MARMARA ÜNİVERSİTESİ YAYINEVİ

Characteristic	n	%
Use of assisted reproductive technology		
Yes	2	3,9
No	49	96,1
Hormone replacement therapy		
Yes	2	3,9
No	49	96,1
Smoking/Alcohol Use		
Smoking	11	21,6
Alcohol	0	0,0
Breast biopsy		
Yes	4**	7,8
No	47	92,2
Cancer diagnosis		
No	49	96,1
Lung cancer	1	2,0
Brain tumour	1	2,0
Chronic disease		
Yes	35	68,6
No	16	31,4
Family history of cancer		
Yes	18	35,3
No	33	64,7
Total	51	100,0

All breast biopsy results were reported as normal.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

The average body weight of the women was 76.45 kg (±15.3 kg; range: 52-105 kg), and the average height was 1.60 m (±0.05 m; range: 1.50-1.70 m). The average age of first menstruation was 13.1 years (±1.6 years; range: 11-18 years). Among the women, 64.7% (n=33) were in the menopausal period, with an average age of menopause onset of 48.2 years (±5.1 years; range: 34-57 years).

Of the women, 29.4% (n=15) had never had a mammogram, while 70.6% (n=36) had previously had at least one mammogram (range: 1-3 times) but had not had one in the last two years. The time since the last mammogram among those who had previously undergone the screening ranged from 3 to 30 years.

Regarding self-breast examination (SBE), 27.5% (n=14) reported not performing SBE, while 72.5% (n=37) stated they did. However, only 21.6% (n=8) of these women were found to be performing SBE correctly. (Correct SBE is defined as examining the entire breast, including the underarm area, in front of a mirror or lying down with arms raised, after each menstrual period.) Only 11.8% (n=6) of the women had previously had a clinical breast examination (CBE).

Among the women, 45.1% (n=23) had not heard of KETEM, while 54.9% (n=28) had. Of those who had heard of KETEM, only 25.0% (n=7) had visited KETEM for any type of cancer screening.

The analysis of interviews with the women revealed a total of 89 codes. These codes were grouped into main and sub-themes and reported considering the Health Belief Model. All components of the model, except for self-efficacy, were included as themes. No findings related to self-efficacy were identified in the analysis of women who had not undergone a mammogram in the past two years.

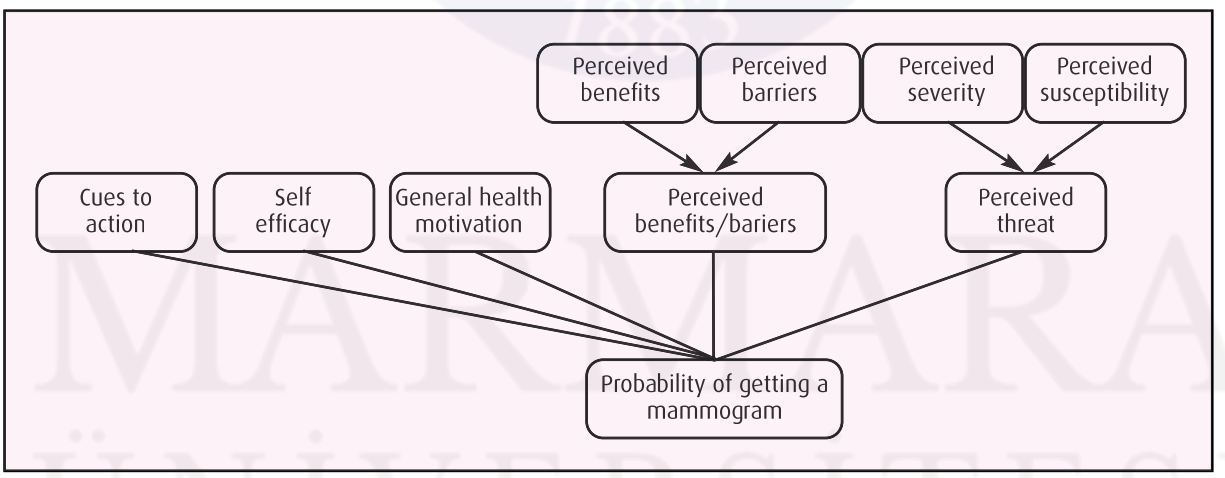


Figure B.2: Health Belief Model.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table B.4: List of the main themes and sub-themes obtained from the analysis of women who have not had a mammogram in the last 2 years.

Main Themes	Sub-Themes
1. Perceived Severity	1.1. Perception of breast cancer as a severe illness 1.2. Seriousness of breast cancer compared to other cancers 1.3. Self-breast examination (SBE) 1.4. Clinical breast examination (CBE)
2. Perceived Susceptibility	2.1. Perceptions of breast cancer risk factors and prevalence 2.2. Misconceptions and lack of awareness about breast cancer 2.3. Psychological and environmental factors in breast cancer
3. Perceived Barriers	3.1. Knowledge and communication issues among women 3.2. Personal and psychological barriers to breast cancer screening 3.3. Barriers for accessing breast cancer screening services 3.4. Social and emotional barriers to breast cancer screening
4. Perceived Benefits	4.1. Awareness of the benefits of early diagnosis
5. Cues to Action	5.1. Women's education and physicians' recommendations 5.2. Ease of access to screening services 5.3. Reminding women about screenings and encouraging participation 5.4. Women feeling safe
6. System	6.1. Women's education and awareness 6.2. Screening service and access issues 6.3. Gender perception in healthcare 6.4. Technological issues in screening service delivery

MARMARA ÜNİVERSİTESİ YAYINEVİ

1. PERCEIVED SEVERITY

According to the Health Belief Model (HBM), perceived severity refers to how an individual perceives the severity and impact of a disease. This perception is shaped by one's health knowledge, behaviours, and attitudes. In the study, women highlighted their perspectives on breast cancer in detail.

1.1. Perception of breast cancer as a severe illness

Most women in the study expressed that they viewed breast cancer as a "severe" illness.

"It's a terrible disease, ultimately fatal, though I hear there are people who live for years. Chemotherapy and other treatments take a very long time. It's hard." (K4, 66 y, retired, north, urban)

"God keep it far away. I don't even want to say it, it's such a terrible disease." (K5, 63 y, housewife, north, rural)

"It's an awful disease. I mean, all illnesses are bad, but this one is worse." (K9, 55 y, retired, central, urban)

"May God protect us. It's a very bad illness. Cancer, in general, is terrible." (K48, 54 y, primary school, east, rural)

1.2. Seriousness of breast cancer compared to other cancers

Women had different opinions about the seriousness of breast cancer. Most of the participants stated that breast cancer has a better prognosis than other cancers, while some stated that it is no different from other cancers.

"It's cancer, but the chance of recovery seems a bit higher compared to others, like lung or stomach cancer. (K1, 69 y, housewife, west, urban)

"Breast cancer is more like a curable cancer." (K2, 60 y, cleaning staff, north, urban)

"It's of course a bad thing to have this, but if it's between stomach or colon cancer, then I'd rather have this. I think it's at a more treatable stage." (K15, 49 y, teacher, east, urban)

Participants expressed that breast cancer was just as dangerous as any other type of cancer, emphasizing that cancer, in general, is a serious illness:

"We see breast cancer around us. It spreads here, spreads there, jumps here, jumps there. They have their breasts removed. Sometimes, even removing the breast doesn't solve it. To me, every type of cancer, no matter where it is, is dangerous." (K7, 51 y, teacher, east, urban)

"All cancers are the same. God forbid, keep it far from our homes. In the end, it leads to death..." (K48, 54 y, housewife, east, rural)

"I don't think it's different; they're all the same to me." (K50, 44 y, teacher, south, rural)

Some participants felt that breast cancer had a worse course compared to other types of cancer, as reflected in their statements:

"It's not like breast cancer is somehow 'better' or anything—somehow, breast cancer always seems worse to me." (K21, 60 y, retired, west, urban)

"It's truly a terrible disease. I mean, all illnesses are bad, but these seem worse." (K9, 55 y, retired, central, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

1.3. Self-breast examination (SBE):

Of the women surveyed, 27.5% (n=14) reported not performing self-breast examinations (SBE), while 72.5% (n=37) stated they did perform them. However, only 21.6% (n=8) of these women were found to be performing SBE correctly. (Correct SBE was defined as performing the examination each month after menstruation, either standing in front of a mirror or lying down, raising their arms, and examining the entire breast area, including the armpits.) Most women reported performing SBE irregularly, by simply touching their breasts occasionally.

"For example, sometimes when I take a shower, I check under my arms, touch my breasts, see if there's any hardness or swelling. It would show itself, if there was something. I don't look in detail, but I touch briefly [to examine] now and then." (K4, 66 y, retired, north, urban)

"Usually, I do it when I shower— I check myself. Not every time I shower, but when it crosses my mind, I touch my breasts and look as much as I can understand." (K5, 63 y, housewife, north, rural)

"Since my breasts are very small, I figure I would see or feel something, so I don't get too anxious. But I do look and check occasionally." (K15, 49 y, teacher, east, urban)

Those who performed SBE correctly described their methods as follows:

"Now and then, I make sure to hold and check, to get a sense of their size and shape a little. I try to check every time I shower, looking for anything new or unusual. I also check under my arms." (K11, 57 y, housewife, north, rural)

"After my shower, and also after my period ends, I check my breasts in the shower. I check every part of my breasts and under my arms." (K14, 41 y, cleaning staff, south, urban)

"I raise my arm, starting from under the armpit; I press down on my breast with my fingertips, trying to examine every part. With my arm raised, I do both sides in intervals. It takes me about 5–6 minutes. I prefer to do it after my period because my breasts are sensitive during menstruation. After that, it's a good time, as they're not as sore." (K27, 41 y, housewife, central, urban)

Women mentioned learning about SBE from their physicians or through media such as television or the internet.

"I see it on TV. You know, sometimes they show it on programmes. They say, 'Look here like this, touch here, check if there's a lump.' That's how I know about it." (K16, 48 y, cleaning staff, north, urban)

"My doctor told me—my doctor. He advised me to check regularly in the shower." (K17, 61 y, housewife, central, urban)

When asked why they did not perform SBE, the most common response was "I didn't know."

"I didn't know about such a thing; I didn't know it was necessary." (K29, 45 y, housewife, north, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

1.4. Clinical breast examination (CBE):

Only 11.8% (n=6) of the women had previously undergone a clinical breast examination (CBE). Of these, five went to the physician because they felt a lump and had a CBE performed, while one mentioned having a breast examination as part of a routine check-up by her family physician. Another woman who previously visited a physician for breast pain reported that the physician only requested a breast ultrasound without conducting a physical examination. Women in rural areas especially emphasized that they believe physicians may avoid performing breast examinations due to restraint.

"They only examined me when I had breast pain. Other than that, it's never been done." (K2, 60 y, cleaning staff, north, urban)

"No, no, they didn't examine me. Just checked with an ultrasound. They sent me directly to get an ultrasound." (K5, 63 y, housewife, north, rural)

"I used to always get it done at the health centre, but now I don't at all. I haven't done it in a long time." (K28, 53 y, public servant, west, urban)

"Maybe the doctors here are just hesitant, I don't know. Like, if a male doctor were to tell a woman, 'Let's examine your breasts,' he might feel uncomfortable about it. But if it's a woman, maybe she'll say it more easily and examine you." (K16, 48 y, cleaning staff, north, urban)

2. PERCEIVED SUSCEPTIBILITY

According to the Health Belief Model, perceived susceptibility is the awareness of a person's risk or sensitivity to a particular disease.

2.1. Perceptions of breast cancer risk factors and prevalence:

In the study, women stated that breast cancer is more common in women who have not had children, women who are not breastfeeding, after the age of 40, in those with a family history of breast cancer, in men and with stress. Nonetheless, they were aware that breast cancer could affect anyone. One participant even mentioned a belief that vitamin D deficiency contributes to breast cancer. The participants also expressed the view that breast cancer is quite common in Türkiye.

Some women emphasized the universal risk of breast cancer with the following statements:

"It could happen even if you look healthy." (K7, 51 y, teacher, east, urban)

"I don't think weight or breast size makes a difference." (K20, 57 y, lawyer, west, urban)

"The environment is full of chemicals now. These things can definitely cause cancer. It could happen to anyone." (K38, 41 y, teacher, west, urban)

Most of the women noted that breast cancer occurs more frequently in those with a family history of the disease, sharing statements like:

"I understand it's more common in women with a family history of breast cancer. If your mother had it, you have to be more careful." (K22, 51 y, public servant, west, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Genetics play a role. If it runs in the family, it can be more prevalent." (K27, 41 y, housewife, central, urban)

"It can be genetic; if it's in their genes or family history, it can happen." (K38, 41 y, teacher, west, urban)

Many participants also said breast cancer is more common among women who have never given birth or breastfed. Additionally, they noted that age and menopause can increase breast cancer risk.

"I think it's more common in women who haven't had children." (K3, 69 y, housewife, east, urban)

"If you don't breastfeed your child after giving birth, you're more likely to get cancer. The milk that remains can cause lumps." (K22, 51 y, public servant, west, rural)

"I believe it's more common in women who don't breastfeed or haven't had children." (K1, 69 y, housewife, west, urban)

"Women who breastfeed aren't as likely to get breast cancer. It's more common in women without children." (K2, 60 y, cleaning staff, north, urban)

"If a mother doesn't nurse her child, then a mass forms and gets stuck there." (K18, 61 y, housewife, east, rural)

Most participants also acknowledged that although breast cancer is more common in women, men can also develop the disease, as reflected in the following statements:

"It's more common in women, but it can happen in men, too." (K9, 55 y, retired, central, urban)

"I think it's more common in women, but I know it can happen in men too." (K20, 57 y, lawyer, west, urban)

2.2. Misconceptions and lack of awareness about breast cancer:

Some participants thought that breast cancer would not occur in themselves. Especially those who did not have a family history of breast cancer and who did not have any complaints stated that they did not think that they would develop breast cancer. Women also stated that breast cancer is less common in women with small breasts.

"I've never worried about breast cancer. No, it never crossed my mind since I have no issues." (K23, 52 y, public servant, west, urban)

"I've wondered if it could happen to us, but if it was in me, I'd know. My mother didn't have it, and it doesn't run in our family. I haven't shown myself to a doctor, either. I guess I don't think I have it. I don't feel any pain or anything like that." (K29, 45 y, housewife, north, urban)

"I haven't felt anything myself. Also, since there's no family history, I didn't think I was at high risk." (K34, 47 y, other, south, urban)

"A doctor once told me that those with small breasts don't get conditions like this, so I haven't worried about it at all, honestly. I know the risk of breast cancer is very low in people with small breasts." (K35, 45 y, academic, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

2.3. Psychological and environmental factors in breast cancer:

Some women highlighted the significant impact of stress on the occurrence of breast cancer. One participant mentioned that antidepressant medications, often used to manage high stress, could also contribute to breast cancer risk. Additionally, traditional medical practices applied to the breast were noted as potential cancer risks.

"It could be from the stress women go through. You know, with kids and work and all that. I think that stress triggers the body." (K30, 55 y, public servant, north, urban)

"Those psychological drugs, you know, the ones for stress. What was it called? Antidepressants can cause it too." (K31, 44 y, housewife, west, urban)

"There are these small glass cups, you know, for cupping therapy. They light a candle inside and then stick it on their breasts, leaving it until it falls off by itself. I heard that this bursts blood vessels. I saw it in the news. Many women do this, apparently. And it increases the risk of breast cancer, from what I understand, as it damages the vessels." (K31, 44 y, housewife, west, urban)

3. PERCEIVED BARRIERS

Participants faced numerous barriers to getting mammograms. These obstacles were identified as issues in knowledge and communication, personal and psychological barriers, access to services, and social and sensory obstacles.

3.1. Knowledge and communication issues among women:

A primary issue among women was the lack of information from family physicians or the physicians they consulted about breast cancer screening. Some participants mentioned that their physicians did not provide information about mammograms or cancer screenings. They felt family physicians, in particular, should provide more guidance on these topics.

"Doctors don't tell us, like, 'Go get a mammogram' or anything. For instance, when I go to the gynaecologist, I usually go to a private one. The obstetrician talks about the cervical cancer vaccine. He talks about the smear test. After that, he talks about 'let's do HPV' or something like that, but I have never been told to go and have a mammogram." (K50, 44 y, teacher, south, rural)

"When we visit family doctors, we just get our prescriptions and leave. They don't give any information." (K8, 60 y, retiree, central, urban)

"Family doctors? They just write prescriptions. They don't even look at you." (K4, 66 y, retiree, north, urban)

"I really like my family doctor, but he never mentioned anything like this. They called me frequently during COVID-19, but mammograms never came up." (K5, 63 y, housewife, north, rural)

Additionally, some women mentioned they were not aware of mammograms or did not go for screenings due to a lack of awareness.

"We don't go, because we don't know." (K2, 60 y, cleaner, north, urban)

"No one said anything. Honestly, I didn't know I was supposed to get it done." (K3, 69 y, housewife, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some participants stated they had previously undergone a mammogram and, as nothing was found, did not feel the need to have another one.

"I had it done before; nothing came up. So, we probably just think nothing will show up again." (K28, 53 y, public servant, west, urban)

"I had one done before, and the doctor said everything was clear, so I didn't go back." (K17, 61 y, housewife, central, urban)

3.2. Personal and psychological barriers to breast cancer screening

When asked about barriers to getting a mammogram, the primary reason women cited was that they didn't feel the need to go because they had no complaints.

"I didn't see the need. I don't have any discomfort, no complaints." (K23, 52 y, public servant, west, urban)

"I don't feel any problems in my breasts; I check them myself regularly, and I don't see anything wrong. If there's nothing wrong with my breasts, why should I go?" (K7, 51 y, teacher, east, urban)

"If I felt something was wrong, I'd go— you know if something was swollen, I'd go to orthopaedics, right? Fear doesn't help you avoid death. I'm aware of that. If something were wrong, I'd go anyway." (K12, 48 y, housewife, south, rural)

"There's nothing wrong with my breast, thank God. I have no discomfort. Some people say they have pain, some say they have aches, but I don't, thank God. There's no problem. If there were, I'd go, but I don't have any issues." (K18, 61 y, housewife, east, rural)

"Since I don't have any complaints, I wonder, why should I go?" (K19, 58 y, other, central, rural)

Women also expressed fear of discovering something if they went for a mammogram:

"I'm scared to go to the doctor, wondering what they might say and if something will show up. I'm afraid something will come up." (K5, 63 y, housewife, north, rural)

"There's this fear inside, like, what if they find something." (K2, 60 y, cleaner, north, urban)

"We should have gone, but we didn't. We were scared of finding something wrong [health-wise]." (K51, 60 y, housewife, south, urban)

The study found that women tended to neglect themselves. Some mentioned that they were more likely to go to the hospital for their spouses, children, or other family members than for themselves.

"As people, we neglect our health. We don't take it seriously. But if it's our kids or husband, we go running, but when it comes to ourselves, there's not much urgency..." (K24, 56 y, housewife, north, urban)

"Not giving importance to life. Not taking it seriously until it happens. There are 3–4 centres here. You just need to get on a bus, but nope, we're that negligent." (K37, 66 y, housewife, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"More like not caring, being indifferent, you know? Us women, if something happens to our kids, we rush, but when it's ourselves, we just delay it. I think it's because we keep putting it off." (K27, 41 y, housewife, central, urban)

"I'm how old, haven't gone in years, and I could just go and get it done. I have a car, no small children to take care of, nothing stopping me. It's pure neglect; totally our fault." (K43, 56 y, financial consultant, central, urban)

Some women explained their reluctance to get a mammogram by using the Turkish saying "durup dururken iş çıkarmak" (create trouble out of thin air), implying that they didn't want to discover they had a problem upon getting a mammogram.

"There's a saying here, 'creating trouble out of nowhere.' I thought, why make something out of nothing, why make myself sick (laughs)." (K15, 49 y, teacher, east, urban)

"Like, I don't have anything wrong, so why create trouble for myself? (laughs) If there's nothing wrong, why should I deal with it now, or why poke around with something small?" (K19, 58 y, public servant, central, rural)

"I had it done once, nothing came up. So why create trouble for myself now? (laughs)" (K22, 51 y, public servant, west, rural)

"If there's nothing wrong, why would you want to bring something up? I think I have no reason to go." (K42, 58 y, teacher, north, urban)

Some women expressed that they didn't feel the need to get a mammogram, saying:

"I mean, there's no pain, no discomfort, so I thought, 'Why go?' and I didn't. I didn't feel the need to go." (K4, 66 y, retiree, north, urban)

"I didn't feel the need." (K10, 55 y, housewife, south, urban)

In Turkish culture, the phrase "kötüyü çağırma" (don't invite the devil) reflects a self-fulfilling prophecy. Women feared that just thinking about the possibility of cancer could actually bring it about. In the study, women also expressed the obstacle to mammography and screening check-ups as 'inviting the bad'.

"People make themselves sick, nothing else. The more you think about illness, the more you stress. Even if I'm sick, I tell myself I'm not. I don't invite the bad." (K9, 55 y, retiree, central, urban)

"I don't want to think about it. You know, they say if you think about something a lot, it happens. I don't want to fall into that." (K12, 48 y, housewife, south, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some women cited the radiation from mammogram machines as a reason not to go for mammograms.

"A doctor once said, if you get one X-ray per year, by the time you're seventy, that's seventy X-rays. So I'm not one of those people who think, "Let me go get a mammogram and do something while there's no problem." (K12, 48 y, housewife, south, rural)

"My friends told me if there's no issue, there's no need to get a mammogram. You're exposed to radiation, so why take on extra radiation if you don't need to?" (K44, 55 y, retiree, south, urban)

"I think it's harmful. So without any complaints, I don't feel brave enough to go again." (K39, 63 y, housewife, west, urban)

"Some people say there's a lot of radiation. That radioactive stuff gets into your body." (K41, 65 y, housewife, west, urban)

Some participants said they feared that receiving a breast cancer diagnosis would negatively affect their mental health, which discouraged them from getting a mammogram.

"It's scientifically proven that early detection saves lives, but emotionally, I think it would wear me out even more. The later I find out, the better for me." (K15, 49 y, teacher, east, urban)

"If I'm sick, I don't want to know; it messes with my head." (K9, 55 y, retiree, central, urban)

Most women described the mammogram process as painful; with some saying they avoided it solely due to this fear.

"Getting a mammogram was so hard for me. They squeeze your breast like in a toast press. It was really hard for me. They said you'll have to come every year. I said, no way, I'm not coming back." (K2, 60 y, cleaner, north, urban)

"Honestly, I don't know; I'm afraid of the pain (about the mammogram machine)." (K17, 61 y, housewife, central, urban)

"It hurt a lot. I mean, would I have the courage to go for a mammogram again? My breast is small, so it's harder to get it into the machine. I was already sensitive, even to the touch, so it was really hard for me. I screamed." (K28, 53 y, public servant, west, urban)

"Getting a mammogram is tough; everyone avoids it out of fear. I know that; I even prefer not to go because it's difficult with small breasts... It's very painful, you can't bear it. It's very hard with small breasts." (K36, 57 y, housewife, north, rural)

"Women scream in that machine. I thought, even if I lived a hundred years, I wouldn't get in that [mammogram] machine." (K18, 61 y, housewife, east, rural)

"They press you down like a toast machine. People avoid it because it's painful." (K26, 52 y, housewife, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

3.3. Barriers for accessing to breast cancer screening services:

Barriers in accessing breast cancer screening services were mostly related to the health system. Appointment problems, taking too long in public hospitals and the high cost of private hospitals are the main barriers. Some women also reported difficulties with transport. While women living in urban areas did not have any transportation problems, women living in rural areas still had difficulties in accessing mammography. Living in the village and living far from the centre were identified as transportation difficulties.

Most of the women stated that they had problems with making appointments and therefore did not have mammography.

"You can't get an appointment at hospitals. Even if you get an appointment, you can't get your work done, and private hospitals are very expensive." (K1, 69 y, housewife, west, urban)

"You want to go, but they give you an appointment for a distant date and time. There are some who can make it [to the appointment], some who can't. Some who can go for it, some who can't." (K9, 55 y, retired, medium, urban)

"It is also difficult to get an appointment in public healthcare. Who is going to make an appointment for me to get a mammogram out of the blue, ohooo [sound indicating it will take a very long time]..." (K22, 51 y, civil servant, west, rural)

"If you make an appointment [now], it will take several months [for you to go there]. Recently, the appointment system has become very complicated." (K24, 56 y, housewife, north, urban)

Most of the participants, especially those who preferred public hospitals, stated that the work takes too long in public hospitals and that they do not want to have mammography for this reason.

"Your work does not end immediately at the hospital. You go, they ask for a test, you show a result, and then they call you for a check-up according to the result, send you to another place, and so on. It takes a very long time. At some point, you start not going, unless you have a complaint or unless they force you too much." (K2, 60 y, cleaning staff, north, urban)

"You go, you queue, and you make an appointment. Whatever's going to happen [possible negative consequences of the disease] will already take place until your appointment. You know, they do not prioritize you in the queue. That has an effect [on people's intention of getting one]. So, what happens is that if they need it, people go and have it done [mammography] in private hospitals. But whatever's going to happen, happens while you are waiting [to receive care] at the public [healthcare facility]." (K26, 52 y, housewife, western, urban)

Some participants stated that they could not go to private hospitals because private hospitals were expensive, and therefore they did not have mammography.

"Can you afford the private hospitals? Having a medical test requires a massive salary. I should bring my pension, leave it there and get out." (K24, 56 y, housewife, north, urban)

"I went to a private clinic. Even abortion costs a lot of money. I didn't want to go again. If I go there now, they will take a lot of money from me for Smear test, HPV test, etc. I didn't want to go just because of that." (K38, 41 y, teacher, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some women also mentioned that they had transportation difficulties in order to have mammography. Transport problems were a common finding, especially in rural areas.

"There may be transport difficulties in rural areas." (K23, 52 y, civil servant, west, urban)

"Treatments are difficult; you have to go to the centre here. We don't want that a little bit. We cannot get an appointment with doctors. This is an obstacle for us. Because it is an hour's drive from here to the centre. The fact that there is no hospital nearby also makes it difficult for us." (K11, 57 y, housewife, north, rural)

"For example, we are in a remote place. Since we are in a remote place, it is in a rural area. We do not go unless we are sick." (K48, 54 y, housewife, east, rural)

Not being able to take time off from work was also found to be one of the barriers to mammography for working women.

"Also, it is very difficult to take leave while working." (K2, 60 y, cleaning staff, north, urban)

"I cannot go to the health centre much these days because I am working." (K28, 53 y, civil servant, west, urban)

"Appointments are outside working hours, you leave school at three and the examinations close at four. Well, you cannot keep up with the examination, so that is also effective." (K42, 58 y, teacher, north, urban)

Women's inability to go to the hospital alone was another obstacle.

"I am not a person who can go anywhere on my own. My children or my husband should take me. I don't go to the hospital unless an illness is very difficult for me so as not to inconvenience them. I will go if I cannot bear it." (K3, 69 y, housewife, east, urban)

"Not everyone can use this online system as they please. I wish I could tell my children to sign me up [for appointments] as much as I want. But even when something happens, they don't say anything. So, I won't ask them again. They don't care. They don't always do what you say." (K24, 56 y, housewife, north, urban)

Participants who stated that they still did not want to go to the hospital after the pandemic period also stated the reasons for not wanting to go as follows:

"After the pandemic, [attending to] these hospital issues turned into a problem for people. I couldn't get myself together and go. I actually forgot, it slipped out of my routine. I would normally go for my annual [routine check up]. I don't have a routine anymore." (K20, 57 y, lawyer, west, urban)

"It [the routine] was broken during the pandemic. I still feel uneasy going to the hospital. I am actually afraid." (K21, 60 y, retired, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

3.4. Social and emotional barriers for breast cancer screening

The fact that mammography is performed by male technicians and embarrassment was the prominent social barriers we encountered.

"If it's a woman, it's more comfortable, of course. Generally, the staffs there are women anyway." (K24, 56 y, housewife, north, urban)

"There wasn't a female technician; men tend to be a bit rough, and it hurts a bit, so I hesitate." (K13, 62 y, public servant, east, urban)

"Generally, people don't go because they're embarrassed. You have to put your breast there, and usually, the technician is a man. Nobody really likes that. At least if it were a woman, you'd feel more comfortable. I mean, it's an unfamiliar man, after all. That's why people avoid going." (K26, 52 y, housewife, west, urban)

"Women feel a little hesitant going to the hospital for women's health issues, especially if it's breast-related, and even more so if the doctor is a man. Even mine, my doctor is also a man." (K39, 63 y, housewife, west, urban)

In addition to feeling uncomfortable with male technicians, one participant suggested that doctors might also feel awkward about recommending a breast examination.

"Maybe the doctors here are hesitant; I'm not sure. If a male doctor were to say, 'Let's examine your breasts,' he might feel awkward. But if it's a female doctor, maybe she'd be more comfortable suggesting it and performing the exam." (K16, 48 y, cleaner, north, urban)

Some women mentioned that they avoided getting mammograms due to feelings of embarrassment. This sentiment was especially prevalent among those from rural areas.

"We're not used to it; you feel embarrassed. Even if it's a woman, sometimes you still feel embarrassed." (K11, 57 y, housewife, north, rural)

"Women might feel embarrassed. After all, it's a private area. It's a personal area, so that's why." (K23, 52 y, public servant, west, urban)

"It's not like in İstanbul here. For example, in the East, some things are still considered shameful. For instance, even going out without a veil on your face... They still wait for the man to pass in front of them; they don't walk in front of him. Let alone [talking about] breasts, how can they talk about the breast? They lean more towards keeping private... How can I put it? They don't talk about it out of the blue. They're ashamed, they're shy. They can't say it." (K48, 54 y, housewife, east, rural)

"It's more comfortable if the doctor's a woman. Of course it's harder with men. In the past, I didn't even want to go to a gynaecologist if it was a man. I'd go if it happened to be a woman." (K24, 56 y, housewife, north, urban)

"Since midwives stopped attending births in the villages, I didn't even want to give birth. I have two kids, and they were delivered by midwives in the village. We'd be embarrassed and didn't want to expose ourselves. It's still like that today." (K46, 69 y, housewife, west, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some participants mentioned that they didn't want to get a mammogram because they didn't enjoy going to the hospital or physician.

"I don't like taking medicine, so I don't want to go to the doctor and end up with them prescribing something." (K26, 52 y, housewife, west, urban)

"Maybe because I don't particularly enjoy going to the doctor..." (K34, 47 y, public servant, south, urban)

"I wouldn't go for any reason; I don't like going to the doctor." (K5, 63 y, housewife, north, rural)

The absence of a family history of breast cancer was also cited as a reason for not feeling the need to get a mammogram.

"If my mother or grandmother had it, I'd go, but it just never crossed my mind to go." (K29, 45 y, housewife, north, urban)

"I didn't think I was at high risk since there's no history in my family." (K34, 47 y, public servant, south, urban)

Some women mentioned that they simply forgot to get a mammogram.

"The only thing stopping me from doing it regularly is forgetfulness and laziness, I think." (K43, 56 y, other, central, urban)

"I forget; it just doesn't come to mind." (K39, 63 y, housewife, west, urban)

4. PERCEIVED BENEFITS

According to the Health Belief Model, the perception of benefit refers to women's belief that getting a mammogram can help reduce the threat of breast cancer.

4.1. Awareness of the benefits of early diagnosis:

The study found that most women were aware that early diagnosis saves lives, but it was unclear whether they specifically understood that this early diagnosis could be achieved through mammography.

"They say early diagnosis saves lives; if you go early, you learn everything." (K4, 66 y, retiree, north, urban)

"Well, the earlier it's diagnosed, the sooner you'll be saved; the later it's diagnosed, the closer you are to death." (K9, 55 y, retired, central, urban)

"Actually, if we go to the doctor every six months without waiting for an issue, any potential illness could be detected early, and treatment would be easier before it progresses too far." (K13, 62 y, public servant, east, urban)

"If you treat them all early (referring to all cancers), you find a solution; if you delay, you don't." (K36, 57 y, housewife, north, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

5. CUES TO ACTION

According to the Health Belief Model, the activators in health behaviour are the development of health behaviours that can trigger that action. When the responses were categorized, the following headings were reached:

5.1. Women's education and physicians' recommendations:

Women expressed that if they received information or recommendations from physicians during visits for other illnesses, they might be more inclined to get a mammogram. They noted that guidance, especially from family physicians, would be more impactful.

"If my family doctor or someone like that directed or recommended it, I'd go." (K33, 60 y, retiree, south, urban)

"Given my age, I hadn't thought about it, but my gynaecologist recommended a check-up, so I went ahead with it." (K30, 55 y, public servant, north, urban)

"The doctor should direct us, because some people are meticulous and go on their own, while for others, it doesn't cross their mind at all." (K42, 58-y, teacher, north, urban)

"The doctor will guide us. If something like that happened to me, I'd go ask the doctors." (K46, 69 y, housewife, west, rural)

Additionally, women indicated they were unaware of the need to have a mammogram every two years after the age of 40. Some even mentioned that after receiving a "clean" mammogram result, their physician advised them, "You don't need to get one anymore," which led them not to seek further screenings.

"If I knew about something like this, I would want to go get it done—I mean, God forbid, people should be checked after all. I think there isn't enough being done about this topic. I mean, how should I put it, there isn't much public awareness about this, so people don't go thinking nothing will happen. I think there should be more information and more attention brought to this issue." (K50, 44 y, teacher, south, rural)

"If I had known, I probably would have gotten it done." (K38, 41 y, teacher, west, urban)

5.2. Ease of access to screening services:

Some women stated they were unaware that mammograms are performed free of charge at KETEMs and that they would have used this opportunity if only they knew about it.

"It's actually a very nice service. Why don't we know about it? If there were announcements about this, maybe we would go if we were informed." (K1, 69 y, housewife, west, urban)

"If I knew that there was such a free centre near me, I swear, I would go as soon as possible, I already have anxieties." (K31, 44 y, housewife, west, urban)

"(After receiving information about KETEM from the researcher) If there's something like this, I'll go there and get it done for free. I'll look into it since it's free; instead of paying 3,000–5,000 TL, I'll get everything done there." (K38, 41 y, teacher, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Women highlighted that having convenient access to centres where mammograms are conducted is essential, especially in rural areas, where access can be a larger issue.

"If it were nearby, just fifteen or twenty minutes away, you'd go anytime. I mean, why not? Of course, if it were close, you'd go, but since it's not, you don't think about going." (K11, 57 y, housewife, north, rural)

"If it were here, I'd go. I mean, if it were in this district or at our state hospital." (K48, 54 y, housewife, east, rural)

"Maybe municipalities can be a little more active in this regard. For example, as I said, they can do something more in a place closer to the neighbourhood. I think municipalities also have a duty in this respect. It does not have to be in a hospital. For example, if there were a few more places like KETEM, somewhere in the neighbourhood." (K37, 66 y, housewife, south, urban)

Women also mentioned that they would feel more inclined to get mammograms if the appointment system were easier to navigate.

"If the appointment system were easier in public hospitals -though it's actually quite easy in private ones- you could easily go and get it done." (K43, 56 y, financial consultant, central, urban)

"My biggest complaint is with the appointment system. If I knew the Ministry of Health's phone number, I'd actually call them. This appointment system is really a mess, dear. I mean, I would go if I could get an appointment, but I can't." (K24, 56 y, housewife, north, urban)

5.3. Reminding women about screenings and encouraging participation:

Most women indicated that they would find it easier to participate in breast cancer screenings if they received reminders via phone calls or text messages.

"If women are called, like if I get a call saying 'you're at this age, you should come on this day,' I'd definitely go." (K21, 60 y, retiree, west, urban)

"If someone directed me, like 'we expect you at this time,' or made a personal call, then I'd go." (K49, 52 y, housewife, south, urban)

"It would be even better if the Ministry of Health sent a message. Like if they routinely sent messages every three or five months, I think it would guide women more effectively." (K30, 55 y, civil servant, north, urban)

Some women expressed that they would be more likely to get a mammogram if it were mandated by an official authority.

"Doctors need to say this. They need to make it a requirement, like 'you absolutely have to do this.' Only then would people go to these kinds of check-ups, I think." (K4, 66 y, retiree, north, urban)

"Every woman should go, but if there were such a requirement, maybe I'd do it." (K42, 58 y, teacher, north, urban)

"If it's enforced, like 'you have to go, the state says you must go and have these screenings,' then maybe people would go." (K51, 60 y, housewife, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some women said they would participate if screening campaigns were organised.

"Hospitals used to hold cancer screening campaigns; if I happened to come across something like that, I'd go." (K33, 60 y, retiree, south, urban)

"The Ministry of Health could organise campaigns, or they could use TV for public service announcements. Society needs more awareness." (K33, 60 y, retiree, south, urban)

Some women noted that seeing billboard advertisements would motivate them to get a mammogram.

"If they post on advertising boards, like reminders for those over a certain age to get checked, then people would go." (K30, 55 y, civil servant, north, urban)

"They could place these ads on billboards around the area or in places where people frequently walk, like shopping centres." (K43, 56 y, financial consultant, central, urban)

5.4. Women feeling safe:

Some women indicated they would be more willing to undergo a mammogram if examined by a female physician or if the procedure was performed by a female technician.

"If I knew of a female doctor I could trust, maybe I'd go more comfortably." (K39, 63 y, housewife, west, urban)

"If a male doctor were to say, 'let me check your breasts,' he might hesitate, honestly. But if it were a female, she might feel more comfortable mentioning and performing the exam." (K16, 48 y, cleaning staff, north, urban)

"At least if the examinations were done by a woman, you'd feel more comfortable. After all, it's a stranger. That's why people don't prefer to go." (K26, 52 y, housewife, west, urban)

During the study, women complained about the pain caused by mammography machines and stated they would be more likely to get a mammogram if less painful technology were available.

"If they did it with an ultrasound instead, it would be easier; if they just used an ultrasound, everyone would go without hesitation. It hurts a lot; it's unbearable. For those with smaller breasts, it's particularly difficult." (K36, 57 y, housewife, north, rural)

"It was very difficult for me to get a mammogram. They squeeze the breast in a machine that's like a toaster. It was hard for me. They said, 'you'll come every year and go through this.' Honestly, I said, 'I won't come again.' But if it were less painful, if there were an easier machine, then I'd probably get it done again." (K2, 60 y, cleaning staff, north, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

6. SYSTEM:

Another prominent reason why women refrain from getting mammograms is related to the system itself.

6.1. Women's education and awareness:

Women stated that they obtain health-related and breast cancer information mainly through their environment (relatives, neighbours, and friends), television, the internet, social media, brochures, billboards, and educational programmes. However, they also mentioned that if physicians themselves directed them toward screening, they would participate more in such programmes.

"From time to time, I see health brochures with announcements saying, 'go get a cancer screening test.'" (K15, 49 y, teacher, east, urban)

"I mostly get information from those around me. I do research too, like on the internet or computer. When I hear about an illness nearby, I look it up to see what happened, how it can be treated." (K30, 55 y, civil servant, north, urban)

"I learn as it happens to my friends. I see what it's like, what's done, and then by following their process, I learn more." (K43, 56 y, financial advisor, central, urban)

"I have doctor acquaintances; I learn from them. They already ask, 'have you gone for a check-up?'" (K22, 51 y, civil servant, west, rural)

"I hear it from doctors. I listen to them when they speak on TV. They really recommend it a lot." (K36, 57 y, housewife, north, rural)

"They give information on TV and there are advertisements, for example." (K23, 52 y, civil servant, west, urban)

6.2. Screening service and access issues:

In terms of healthcare service provision, issues like hospital crowding, insufficient information about screenings at family health centres, and physicians' inability to inform patients due to workload, and difficulty in getting appointments at hospitals were frequently mentioned.

"You want to go, but they give appointments for a really long time later. Some manage to go, some don't; some keep up, some can't." (K9, 55 y, retiree, central, urban)

"You go to the hospital, and the tests never end. They tell you to go here, then there, and don't give you proper information. You end up going around in circles in public hospitals." (K2, 60 y, cleaner, north, urban)

"I used to go to a public hospital, which I liked. I loved the building, felt safe, and everyone would share test results, and the doctors were attentive and calm. But now? I wouldn't go again. It's extremely crowded, and I don't think they provide the same level of service as before." (K35, 45 y, academic, west, urban)

"Getting a mammogram isn't easy either. One person directs you to another, who directs you to someone else. They don't just send you straight to the test." (K26, 52 y, housewife, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"My family doctor is very sensitive, I love him very much, God bless him. I mean, he tries to warn us about everything. For example, he even gave information on cervical cancer." (K9, 55 y, retiree, central, urban)

"Does anyone even ask family doctors for anything? They only write prescriptions don't even look you in the face." (K4, 66 y, retiree, north, urban)

"Public hospitals are very crowded; unfortunately, they can't give proper attention to their patients. Are there bad doctors there? No, there are excellent doctors in public hospitals." (K7, 51 y, teacher, east, urban)

"Appointments are outside working hours, you leave school at three and the examinations close at four. Well, you can't make it to the examination, so I guess that's where my laziness comes from." (K42, 58 y, teacher, north, urban)

"Since Türkiye's doctor-to-person ratio is very low, we can't blame the doctors. They don't have the time to inform each patient individually. The workload is very high, and they're just trying to address illnesses as much as possible. They have no choice but to do that to serve everyone." (K7, 51 y, teacher, east, urban)

Another finding was that women preferred private hospitals more if they had money. The reasons for preferring private hospitals were the intensity in public hospitals and the inability to get things done quickly.

"I went to a private hospital, even for a procedure like a D&C, it cost a fortune. If I go now, they'll take a smear, an HPV test, and charge me a fortune again. I didn't want to go just because of that. In fact, there are such tests in the public hospital, you should go, but you can't find an appointment for it right away." (K38, 41 y, teacher, west, urban)

"Getting an appointment at public hospitals is a bit harder, whereas in private hospitals, it's easier to find one right away. It's true, 'money talks.'" (K50, 44 y, teacher, south, rural)

Most women stated they don't have difficulty accessing public hospitals.

"I usually prefer public hospitals. I've never gone to a private hospital. I'm happy with my doctors, and they keep calling me back." (K9, 55 y, retiree, central, urban)

"As long as it's clean and the person in charge is trustworthy, I'll go to public hospitals or wherever I can get an appointment, depending on the urgency." (K35, 45 y, academic, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Women emphasized the appointment issues at hospitals but were aware that there's no such issue at family health centres.

"You can't get appointments at hospitals, but at health centres, you can just walk in; the door's open." (K17, 61 y, housewife, central, urban)

"Sometimes we can handle our business with the family physician even over the phone. We talk; we see each other as a family." (K12, 48 y, housewife, south, rural)

Some women mentioned that if they couldn't get an appointment at public hospitals, they'd turn to private ones.

"If we can't get an appointment in a public hospital or if it takes too long there, we go to a private one in an emergency." (K13, 62 y, civil servant, east, urban)

"If I find out which doctor I need to see, I go to that doctor. It doesn't matter if it's public or private. I'll go to public [hospitals] if I can get an appointment, but usually, you can't find one. If not, I'll choose private." (K26, 52 y, housewife, west, urban)

6.3. Gender perception in healthcare:

Women expressed reluctance to have male radiology technicians perform their mammograms due to feelings of embarrassment and discomfort. They also mentioned feeling hesitant about having breast exams conducted by male physicians.

"It's definitely more comfortable with a woman; it's difficult with men. In the past, most OB-GYN doctors were men, and I usually didn't want to go. I'd go only if a female doctor was available." (K24, 56 y, housewife, north, urban)

"Men seem to be a bit rougher, and it probably hurts a bit too, so I'm a little hesitant. If it's not a woman, I absolutely won't do it." (K13, 62 y, civil servant, east, urban)

"Generally, people don't go because they're embarrassed. You have to put your chest there. It's usually a man. No one accepts that either. At least if it's a woman doing it, you feel more at ease. I mean, after all, it's a stranger, so people prefer not to go." (K26, 52 y, housewife, west, urban)

"If it's not a woman, I definitely won't do it. Even for a mammogram, I'd prefer the person doing it to be a woman. If it's a man, I'm not inclined to have it done. I think we should have the option in these types of sensitive matters." (K13, 62 y, civil servant, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Generally, people don't go because they're embarrassed. You have to put your chest there. It's usually a man. No one accepts that either. At least if it's a woman doing it, you feel more at ease. I mean, after all, it's a stranger, so people prefer not to go." (K26, 52 y, housewife, west, urban)

"If it's not a woman, I definitely won't do it. Even for a mammogram, I'd prefer the person doing it to be a woman. If it's a man, I'm not inclined to have it done. I think we should have the option in these types of sensitive matters." (K13, 62 y, civil servant, east, urban)

6.4. Technological issues in screening service delivery:

Another barrier was the discomfort caused by mammography machines, described as "like a panini press squeezing the breast," which made the experience painful. Due to fears of pain, many women avoided undergoing mammography screenings.

"Getting a mammogram was really difficult for me. It's like a panini press machine squeezing your breast and so on. It was really hard for me. They said, 'you'll come every year and have it done like this.' Honestly, I said, 'I'm not coming back." (K2, 60 y, cleaning worker, north, urban)

"Honestly, it hurts a little bit. They squeeze you like a panini press. It hurts, so people avoid going." (K26, 52 y, housewife, west, urban)

"It's just that squeezing thing when they take the mammogram that scares people. Even I feel that way. I'm also scared because of it. That's why I hesitate." (K36, 57 y, housewife, north, rural)

B. RESULTS OF WOMEN WHO HAVE HAD A MAMMOGRAM IN THE LAST 2 YEARS:

In-depth interviews were conducted by phone with a total of 39 women who had a mammogram in the last two years, from June 16, 2023, to March 1, 2024, in rural and urban areas across five regions of Türkiye (west, north, central, east, and south) (Table B.5). The average age of the women was 52.8 years (± 1.1 years, range: 42–69 years). The other socio-demographic characteristics of the women are provided in table B.6. Three women who were healthcare workers were excluded from the qualitative analysis, and analyses were conducted with 39 individuals

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table B.5: Women who have had a mammogram in the last 2 years.

Region	Urban/Rural	n	%
West	Urban	8	21,4
	Rural	1	
Central	Urban	9	23,8
	Rural	1	
East	Urban	6	16,6
	Rural	1	
North	Urban	6	16,6
	Rural	1	
South	Urban	8	21,4
	Rural	1	
Total		42	100,0

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table B.6: Characteristics of women who have had a mammogram in the last 2 years.

Characteristic	n	%
Age groups (years)		
40-49	13	33,3
50-59	19	48,7
60-69	7	17,9
Marital status		
Married	33	84,6
Widowed	2	5,1
Divorced	2	5,1
Single	2	5,1
Education level		
Primary school or below	14	35,8
Secondary and high school	8	20,5
University and above	17	43,5
Occupation		
Housewife	18	46,1
Retired	7	17,9
Teacher	6	15,4
Civil servant	3	7,7
Other*	5	12,8
Social security (SGK)		
Yes	38	97,4
No	1	2,5
Private health insurance (PHI)		
PHI and SGK	2	5,1
Only social security (SGK)	36	92,3
Unknown/Not specified	1	2,5
Income level		
Income less than expenses	7	17,9
Income equal to expenses	28	71,7
Income more than expenses	4	10,2
Menopausal status		
Yes	24	61,5
No	15	38,4
Total	39***	100,0

Characteristic	n	%
Use of assisted reproductive techniques		
Yes	2	5,1
No	37	94,8
Hormone replacement therapy		
Yes	2	5,1
No	37	94,8
Smoking/Alcohol		
Smoking		
Yes	10	25,5
No	29	74,5
Alcohol		
Yes	2	5,1
No	37	94,9
Breast biopsy		
Yes	5**	12,8
No	34	87,1
Cancer history		
No	36	92,3
Yes	3	7,6
Breast cancer	3	7,6
Family history of cancer		
No	19	48,7
Yes	20	51,2
Breast cancer	10	25,5
Cervical cancer	1	2,5
Colorectal cancer	1	2,5
Other	8	20,5
Total	39***	100,0

* Other: Psychologist, Chemical Engineer, Health Law Specialist, Advertiser, Manager.

** Three of them were diagnosed with breast cancer, while others had normal results.

*** Three participants were excluded from the analysis because they were healthcare workers.

MARMARA ÜNİVERSİTESİ YAYINEVİ

The average body weight reported by the women was 73.5 kg (±12.2; range:50-103 kg), and the average height was 1.6 m (±0.6; range:145-174 cm). The average age of first menstruation was 13.3 years (±1.4; range:10-16 years). Of the women, % (n:24) reported they had entered menopause, with an average age of menopause at 48.7 years (±3.8; range:40-55 years).

Of the women, 79.4% (n=31) reported performing breast self-examinations (BSE); however, according to their statements, only 17.9% (n=7) were assessed as performing BSE correctly. (Correct BSE is defined as examining the entire breast, including the armpit area, every month in front of a mirror or lying down, lifting the arms for post-menopausal women or after each menstrual period for menstruating women.) Additionally, 64.1% (n=25) of the women had heard of KETEM. Among the women who had heard of KETEM, 68.0% (n=17) had previously visited KETEM for cancer screening.

A total of 92 codes were identified from the interviews conducted with the women. These codes were grouped to form sub-themes and themes, and the report was prepared considering the Health Belief Model.

Table B.7: List of the main themes and sub-themes obtained in the analysis of women who had mammography in the last 2 years.

Main Themes	*Sub-Themes*
1. Perceived Severity	*1.1 Perception of severe illness* *1.2 Seriousness of breast cancer compared to other cancers* *1.3 Self-breast examination* *1.4 Clinical breast examination*
2. Perceived Susceptibility	*2.1 Risk factors for breast cancer* *2.2 Perceptions and personal beliefs about breast cancer*
3. Perceived Barriers	*3.1 Comfort issues encountered during breast cancer screenings* *3.2 Issues related to healthcare personnel* *3.3 Impact of the earthquake*
4. Perceived Benefits	*4.1 Knowledge of the benefits of early diagnosis*
5. Cues to Action	*5.1 Informing and guiding women* *5.2 Reminding and encouraging women* *5.3 Personal and family factors* *5.4 Ease of access to screening services* *5.5 Comfort of screening and women's sense of security*
6. Self-Efficacy	*6.1 Women undergoing screening/check-ups*

MARMARA ÜNİVERSİTESİ YAYINEVİ

1. PERCEIVED SEVERITY

1.1. Perception of Severe Illness:

The majority of women regarded breast cancer as a severe illness. Although some participants noted that it could be either benign or malignant, meaning it could progress differently in each case, most described breast cancer as a stealthy or rapidly advancing disease. Many participants specifically emphasized that surgery would disrupt body integrity if it became necessary.

"Breast cancer is a bad disease in my opinion. Imagine if your breast were removed, God forbid." (K62, 53 y, housewife, south, urban)

"When we talk about breast cancer, the malignant type of cancer comes to mind. It progresses to a stage where the breast might have to be removed." (K69, 54 y, civil servant, central, urban)

"After all, cancer has a bad name. Just hearing the name is enough..." (K75, 52 y, housewife, west, urban)

1.2 Seriousness of breast cancer compared to other cancers:

Breast cancer is a disease with an opportunity for early diagnosis and is a type of cancer with a high response rate to treatment. While many participants believed that breast cancer is less deadly than other types of cancer, there were also those who felt that there is no difference between cancer types, expressing the sentiment that "cancer is cancer."

"I mean, cancer is cancer, you know? I don't know, it's a bad tumour in the body, after all. If no precautions are taken, all of them spread." (K60, 49 y, manager, central, urban)

"It's less deadly." (K63, 54 y, housewife, north, urban)

"It's somewhat better compared to others. For example, compared to pancreatic cancer or lung cancer, I think there may be a bit more possibility for treatment." (K78, 49 y, teacher, south, urban)

1.3 Self-breast examination (BSE):

The majority of women performed BSE, though only a minority did it correctly.

After every shower, I stand in front of the mirror, lift my arm, and even check up to my lymph nodes." (K58, 50 y, housewife, east, urban)

"I check if there is a lump under my arm or if there's anything in my breast. I examine myself. I do it every time I shower." (K62, 53 y, housewife, south, urban)

"The teacher actually showed us how, saying to check by drawing circles with your hand. But, believe it or not, I never thought of doing it." (K66, 57 y, civil servant, central, rural)

"Not in every shower, but sometimes it crosses your mind when you watch television. You wonder, so you check. I do it randomly, I won't lie." (K73, 43 y, housewife, north, urban)

"I put my hand on top of my head. I move my fingers around my breast, then press to see if I feel any lump or anything." (K74, 51 y, housewife, central, urban)

"In the shower or something, I check with my hand to see if there's any lump." (K89, 58 y, housewife, south, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

1.4 Clinical breast examination (CBE):

The majority of women had not previously undergone a CBE. Most women stated that they did not have clinical breast exams because they had no complaints or only sought them when experiencing symptoms.

"When there was hardness, the surgeon did it. But normally, when I go to the general surgeon for a breast check-up, he also does the breast examination." (K52, 67 y, housewife, west, urban)

"We talked with the doctor. He examined me, he's like an ultrasound machine himself. He does the examination by hand and immediately tells you what's going on." (K59, 60 y, retiree, central, urban)

"I've never had a manual examination." (K72, 42 y, housewife, east, rural)

2. PERCEIVED SUSCEPTIBILITY

2.1 Risk factors for breast cancer:

The majority of participants believed that breast cancer is related to genetics. Women with a family history of breast cancer or any other cancer were more sensitive to the issue. However, one woman thought that breast cancer is unrelated to genetics and is instead the result of stress and poor nutrition.

"For example, since my mother had it, I'm at serious risk. That's why I never neglect my screenings." (K54, 42 y, psychological counsellor, east, urban)

"Family members diagnosed with breast cancer may genetically carry a higher risk." (K78, 49 y, teacher, south, urban)

"I had heard it was hereditary. I'd heard that those with mothers who had it are at greater risk..." (K81, 51 y, retiree, central, urban)

Many participants mentioned that breast cancer is more common among women who have no children or have not given birth. While some believed it occurs in women who have not breastfed, others felt it can also be seen in those who have breastfed. It was suggested that breast cancer is more common in older women and that menopause might be a risk factor. One participant stated that age has no relevance, and another mentioned that breast cancer can also occur in men.

"They say most breastfeeding women are at risk, but I don't know for sure." (K56, 43 y, chemical engineer, west, urban)

"I think it's very common in the 40-50 age range. But it's also affecting younger people, of course. It's just that I hear about it most often in people between 40-50." (K60, 49 y, manager, central, urban)

"I even tell my son about it because I've heard it can happen in male children as well." (K76, 62 y, housewife, south, urban, breast cancer patient)

"They say breastfeeding women don't get it, but even breastfeeding women can get it. Maybe it's just today's conditions..." (K82, 52 y, teacher, north, urban)

"Irregular menstruation, hormonal imbalances, diet, lifestyle irregularities..." (K84, 51 y, teacher, north, urban)

"I know very well that it has nothing to do with age." (K85, 56 y, teacher, north, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

One participant associated breast cancer with breast size:

"It seems more common in women with larger breasts. That's what I've noticed most." (K59, 60 y, retired, central, urban)

Most women discussed the impact of lifestyle habits on breast cancer development. The most commonly emphasized factors were diet, stress, and smoking. One participant mentioned that hormone medications might cause cancer.

"I think it somehow comes from what we eat. These foods are getting increasingly modified, with all these agricultural chemicals—everything we get from outside, even the air." (K56, 43 y, chemical engineer, west, urban)

"I think everything, from what we eat and drink, our diet, stress, all plays a role." (K81, 51 y, retiree, central, urban)

"Stress is the primary trigger for most cancers." (K78, 49 y, teacher, south, urban)

"People who smoke tend to be that way, too." (K73, 43 y, housewife, north, urban)

"There were things about hormone medications potentially causing breast cancer in people later on." (K70, 53 y, retiree, west, urban

2.2 Perceptions and personal beliefs about breast cancer:

Most women expressed that they could not imagine themselves being diagnosed with breast cancer. Some mentioned that cancer cases are increasing. Overall, they emphasized that breast cancer could happen to anyone.

"Psychologically, a person just can't imagine such a thing happening to themselves." (K76, 62 y, housewife, south, urban, breast cancer patient)

"I mean, it could happen to us as well." (K64, 45 y, housewife, central, urban)

"It has increased so much, really a lot right now. One in seven women has it; in my surroundings, the number of people who got this disease after me has increased significantly." (K76, 62 y, housewife, south, urban, breast cancer patient)

"If everyone is somehow getting cancer, then we need to be more careful." (K78, 49 y, teacher, south, urban)

3. PERCEIVED BARRIERS

3.1 Comfort issues encountered during breast cancer screenings:

The most frequently mentioned issue was pain during the screening. Although only one participant stated that she would not undergo the screening again due to the pain, it was noted that this discomfort was a common topic among women. Those with smaller breasts thought that their breast size contributed to the pain. Some participants also expressed concerns that mammography devices damage tissues and emit a high level of radiation. One participant noted that the device in her province was not very good and that she did not trust it.

"It hurts; they press too hard. It really hurts. Honestly, I'm scared; I don't like it, it's not a friendly device at all." (K56, 43 y, chemical engineer, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Mammography is a very torturous experience. I didn't have the courage to do it again. It hurts a lot..." (K58, 50 y, housewife, east, urban)

"I struggled a lot due to the pain. When they press down and pull from the breast, it becomes distressing..." (K61, 42 y, teacher, central, urban)

"My breasts are small, so I experience a lot of pain during mammography. It's really challenging and painful for me." (K59, 60 y, retiree, central, urban)

"There's talk among women about the pain caused by pressing down. Some don't go because of this fear." (K81, 51 y, retiree, central, urban)

"They say that pressing the breast damages tissues. It's something that circulates among people." (K75, 52 y, housewife, west, urban)

"They say that the radiation builds up every year..." (K61, 42 y, teacher, central, urban)

"People who go to big cities say that this area is far behind in that regard, that the devices here aren't very sensitive, and that used machines are sent here. It makes you lose confidence in the devices here." (K82, 52 y, teacher, north, urban)

3.2 Issues related to healthcare personnel:

Participants mentioned that they research healthcare personnel before receiving services. Some stated that the "doctor" is what matters most. Some participants expressed concern about potentially receiving poor treatment from healthcare personnel, which created reservations about seeking services. Women considered not only the approach of healthcare personnel, but also the facility when evaluating the quality of service.

"The doctor is important to me. There are top doctors at major medical faculties, and we try to choose them." (K80, 59 y, retiree, central, urban)

"The attitude of the person you go to can be influential. If they treat someone poorly, it affects you too... things like that can have an impact." (K81, 51 y, retiree, central, urban)

"The person guiding you there could be more patient. People are already nervous, you know, and might act timidly. They say, 'Lift your right arm,' but they lift the left arm instead. Out of nervousness, people can do things wrong at that moment. If the staff were more patient and understanding, it would be easier, I think." (K83, 53 y, housewife, south, urban)

"Because I've had so many exams, there's a constant tension. Will something go wrong this time? They say, 'Move a bit this way, not like that, like this,' which creates stress. So, I worry, 'Do I have to go through this again?' Speaking for myself, it's stressful." (K84, 51 y, teacher, north, urban)

"When it comes to choosing between state and private facilities, you feel more comfortable in private hospitals. They provide the same treatment, do the same things, but the chaos, the wait, and the indifferent or harsh behavior of the staff in public hospitals push people away." (K78, 49 y, teacher, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Women's preference for female physicians and the importance attributed to the gender of the personnel in charge of service provision were revealed. Some participants mentioned that they preferred female technicians for mammography. The fact that mammography is performed by male technicians may cause reservations in women. Approximately half of the women participants stated that they would like to be in contact with their fellow women while receiving health/screening services.

"I go when I know there's a female doctor..." (K73, 43 y, housewife, north, urban)

•*"And then there's our thing. Men and women. That's also a problem. Nevertheless, the majority of women want women..."* (K75, 52 y, housewife, west, urban)

"When it's done by a man at the place you go to, you just don't feel like doing it..." (K78, 49 y, teacher, south, urban)

"Because he's a man, I wouldn't want to do it with him." (K85, 56 y, teacher, north, urban)

"A woman can comfortably go to a female doctor." (K86, 52 y, civil servant, south, urban)

In the continuation of their screening processes, women need to apply to hospitals for further breast cancer evaluation. The most frequently mentioned issues were the difficulty in accessing services or the long wait times for mammogram results. They experience problems such as difficulty in obtaining appointments, a lack of adequate hospitals and/or physicians, and challenges in reaching hospitals.

"In public hospitals, you get dragged around and wait for days. Recently, I started going to the private faculty of the medical school, where I can also get private tests done. It's easier to get appointments and tests there, but it's very expensive, of course." (K68, 68 y, retiree, east, urban)

"It's hard to get access to doctors. You can't get an appointment sooner than 15 days." (K58, 50 y, housewife, east, urban)

"We never got to take my mother to oncology; she passed away before we could. There was only one doctor in that huge hospital..." (K74, 51 y, housewife, central, urban)

"Frankly, hospitals here are inadequate. Because of the earthquake, hospitals were destroyed, and now there are no doctors here." (K76, 62 y, housewife, south, urban, breast cancer patient)

"We can't reach hospitals because we can't get an appointment." (K81, 51 y, retiree, central, urban)

"It's hard to get a mammogram at the faculty, getting in line, they don't give appointments, they give them very late..." (K84, 51 y, teacher, north, urban)

One participant also mentioned that not being able to have continuous follow-up with the same physician is a problem in service provision.

"Doctors at the state hospital keep changing. You can't be followed by the same doctor." (K61, 42 y, teacher, central, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

3.3 Impact of the earthquake[7]:

A participant from an earthquake-affected region mentioned that while there is a mammography machine in the area, the building was damaged, and physicians are in a challenging situation, which has disrupted services.

"Frankly, hospitals here are inadequate. Because of the earthquake, hospitals were destroyed; doctors aren't here, and KETEM is here. They moved the mammography machine upstairs because the downstairs area was damaged. But the building was seriously damaged..." (K76, 62 y, housewife, south, urban, breast cancer patient)

4. PERCEIVED BENEFITS

4.1 Knowledge of the benefits of early diagnosis:

The majority of participants were aware of the benefits of screening methods in early diagnosis.

"Breast cancer, especially when diagnosed early, is a disease that doesn't progress. It's treatable. I think the same applies to other cancers; many cancers can be cured with early diagnosis." (K54, 42 y, psychological counsellor, east, urban)

"They say early diagnosis saves lives, and that's a very accurate statement for breast cancer..." (K69, 54 y, civil servant, central, urban)

"I know that early diagnosis in breast cancer, as in all cancers, saves lives." (K70, 53 y, retiree, west, urban)

"If it's diagnosed early, we know it saves lives... The most important thing is to examine ourselves; if we have early diagnosis, we can get through it faster. That's an obvious truth. That's what the doctors say too." (K87, 49 y, housewife, west, urban)

5. CUES TO ACTION

5.1 Informing and guiding women:

The majority of participants felt that information about breast cancer and screening programmes was insufficient and that women need adequate knowledge and awareness to participate in screenings.

"The more women are conscious, the more they take care of themselves. They pay more attention to their health." (K69, 54 y, civil servant, central, urban)

"There are KETEMs, there are vehicles, for example. But nobody knows this. It needs to be advertised..." (K53, 67 y, housewife, west, urban, breast cancer patient)

---

[7] On 6 February 2023, at 04:17 TRT(01:17 UTC), a 7.8 earthquake struck southern and central Türkiye. The epicentre was 37 km (23 mi) west–northwest of Gaziantep. The earthquake had a maximum Mercalli intensity of XII (Extreme) around the epicentre and in Antakya. It was followed by a Mw 7.7 earthquake at 13:24. This earthquake was cantered 95 km (59 mi) north-northeast from the first. There was widespread damage and tens of thousands of fatalities.

There was widespread damage in an area of about 350,000 km2 (140,000 sq mi), about the size of Germany. An estimated 14 million people, or 16 percent of Turkey's population, were affected. Development experts from the United Nations estimated that about 1.5 million people were left homeless.

The confirmed death toll in Turkey was 53,537. It is the deadliest earthquake in what is now present-day Turkey since the 526 Antioch earthquakes and the deadliest natural disaster in its modern history (Ref: https://en.wikipedia.org/wiki/2023_Turkey%E2%80%93Syria_earthquakes).

MARMARA ÜNİVERSİTESİ YAYINEVİ

A physician's recommendation was one of the most frequently mentioned motivators. Participants trust physicians and want to receive information about screenings from them. It is believed that if a physician informs or guides them, interest and participation in the programme would increase.

"I go a bit based on the doctor's guidance." (K73, 43 y, housewife, north, urban)

"Because of my mother, they told me to come every six months for a check-up. So, I will try to go now." (K74, 51 y, housewife, central, urban)

"If family physician raises awareness, like I said, or discusses something like that, maybe more people would go [get screened]." (K77, 53 y, housewife, west, urban, breast cancer patient)

"An emergency doctor wouldn't say anything about this. You go to internal medicine, and they wouldn't say anything either. The most logical way is through family physicians and nurses, whom people can access most easily. Nurses can be more helpful on this topic." (K81, 51 y, retired, central, urban)

"I think family physicians' guidance is key. I trust them... I think this is where family physicians come in because we directly interact with them on this issue." (K84, 51 y, teacher, north, urban)

Seeing close friends or relatives go for a mammogram also influenced women to take action.

"My neighbour went, so I went with her. After us, women from our friend group also went..." (K63, 54 y, housewife, north, urban)

"My sister made an appointment there. She said, 'Sister, I've made an appointment there. Let's go together.' So, the two of us, two sisters, went together." (K79, 49 y, housewife, east, urban)

"My neighbours' daughters and daughters-in-law went and did it, for example. I said I went for a screening, so they went too." (K87, 49 y, housewife, west, urban)

5.2 Reminding and encouraging women:

The participants emphasized the need to increase public knowledge and awareness. They expressed a high level of trust in the state and physicians and felt that information should be provided through these channels.

"People need to go to such places. These things need to spread. Look, you told me, I'll tell someone else, and it'll spread like that..." (K53, 67 y, housewife, west, urban)

"When the vehicle came here, they made an announcement. A lot of women went then, both for smear tests and KETEM screenings." (K72, 42 y, housewife, east, rural)

"It's really insufficient, I think. Nothing is ever announced. It should be announced more frequently-like, 'This is available here.'" (K77, 53 y, housewife, west, urban, breast cancer patient)

Information and awareness about breast cancer through television, brochures, and visuals on billboards were also mentioned as effective cues to action.

"It's written in health centres that mammograms are done for free; hospitals also have posters saying that's where I know it's free. Sometimes they mention it on TV." (K52, 67 y, housewife, west, urban)

"These awareness things, we come across them all the time on TV and in our surroundings." (K55, 47 y, advertiser, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"We also have brochures distributed in some of our environments. When you're close to a healthcare organisation, like at work, you have a chance to learn about it." (K60, 49 y, manager, central, urban)

The phone, as a communication tool actively used by everyone, could be utilized for information purposes. Sending messages through family health centres or the Ministry of Health, or calling women when it's time for screening, was seen as an action that would motivate women.

"For example, messages can be sent. You know, municipalities send us messages about every issue. There can be messaging channels specifically for women, where they provide information and call people." (K78, 49 y, teacher, south, urban)

"I was called by the family health centre. They do these checks, telling you to go, so I went because of that..." (K81, 51 y, retiree, central, urban)

Some participants found sharing experiences of women diagnosed with breast cancer to be effective.

"I had my mother share her experiences. When they observed her, women took more interest, and they started going because of my mother's account..." (K54, 42 y, psychological counsellor, east, urban)

"I think it would be more effective to bring people who have gone through this in front of children or have they shared their stories at a parent meeting..." (K85, 56 y, teacher, north, urban)

One participant thought that breast cancer screenings would be more effective if made mandatory.

"Maybe if it were organised regularly, like telling people over 50 that they have to have these checks done..." (K75, 52 y, housewife, west, urban)

"Our people like a little push, they'll do it if they're required to... or if someone makes it compulsory..." (K78, 49 y, teacher, south, urban)

5.3 Personal and family factors:

The most commonly mentioned cue to action was "having a complaint." Most participants went to the hospital and had a mammogram after experiencing a symptom.

"I recently felt hardness in my breast, for instance. I immediately went to the general surgeon, and that's how I got a mammogram." (K52, 67 y, housewife, west, urban)

"I noticed a large lump under my arm. Six months before, a friend had experienced the same thing. After that, of course, I became suspicious..." (K53, 67 y, housewife, west, urban, breast cancer patient)

"My neighbour only went to KETEM because of pain; she went just because it hurt." (K72, 42 y, housewife, east, rural)

"I had a mammogram two years ago because I had a slight ache..." (K78, 49 y, teacher, south, urban)

"If I had had an issue, if I had felt something, or if there was a heavy feeling in my breast, I would have gone sooner..." (K82, 52 y, teacher, north, urban)

"There must be a reminder or stimulus. Some people are very cautious and go right away, while others don't want to go unless there's a problem or they see a symptom." (K84, 51 y, teacher, north, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some participants noted that having family members or people around them diagnosed with breast cancer influenced them to undergo screening. Other women stated that entering menopause motivated them to get screened.

"My co-worker was in front of me when she got cancer. I mean, her breast was removed and all. When I hear about these things in my surroundings, I think I should go..." (K60, 49 y, manager, central, urban)

"I started paying more attention after my mother's illness." (K66, 57 y, civil servant, central, rural)

"I went when I entered menopause at 45." (K80, 59 y, retiree, central, urban)

"I went first because I entered menopause, unsure if it would cause an issue. Later, the family physicians called too..." (K81, 51 y, retiree, central, urban)

Some participants mentioned that they undergo breast examinations and/or mammograms as screenings to monitor them and avoid missing the opportunity for early diagnosis.

"I go because there could be something hidden in my body at any moment. I go to protect myself" (K52, 67 y, housewife, west, urban)

"If there's something, I want to catch it early and take precautions. God forbid, catching even the smallest thing early is always important." (K60, 49 y, manager, central, urban)

"It's beneficial to keep up with it, to benefit from early diagnosis and early treatment methods." (K84, 51 y, teacher, north, urban)

"I went again for another screening, just in case..." (K87, 49 y, housewife, west, urban)

One participant viewed getting a mammogram as a responsibility.

"I see it as a duty, to be honest. I mean, I should do it first so that everyone else does too. I also recommend it to others." (K60, 49 y, manager, central, urban)

5.4. Ease of access to screening services:

Women in urban areas indicated that easy access to health centres was a positive factor in increasing service utilization, while in rural areas; the physical distance to health centres was reported as a primary barrier to accessing screening services. Transportation by motor vehicles or mobile services to mammography locations can facilitate access to screening services.

"If this process were available in villages, more women would go. Now, for example, they'd have to get on a car, take a bus from the village, come here, have the procedure done, and go back to the village, then come again. It's a bit, you know, boring for them." (K87, 49 y, housewife, west, urban)

"For example, there is a health centre in our village, if it exists; it is already difficult to reach there. I am thinking about the women living in our village. There is really a transport problem. I wish there was something like a municipality assigned car so that our women could reach such places easier." (K89, 58 y, housewife, south, rural)

Some participants expressed that it would be more suitable to be taken from their location by vehicle for mammography screenings:

"For example, every Friday here, they take those who want to go; three or five people, they hire a bus, and go to a designated centre. The state pays; it's a private centre, but the state pays, and these screenings are done regularly." (K87, 49 y, housewife, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

5.5. Comfort of screening and women's sense of security:

Most participants indicated that, if possible, they would prefer to receive health services from the State. There is a high level of trust in physicians working in state hospitals. Private hospitals are perceived to treat patients as customers, and this approach is thought to reduce the quality of service.

"I don't trust private hospitals as much as I used to. In public hospitals, everything is investigated more thoroughly; they do detailed tests." (K52, 67 y, housewife, west, urban)

"I don't go because I think private hospitals see patients as customers and make them spend unnecessarily." (K57, 47 y, health law specialist, north, urban)

"The state feels more reliable to me. Private hospitals always seem like a money trap to me. They might come up with unnecessary issues. But the state doctors always seem reliable to me." (K60, 49 y, manager, central, urban)

"We have a state hospital, and they take very good care of us there. If they don't understand something, they refer us. The healthcare system here is very good, but there are issues everywhere due to a shortage of doctors." (K72, 42 y, housewife, east, rural)

One participant mentioned that hospitals in major cities are more trustworthy:

"Sometimes there is no trust in the state hospital, when you hear about the cases there, people don't want to go when they hear the negative example, sometimes they don't want to go when they hear about the negativities in the medical faculty, even they don't want to stay in their city and want to go to big cities." (K82, 52 y, teacher, north, urban)

Most participants expressed a preference for state-provided services. However, some participants were bothered by the delays in the public healthcare process.

"It's a bit difficult for things to progress in the public sector. You can't get an appointment, and even to show the smallest result, you have to wait. It's crowded. The doctor can't spare enough time to give you information." (K54, 42 y, psychological counsellor, east, urban)

"Since things progress more slowly in public hospitals, people move to private hospitals." (K69, 54 y, civil servant, central, urban)

6. SELF-EFFICACY

6.1. Women undergoing screening/check-ups:

All women had undergone mammography within the past two years for various reasons. They were aware of the benefits of having pre-illness check-ups. One participant emphasized that a woman who values herself should participate in cancer screening programmes.

"I go honestly because something could be hidden in my body at any time. I go to protect myself... " (K52, 67 y, housewife, west, urban)

"I never miss my appointment days. I get my appointment and go the same day..." (K59, 60 y, retiree, central, urban)

"For instance, no matter what, I organise my calendar. When my time comes, I go and get my check-up..." (K68, 68 y, retiree, east, urban)

"It's probably related to how much women value their own lives. If a person values their health, they should do it." (K83, 53 y, housewife, south, urban)

"I went for a check-up because, you know, I keep hearing from people around me that we need to get checked now." (K89, 58 y, housewife, south, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

C. RESULTS OF FAMILY PHYSICIANS AND FAMILY HEALTH WORKERS

In-depth interviews were conducted with family physicians and family health workers from rural and urban areas in five regions of Türkiye (west, north, central, east, and south) between August 15, 2023, and May 31, 2024. Of all interviews with family physicians, 67.5% were conducted in urban areas, while 45.5% of interviews with family health workers were conducted in urban areas.

Table B.8: Family physicians and family health workers

Region	Urban/Rural	Family Physicians		Family Health Workers	
		n	%	n	%
West	Urban	7	22,5	1	18,2
	Rural	2		1	
Central	Urban	5	17,5	1	18,2
	Rural	2		1	
East	Urban	5	20,0	1	27,2
	Rural	3		2	
North	Urban	5	22,5	1	18,2
	Rural	4		1	
South	Urban	5	17,5	1	18,2
	Rural	2		1	
Total		40	100,0	11	100,0

Of the family physicians interviewed, 37.5% (n=15) were family medicine specialists (FMS), 20% (n=8) were contracted family medicine specialty training students (SAHU), and 42.5% (n=17) were practitioner family physicians (PFP). The median age of the family physicians was 39.0 years (mean 42.8±10.2; range:30-64), while the median age of family health workers was 37.0 years (mean 38.4±8.2; range:28-50).

The median length of time family physicians had been working at the same Family Health Centre (ASM) was 5.0 years (mean 5.8±4.6 years; range:0.1-15 years), while the median total duration working in ASMs was 8.5 years (mean 8.5±4.8; range:0.7-18 years). For family health workers, the median duration at the same ASM was 2.0 years (mean 3.3±3.7 years; range:0.2-13 years), and the median total duration working in ASMs was 3.0 years (mean 4.6±4.0; range:0.3-13 years).

A total of 489 codes were identified from the interviews with family physicians and family health workers. The main themes and sub-themes created are provided in Table B.9.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table B.9: List of the main themes and sub-themes obtained in the analysis of family physicians and family health workers.

Main Themes	Sub-Themes
1. Family physicians/family health workers' opinions on breast cancer screenings	1.1 Opinions of family physicians 1.2 Opinions of family health workers 1.3 Preventive medicine
2. Breast cancer screening practices	2.1 Implementation of breast cancer screening 2.1.1 Information dissemination 2.1.2 Self-breast examination (SBE) 2.1.3 Clinical breast examination (CBE) 2.1.4 Mammography 2.2 Operation of screenings in family medicine 2.2.1 Access 2.2.2 Coordination 2.2.3 Monitoring 2.2.4 Communication 2.3 Achieving targets
3. Factors affecting breast cancer screenings	3.1 Workload in family medicine 3.1.1 Population size and patient load of family physicians 3.1.2 Additional tasks for family physicians 3.1.3 Workload of family health workers 3.1.4 Factors affecting the functioning of family medicine 3.2 Cultural/regional characteristics 3.3 Barriers and motivating factors 3.4 Perception of gender 3.5 Impact of earthquake/pandemic
4. Recommendations	4.1 Recommendations for policymakers (system-related) 4.1.1 System renewal 4.1.2 Reducing the attached population 4.1.3 Revising the pay-for-performance system 4.1.4 Evaluating the need for additional staff 4.1.5 Implementing sanctions 4.2 Recommendations related to training 4.2.1 Public-oriented recommendations 4.2.2 Recommendations for healthcare providers

MARMARA ÜNİVERSİTESİ YAYINEVİ

1. Family Physicians/Family Health Workers' Opinions on Breast Cancer Screenings

1.1 Opinions of family physicians:

Family physicians are aware that screenings are part of their responsibilities and recognize this as a preventive medicine practice, striving to fulfil this role. However, they all agreed that they were unable to fulfil this task adequately due to the diversity of their work and the heavy workloads associated with the high registered population. Other contributing factors include gender-related cultural issues between physician and patient, and a lack of public awareness, possibly leading to insufficient demand for screenings.

Family physicians openly shared self-critiques regarding their roles in conducting screenings, explaining their challenges and offering suggestions for improved implementation. These reasons and suggestions were analysed under different headings and in this section, the perspectives of Family Physicians on the practice were discussed.

When asked about the functioning of cancer screening programmes, family physicians described their and their peers' work as follows:

"Yes, they are aware of the cancer aspect, they know it, and they explain it to patients when there's an opportunity. But sometimes the process is challenging, especially the persuasion and scheduling for the patient to go. The physicians I know are generally conscious. Finding time, however, is truly challenging due to patient density. ... Apart from that, I'd say that physicians are generally aware." (K96, female, FMS, west, urban)

"In other districts, the programmes are roughly like ours; I don't think they're poorly managed... It could be done very well and should be if the additional burdens on family physicians were removed. Honestly, my main job is that. I'm the one who should be doing this counselling, education, guidance, feedback, but unfortunately, it's not my main focus due to other tasks.". (K100, male, FMS, east, urban)

"I genuinely work as a family physician. I love my job and prioritize screenings. When it comes up with patients, I give them a paper for screening, and I follow up. As family physicians, it's our duty to ensure screenings are done as age and time dictates." (K102, male, PFP, central, urban)

"In this regard, I think we are working very devotedly, we are making efforts, we are doing it, but it is also important to raise awareness of the patients. I mean, I think it is a very important part (of family medicine) because it is a procedure that should be in primary care. Since we know patients more closely, family health centres are the most convenient places to conduct screenings." (K112, female, FMS, central, urban)

"I don't think it's very successful." (K99, male, PFP, east, urban)

"My highest priority would be this (cancer screening) rather than writing prescriptions. For me, cancer screening isn't a burden. So it's not a very difficult thing. If the patient is cooperative, explaining the importance of screening takes less than a minute." (K142, male, PFP, north, rural)

"I always ask patients. I even demonstrate how to do a self-breast examination at home, if I have enough time, on quieter days... It's a two-minute process, but it could save that patient's life." (K117, male, FMS, north, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"I see the family physician as the patient's primary caregiver. If any doctor is to take responsibility [on cancer screening], it should be the family physician. It is very important, and I think it depends on us [our involvement in screening]. Unfortunately, a large part of our daily occupation is polyclinic service. But what we really need to do is [provide] preventive health services." (K120, male, SAHU, north, urban)

"I believe preventive health services should be the priority for both family physicians and family health staff in family health centres. But it's certainly not prioritized in reality at the moment. We provide therapeutic services first. So we prescribe medication. Afterwards, as I said, the biggest service we provide is childhood vaccinations in the name of preventive health service, and we have pregnant women. I think cancer screening is last. Even as I said, it is not on the agenda of some family physicians. Especially the male ones cannot even talk about it with the woman. It is not possible to talk." (K101, female, FMS, east, rural)

"The role of the family physician in breast cancer screening is very important, but for this, the working energy and working environment of the family physician should be planned and organised accordingly. Among the responsibilities of family medicine ... preventive health care is one of these basic things." (K104, female, FMS, west, urban)

"Screenings in the daily workflow cannot find their place because there is both a patient load and a number of bureaucratic burdens, fill this, fill that." (K105, male, FMS, south, rural)

"I don't know the situation for the whole A... [name of location], but the data in our family health centre is a bit insufficient. The socio-economic status is high and people's participation is good... their approach to protecting their own health is good, but I think there is still not enough demand. I think the burden on family physicians is above normal. I mean, in the end, of course, this is our legal responsibility or our conscience responsibility that we have to do, but as I said, we have so much work that you can think that one starts before one ends." (K106, male, FMS, south, urban)

"In my opinion, cancer screenings cannot be carried out in primary care. Because screening cannot be done within the service provision of primary care, we cannot reach the appropriate number... Yes, cancer screening is also my job. The effect of not doing this within the scope of the preventive services of a family physician on this issue is frankly difficult for me, as I feel that this is a deficiency of mine." (K138, female, PFP, west, rural)

"Especially in my unit, I try to do cancer screenings seriously.' 'I think it should be at the top of the list, but we ... prioritize outpatient services. I mean, vaccinations, follow-ups, pregnancy follow-ups and cancer screenings should be on our first priority list, but ... we can do nearly a hundred outpatient clinics a day." (K121, male, SAHU, north, rural)

"This is our first and foremost job. Of course, preventive health care, chronic disease management, this is our job, we would do this anyway." (K118, female, SAHU, north, urban)

"Actually, screening programmes are getting better day by day. However, they may still not be at a sufficient level. There is still some coordination problem between family medicine and screening programmes. Especially in terms of breast...'." (K119, male, PFP, central, urban)

"I think it works well. I am not in a very busy ASM in M...[name of location]. About 30–40 patients come in a day so we can actually spare time. In other words, when the appropriate patient comes, at least we can spare time to talk when there is no intensity. Of course, when there is intensity, we can sometimes skip it, but I usually try to tell my patients, my own population." (K129, female, PFP, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Participants had different comments about the difference the Disease Management Platform (DMP) made in practice.

"I think we are not making enough progress. I mean, I honestly think that there is some progress with the latest DMP (Disease Management Platform) system, but I don't find it enough." (K103, female, FMS, east, urban)

"I can say this on my own behalf. After the DMP was issued, we are already doing these (screening) especially in a very active way. You know TSMs and District Health Directorates are already emphasizing this lot." (K114, male SAHU, central, rural)

According to the statements of the participants, the pandemic seems to have been an important breaking point. They express the differences in practice before and after the pandemic as follows:

"What I see in general is that there is a little bit of a deficiency, especially with the pandemic. As far as I saw, it seemed that we doctors were even more distant from these cancer screenings.' 'They say that screening was much better in those (pre-pandemic) periods and that the rates were higher in that period." (K107, male, FMS, west, urban)

"We had created our lists before the pandemic; this work was disrupted a little by the pandemic. Now we are working on incoming patients." (K120, male, SAHU, north, urban)

The importance of training and motivation was expressed in the following sentences:

"The screening programmes are like this, maybe I pay more attention because I received extra training. If I had not received specialization training, I am not sure if I would have paid as much attention. In the ASM where I work, we have friends of different ages. Young doctors are progressing well in this regard, but older doctors are different. Because there is habituation to a system, it may not come to mind... like I said, because I have received training, because I constantly hear about it from my lecturers, it somehow gets into my head. But I think it is more difficult for our doctor friends who continue in routine, who have established a certain pattern, to add another pattern to that pattern. We need a constant stimulus for some things, we need motivation." (K108, female, SAHU, west, urban)

"Our Health Directorate in our region attaches great importance to these cancer screenings. We are constantly exchanging views on how to work more sensitively and more disciplined on this issue. We may have friends who have been in the system for a very long time and lack information. In general, I think it is well implemented in R... Our Health Directorate holds many meetings on this issue and decided to restart the training processes." (K120, male, SAHU, north, urban)

Mobile access and the importance of collective work:

"Before the mobile KETEM vehicle, things were very troublesome. Sending the patients to K...[name of location] for mammography was frankly a hardship for the patients, that is, it was a bit of a problem for them, it was too heavy to send them, or when you sent them, it was very difficult for them to reach the general surgery doctor after mammography. After the mammography mobile vehicle, our numbers have obviously increased, although not at the desired level. Obviously, mammography or breast cancer screening is seen as the work of the family physician only...Yes. Maybe it is difficult, but it is easier when another obstetrician or gynaecologist or someone else sends [them]... A collective work is needed here. In other words, ASM, TSM and Provincial Directorate of Health should work together and think together on how to increase this number. KETEM should be used more actively. These can be done in the sense of orientation of mukhtars or national education, maybe in the sense of disease education." (K111, male, PFP, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some physicians highlighted the challenges due to patient fluctuation and seasonal migration in their areas:

"We're in a region that sees a lot of migration, whether for agriculture or as a seasonal retreat. In summer, our patient count of two to three thousand swells to around thirty thousand in the district... We need time, our biggest problem is time." (K122, male, SAHU, north, rural)

"I think screening is a very important thing, something that family physicians should do, but the patient load is too high. With such a high patient load, it is not successful or as it should be." (K139, female, PFP, west, rural).

1.2. Opinions of family health workers (FHWs):

Family health workers, composed entirely of female nurses and midwives, focus primarily on vaccinations and prenatal/infant monitoring, providing preventive health services that also include health education for individuals. They play a crucial role in working alongside physicians, especially in communicating with women. In breast cancer screenings, they support physicians by teaching women how to perform self-breast exams, creating screening lists, and contacting patients by phone to encourage mammography. They generally know the communities they serve well and maintain good communication with them.

Nurses highlighted that KETEM mobile units facilitate access to rural areas:

"I travelled to many provinces. These mobile units go to specific locations, setting up for screenings there. Rural residents often can't go to hospitals. But the KETEM mobile units are excellent. They've been operating for 3–4 years, and going into the villages is really good. For example, village women often aren't brought to the hospital or town centre by their husbands. But this KETEM unit has been great and has surely saved the lives of many women in the village." (K134, female, nurse, east, urban)

They expressed that they are seen as close, trusted figures in the community, respected as educators and healthcare providers:

"Rural areas are distant, and people can't go to hospitals. They come to us for everything. It's not like a central area here. They interact with us continuously. Even for the smallest thing, they come to us, saying, 'It feels like there's something in my right breast, can you check it?' We've found many lumps—some benign, some not. Their lives were saved because of this. Primary care is incredibly important in this regard." (K135, female, nurse, west, rural)

"We call them, informing them about their screenings. We give all the information, noting that we're waiting for them at the Family Health Centre (ASM) soon. We talk to them in a way that convinces them. They often ask, 'Is it mandatory?' and we explain that it's not, but it's beneficial. As long as they come, as long as we can do it and work towards early diagnosis, it doesn't feel burdensome to me." (K141, female, nurse, north, rural)

1.3. Preventive medicine:

Family physicians unanimously agree that preventive medicine is their primary duty and express a desire to dedicate more time to preventive health practices.

"Our main duty is preventive healthcare. If we didn't have such a high number of polyclinic visits, I'd work on a list of patients and call them in for screenings." (K127, female, FMS, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Healthy individuals are also our service group, so we need to highlight preventive healthcare from all angles, not just cancer screening— from prenatal care to the end of life." (K122, male, SAHU, north, rural)

"It will be necessary to touch on general problems here, but the main task of family physicians should actually be preventive health services at the primary level." (K111, male, PFP, east, rural)

"The primary purpose of primary care is preventive medicine. This is our main goal." (K114, male, SAHU, medium, rural)

"The purpose of primary care is actually preventive medicine. That is our main purpose. So, before anything else, I think we have a duty. Therefore, [we should be] informing all the women who come, giving them information about the screenings. [Give them] right information, of course, and correct any false information they might have. I think if we provide enough information on this matter, we too, hopefully, We will feel at peace with our conscience." (K136, female, PFP, south, urban)

"Preventive healthcare is the responsibility of the state, the Ministry of Health, and the field healthcare workforce. I believe in the importance of cancer screenings and chronic disease management for preventive healthcare. Why should people die from cancer? We can prevent this." (K97, male, PFP, west, urban)

"I prioritize preventive medicine as much as possible; it's part of family medicine. This should be a family physician's duty because we're the ones in the field." (K126, female, PFP, north, urban)

"Our primary duty is preventive healthcare. But we're so busy with polyclinic visits. I'm doing the best I can within this workload." (K127, female, FMS, south, urban)

2. Breast Cancer Screening Practices

2.1. Implementation of breast cancer screening:

This section covers four subheadings: Information dissemination, self-breast examination (SBE), clinical breast examination (CBE), and mammography.

2.1.1. Information dissemination:

The most crucial step for the effective implementation of breast cancer screening is ensuring that women are informed. Family physicians mentioned that they provide information by discussing the topic with women in detail. Family health workers added that when they inform women, these women often bring friends and family members for screenings as well.

"Self-exam, clinical exam—these things could perhaps be explained more to the public. I try to explain whenever I get the chance." (K107, male, FMS, west, urban)

"I try to spark something in women's minds by explaining it to them." (K128, female, FHW, east, rural)

"Whoever is in the appropriate age group, regardless of why they've come in, the Community Health Centre staffs approaches them directly to discuss it." (K100, male, FMS, east, urban)

"People who previously hesitated to show private areas, often for religious reasons, now seem to value these screenings more, and their hesitations are diminishing. I explain why it's necessary and the potential consequences if they don't undergo screening." (K138, female, FMS, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"When we explain the seriousness of it, sometimes they even bring their neighbours. They say, 'I went, and my neighbour wants to go too. Can you make an appointment for her as well, nurse?' They spread it among themselves. This is very positive." (K94, female, FHW, south, rural)

2.1.2. Self-breast examination (SBE):

Most of the family physicians stated that they could not inform women about how to perform SBE in their daily workflow.

"I don't have the opportunity to teach self-breast exams. The nurses explain it to young women aged 15-19 during routine check-ups or prenatal visits. I don't have the time to add this to my regular duties, even if I wanted to." (K96, female, FMS, west, urban)

"I don't actually give it one-on-one, or we can't. We don't have time for this anyway, but I know that sometimes midwives give it to people who request it. So our family health worker does it." (K106, male, FMS, south, urban)

"We have an informational form for women under 49, which include SBE. I inform the target population over 49 when they come in for other reasons, but we don't conduct phone call reminders for that age group. I only mention it if they come to the family health centre for another purpose." (K100, male, FMS, east, urban)

2.1.3. Clinical breast examination (CBE):

Family physicians expressed hesitance about offering CBE. They mentioned concerns about initiating this type of examination without a request.

"Maybe if the public could see these things on television, social media, etc., maybe things could be normalized. It would be a step towards normalization. Otherwise, maybe the woman also wants to go and have a breast examination, but maybe she hesitates. I mean, it could be that a doctor can misunderstand, et cetera." (K107, male, FMS, west, urban)

"If I say that all women should come to me annually for a breast exam, it might overshadow my intention." (K110, male, PFP, east, urban)

"We generally perform breast exams on women who report feeling something unusual, like a lump. We do it upon request." (K114, male, SAHU, central, rural)

"There might be a suspicion of harassment among women." (K115, male, SAHU, east, rural)

"Clinical breast exams take time, and sometimes I need to allocate specific time slots for this." (K138, female, FMS, west, urban)

2.1.4. Mammography:

Family physicians reported that women still have fears regarding mammography.

"Some women say they're scared, afraid of what might be found. Some fear the pain of the procedure." (K110, male, PFP, east, urban)

"Women think if they undergo mammography, if there is something bad it will spread to their body." (K126, male, PFP, south, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"They still think mammography causes a lot of pain, and they haven't reached a comfort level with it." (K118, female, SAHU, north, urban)

"They think mammography is very painful. There's also a misconception that it involves excessive radiation exposure. There's a false belief that repeating it every two years does more harm. Unfortunately, patients can read different things on the internet, sometimes good and sometimes bad. It can be difficult in that regard." (K136, female, PFP, south, urban)

Late mammography results and the inability of physicians to see the results were also considered as another problem.

"Mammography results take too long. It can take up to three months, for example." (K112, female, FMS, central, urban)

"We wish we could see the results ourselves instead of hearing them from the patient." (K119, male, PFP, central, urban)

"There's no issue with women refusing mammography; the main problem is access." (K132, female, PFP, central, rural)

2.2. Operation of screenings in family medicine

Under the functioning heading, the subheadings of access, coordination, monitoring and communication emerged.

2.2.1 Access:

Access to patients:

Family physicians stated that they could access women mostly through follow-ups in the 15-49 age range, through the HYP system, by making a list, by providing information during outpatient clinics and by making phone calls. In particular, it was emphasized that the positive performance in the DMP system caused physicians to focus more on cancer screening. However, there were also physicians and family health workers who stated that the DMP system was poor software.

"When we call patients to perform a 15-49, we also inform them about cancer screenings. All the women we call for 15-49 are cancer screening patients, and if there is anyone in the family, we inform them about it. So we do this in a sprinkling style. It's not like let's call this person in particular, let's call this person in particular. We do it by repeating it over and over again in every call, in every meeting." (K110, male, PFP, east, urban)

"I think fifteen forty-nine is a valuable interviewing time for us. Outside of that, we try to touch on it as much as possible during routine polyclinic exams." (K120, male, FMS, north, urban)

"With this HYP, the number of referrals increased. Yes, it has increased. In the most obvious way." (K104, female, FMS, west, urban)

"There's a Disease Management Platform (DMP) now, and, for instance, a positive performance metric. If we perform screenings, we receive financial incentives. But we're unable to, it just doesn't happen." (K115, male, SAHU, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Since we have family records, for example, we do family unification. The spouse and children may be separate, but we merge them. When someone's page is opened, all of them are opened. The gentleman comes, if it's time for your wife's mammogram, we ask him to remind that your wife also has a mammogram. But of course, we want her to come herself." (K127, female, FMS, south, urban)

"We don't have this functionality in the system, but if there's a gap in time, I tell the nurse, 'Let's screen the patients.' We have to open each patient's record and check their e-nabız [national health portal]. This requires serious time." (K112, female, FMS, central, urban)

"In the past, there used to be things like household identification fiche. I mean, I like to work a bit like that. I mean, whatever can be done for primary protection in that house: the elderly, the young, the child, the pregnant woman, the woman... For example, I take out an ETF (household identification form). I write the contact address, phone numbers, etc. next to it. Then, I write down that this will be done to this person, that will be done to that child, that elderly person will be called for a colonoscopy, or that person will be called for faecal occult blood." (K100, male, FMS, east, urban)

"I mean, I remind every patient who comes to me, who comes to the examination, but most of them don't go. There is no sanction for this." (K139, female, PFP, west, rural)

Patient access to services:

Family physicians and family health workers noted that patient participation in mammography screenings increases significantly when transportation is arranged through district health offices or KETEM, which collects patients from their homes or ASMs and takes them to mammography centres.

"Every week, every two weeks or so, a vehicle comes here to the district health directorate and transports people from here to cancer screening centres and cancer screenings are carried out there, and at that time, as the doctors' wives said and I heard from the patients, they say that the screening was much better at that time, that is, they say that the rates were higher." (K107, male, FMS, west, urban)

"When sending them to KETEM, we talk to the district health department, they arrange a vehicle, and they pick up the patients from here and take them to KETEM. They have their mammograms done there. In other words, the women here like to go, to have their mammograms taken; they tend to do it when we say something. Because it is a small place, they don't have much of a social life. It is like an activity for them." (K128, female, FHW, east, rural)

"For those who have not been screened, KETEM will inform you in advance and there will be a KETEM vehicle on this day at this time. He prepares a list by informing you that he will pick you up from your home and then drop you off at your home. On that day, that vehicle goes to the hospital accompanied by some of our auxiliary staff from the community health centre and they go to the hospital and have their screening done and come back." (K100, male, FMS, east, urban)

There were participants who said that women came more often when services were provided in mobile vehicles, but there were also participants who said that this was not appropriate.

"On Mondays, the locals know me, so they're not hesitant and come easily." (K134, female, FHW, east, urban)

"I don't think the mobile service application is feasible, because when I went, I was also doing the examination. I was sitting; believe me, sometimes I was doing the examination for 3 hours, 4 hours, 5 hours without getting up from my seat. But among 30 people, a person comes and tells you his complaint. You try to examine them in 30 people." (K110, male, PFP, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Access to results:

Family physicians indicated that, even if mammography is performed for the women registered with them, they often cannot access the results.

"KETEM gives a password, the password for mammography inquiry. The Ministry of Health has a mammography result website. The person can also check it herself. If there is no result, I teach the person the website, you can check it here. But I also tell them to come to me, let's see the result. Because the person cannot know like this. Of course, they cannot interpret the result. There is no interpretation." (K102, male, PFP, central, urban)

"Patients can see their results reflected in e-nabız [the national health portal], and we, as their family physician, can see them too, if they have granted access." (K106, male, FMS, south, urban)

"Our results come in about three weeks. By that time, our colleagues will have already sent me a separate list of patients who tested positive for something dangerous. Others, I throw them away as "clean". Anyway, I query the system one by one and save the results myself." (K135, female, FHW, west, rural)

"The results come from the TSM [Community Health Centre], but when we pull them from the system, we encounter issues. I can't re-access the results, and we only get information for positive cases." (K139, female, PFP, west, rural)

2.2.2. Coordination:

The importance of coordinated work in breast cancer screenings is emphasized by many physicians and nurses. This coordination primarily occurs on the "physician-nurse-patient" level, with the family health centre (ASM) collaborating with other institutions.

Physician-nurse coordination:

Family physicians and family health workers stated that they work together as a team in screening programmes for women, that nurses establish close relationships with patients, that patients can share information that they sometimes have difficulty telling to physicians more easily, and that they support each other in information and guidance processes.

"The doctor says, "I have said it a lot, but it is more effective if you say it, so tell these patients," for example, we pass the ball between us, I say okay, I say it, and they leave after I say it." (K112, female, FMS, central, urban)

"They are very close to her because she has been working for a long time. So I know that they can talk to her much more easily because we talk to the nurse. There are even some problems that they cannot tell me, they are ashamed of me and tell the nurse directly. The nurse comes to me and tells me, "Doctor, we have such and such a patient, can you have a look", and I do." (K117, male, FMS, north, rural)

"Nurses have the skills and opportunities to gather information that we, in a way, can't fully uncover." (K100, male, FMS, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

District Health Directorate–KETEM-Family Health Centre coordination:

Family physicians stated that they work in collaboration with KETEM and district health directorates to facilitate women's access to mammograms. With the vehicles provided by municipalities or district health directorates, women are organised and taken to KETEM through an appointment system and screenings are conducted. Problems such as some patients not going to KETEM or returning from screenings were also mentioned.

"When sending them to KETEM, we talk to the district health department, they arrange a vehicle, and they pick up the women from here and take them to KETEM. They have mammograms there." (K128, female, FHW, east, rural)

"We make the appointment through the system immediately. The car of KETEM, from the district health department, comes here once a week. It collects women and takes them there." (K94, female, FHW, south, rural)

"For mammography, KETEM sends it directly. When KETEM detects a suspicious situation without us, 'let's say BI-RADS-zero came'; the patient's condition or mass came, BI-RADS 3-4 came. It already directs the patient to the university." (K113, female, FMS, central, urban)

"Family physicians could receive assistance in coordination with KETEM because, sometimes, it is very difficult to reach KETEM staff. We cannot see the result of the patient, or we may have problems making an appointment. You know, systems are separate, where patients make appointments through family physicians, I am telling you because I am in the periphery." (K117, male, FMS, north, rural)

"The system at the centre works well. People are never turned away. There is also an appointment system. Appointments can also be made. As I said, the KETEM unit in the centre, within the Community Health Centre, works actively, so their feedback is good in that regard." (K122, male, SAHU, north, rural)

"Having more mammography and ultrasound devices in KETEM, in healthy living centres will make it easier for us to screen these patients. Because we send them, and they often come back like a boomerang. We tell them to go, [but] they may not go. Or there are patients who have made an appointment and come back saying that they did not think it was necessary." (K138, female, FMS, west, urban)

Municipality-Family Health Centre coordination:

Family physicians and family health workers noted that they collaborate with local governments, particularly municipalities, to conduct cancer screenings. Some physicians reported working in close coordination with municipalities and provincial health departments. In rural areas, collaboration with municipalities allows for the organisation of women in villages to be transported to KETEM for screenings, resulting in high screening rates.

"We work in great coordination with colleagues in the centre, with both the municipality and the provincial health office." (K135, female, FHW, west, rural)

"Because I have a very good relationship with the local administration, I probably have the highest cancer screening rate among the villages in this region. Because I meet with the municipality, I get a vehicle from them every fifteen days. I slowly transport all the women in the village, especially those over the age of forty, between the ages of forty and sixty-five, with a list. I mean, I transport them to KETEMs. Well, the last time before the February 6 earthquake, I took about two hundred women. I mean, I took two hundred women to KETEM. And because of this, three of our women have been operated on right now. They are currently receiving their treatment, but think about it, two to three percent is a very big number." (K105, female, FMS, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Healthy Life Centre-Family Health Centre coordination:

Healthy life centres, which have been established in recent years and are increasing in number, are multidisciplinary health centres, and many of them also include a KETEM unit. Most of the physicians stated that they are satisfied with the opportunities offered by healthy life centres. The presence of mobile screening tools was also emphasized as an important service. However, some health professionals stated that the number of these centres and mobile vehicles is insufficient and that more centres and vehicles could increase screening rates.

"In the Healthy Life Centre, mammograms are taken, smears are collected, psychological counselling is offered—everything is available." (K118, female, SAHU, north, urban)

"KETEM operates under the name of the Health and Life Centre. It's excellent, and there's also a mobile unit. We even have a mobile vehicle." (K119, male, FPP, central, urban)

"I think there are very few of these. Because when it is accessible, even when passing by, sometimes patients may think that I came without an appointment, but let me go in, I am available now, I can have it done. I think the number of these should be increased." (K127, female, FMS, south, urban)

Nurse-Client/Women coordination:

Nurses are in closer contact with women registered at FHCs, as the majority of them are women. It was also emphasized that the younger female population can communicate more easily with nurses.

"Since we are in three units [family health units in the same ASM], we have about three hundred babies registered here. So we have a child population of close to a thousand. As such, we are very one-on-one with women." (K124, female, FHW, south, urban)

"The younger female population is closer to the nurse and feels more at ease communicating." (K117, male, FMS, north, rural)

2.2.3. Follow-up:

Directing women solely to breast cancer screenings is not sufficient; their results also need to be tracked.

The effect of the size of the registered population on the practice:

Family physicians and family health workers stated that the size of the dependent population makes it difficult to implement screening programmes. The number of patients per day is high due to the high number of patients under the care of a physician. It was emphasized that more educated population turn to private health services, but these processes are difficult to follow up and increase the workload of physicians.

"But the size of the population, due to this volume, isn't enough; the system doesn't suffice, the number of physicians doesn't suffice, and maybe the number of application units doesn't either." (K131, male, PFP, central, urban)

"When I sit here, I see two hundred or three hundred patients until the evening. If we do this, how can we do cancer screening, for example? We can't." (K137, male, PFP, west, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Populations are too high and it is hard to keep up." (K104, female, FMS, west, urban)

"Our fourth physician came later, a year ago. It was a zero unit. When the population was low, he started cancer screenings, all chronic disease follow-ups and so on. When the population was low. And his things are going full at the moment, you know, I have a population of 3400 and I haven't done half of them yet. Cancer screening, but it started at a low level and it is going very well at first, so I said that it can be done when the number of patients is low." (K96, female, FMS, west, urban)

System suitability for follow-up:

Multiple digital record systems are utilized within family health centres (ASM). These electronic systems allow for patient lists based on age, gender, and disease. Some systems even indicate missing screening information for patients. While family physicians acknowledge that the current systems are largely adequate for follow-up processes, they report some shortcomings. The system provides alerts on patients' screenings, yet tracking whether patients have completed the screenings or following up on results remains challenging for physicians.

"*In the chronic disease management system, we can already see things from there, but there is a monthly amount like how many we need to do, but in our Hızır system [the specific digital software], I can also show you as an example, when we open any patient [folder on the system], it warns us whether the patient is due HYP or FOBT.."* (K127, female, FMS, south, urban)

"I can't really follow up on whether it was advised or not." (K108, female, SAHU, west, urban)

"For example, we tell the patient to go and show it to general surgery or maybe to get a breast ultrasound. Our doctor checks those results, and if they haven't gone, we follow up and call again." (K108, female, SAHU, west, urban)

"It's a bit difficult to track whether it went or not. Now we can pull cervical screenings from the program. Whether they have been done or not. But you have to enter a separate number for mammography so that you can query it. That is a number given only to the patient. Therefore, we cannot question her collectively. We cannot track whether it has been done or not." (K118, female, SAHU, north, urban)

2.2.4. Communication:

Trust:

According to family physicians, establishing a relationship of trust with patients is essential for effective healthcare delivery. Once this trust is built, patients are more receptive to the physicians' recommendations, making them more willing to undergo suggested screenings and examinations. Physicians note that building this trust takes time, but once achieved, patients often view their family physicians as advisors.

"Here, for example, a family physician who is 6 months old is not easily trusted. Maybe 2–3 years should have passed. 'This is my family doctor. He/She knows these issues. I will not hesitate from him/her', then I think the citizens will have some examinations done." (K130, male, FMS, north, urban)

"A trust relationship will be established between us. Once this trust is there, they'll come to me and say they want me to oversee all their tests and checkups." (K109, male, FMS, west, urban)

"An environment [of trust] is created here. And, in this environment, there is serious trust [invested] in you. The patient goes for the surgery they need after I tell him to do so. When he is with the professor, [the patient] says I need to make a phone call. He is with the professor!

MARMARA ÜNİVERSİTESİ YAYINEVİ

What should I do, he [the patient] asks himself. Let me ask the family physician about this surgery, whether I should go forward with it? I tell them, don't pick up the phone to call [me, and try to explain] that's not how it works. We [the family physician] are as a serious counsellor here, as a family health co-unsellor. It's a very valuable thing." (K105, female, FMS, west, urban)

"[The patient says,] Oh, I will go if you say so. It's clear that it's a matter of trust, and it's mutual, reciprocated. You know, when I tell them to do something, they do it. And I mean, whatever I say. Very few people are resistant and those who are at a slightly lower [socio-economic] level, with them we can run into communication problems. But very rarely." (K125, female, PFP, south, urban)

"First, they need to trust us. In other words, the patient must first accept the doctor as a doctor. In primary care, doctors need to accept themselves as doctors to patients, not as clerks writing prescriptions. We need to do this first. When the patient believes in us, they listen to us. I mean, we see the effect of that in the clinic." (K120, male, SAHU, north, urban)

Client/Women-Healthcare Worker communication:

Family health workers (FHW) have noted that when they establish a close relationship with patients, particularly in providing health education to women, they are more effective. Continuous contact with women helps healthcare workers gain their trust, making it easier for patients to consult them even for minor issues, thereby increasing opportunities for early diagnosis. However, in certain rural areas, it has been challenging to build this rapport, especially in villages resistant to health services, where attempts to communicate have often proven unfruitful.

"When we, especially women [staff], including my nurse friends in family health, including me. When we show how to do it [BSE], when we give this form of training, when we show self-examination, when we give examples [of people with breast cancer] from our close environment... we become a sister, a daughter. Of course. Because they are constantly dealing with us [meaning they are the interface of the health system]. After that, they can come to us at the slightest thing and say, "Look, there is something on my right breast, have a look. Yes, I do. Some of them turned out to be good, some turned out to be bad. After that, I mean, really primary care is very, very important in this regard." (K135, female, FHW, west, rural)

"Family health workers generally have a closer relationship with patients, particularly through health education efforts." (K101, female, FMS, east, rural)

"We have one village in the countryside. It does not accept it in any way. I went there a lot and conducted trainings. There is also the sincerity of fourteen years. I used that sincerity a lot, I made speeches, but the village was closed to [not welcoming of/conservative towards] such things, even in the vaccination program, even in the pandemic. It is very 'closed to such things'. In fact, friends from KETEMs from the health department came. We went again with my friends at KETEM, and we begged again. But they don't want it in any way." (K135, female, FHW, west, rural)

Client/Women-Physician communication:

Family physicians and family health workers report that building strong communication with patients enables them to discuss not only medical but also social issues. Many patients, particularly women, prefer consulting their family physicians before making decisions, even if they have already received advice from a specialist. The shared community space and close working relationship foster trust, making patients view their physician as a part of their extended family. Patients who have been with the same family physician for years develop a family-like trust, which reinforces the weight given to their physician's recommendations..

MARMARA ÜNİVERSİTESİ YAYINEVİ

"After a while, you become part of the family. I've been here a long time. People start coming to share not just their health issues but family and social problems as well. They see me as a family member, and that makes family physicians unique, though it needs to be practically applied." (K110, male, PFP, east, urban)

"The good thing about family practice is that we have patients we've been seeing for 13 years. When we say 'sit,' they sit; when we say 'stand,' they stand. Our communication is excellent." (K98, female, midwife, west, urban)

"They see us as family, they listen to us—especially the regulars. Some go to specialists and still come back to ask our opinion. I tell them, 'Look, they're the specialist; what they advised is likely best,' but they still say, 'We just wanted to get your perspective.' This trust leads to positive outcomes most of the time, though there are always a few exceptions." (K135, female, FHW, west, rural)

2.3. Achieving targets:

Family physicians have observed that reaching screening targets varies significantly based on the socio-economic and educational levels of the population they serve. Physicians working with a more educated demographic, utilizing private healthcare, report greater success in achieving screening programme goals. Conversely, other physicians face challenges, with patients often not participating in screening programmes despite encouragement.

"Honestly, my population is more educated, and many of them have already done their smears, breast ultrasounds, or mammograms privately, often as part of a check-up. So, I reach my target as they tell me, 'Oh, doctor, I already do that regularly.'" (K96, female, FMS, west, urban)

"I try to direct patients as much as possible, but I know that they will not go [to get screened]. They don't go. I just can't seem to reach my target." (K103, female, FMS, east, urban)

"We can't fully meet our targets every month, to be honest. It just doesn't happen. We don't reach a hundred percent." (K96, female, FMS, west, urban)

3. Factors Affecting Breast Cancer Screenings

3.1. Workload in family medicine

The workload and the multiple responsibilities of family physicians are among the primary factors affecting breast cancer screenings. Additional duties such as paperwork, bureaucratic tasks, and reporting also shorten the time available for patient care.

3.1.1. The size of the registered population and patient load of family physicians

Family physicians report that high patient volumes and workload negatively impact preventive care and breast cancer screenings, with crowded patient schedules limiting time for these services. In family practices with smaller populations, screenings are conducted more efficiently.

"Our workload is really, extremely high. I mean, for example, there are days where a hundred patients show up. Sometimes, I forget to remind them due to the workload and the exhaustion, I cannot help it. But, I really think that the most important step in this business is the primary level [of healthcare]." (K103, female, FMS, east, urban)

"In a day's rotation, we have very little time for each patient. So if there's an acute issue, we're only able to address that immediately." (K117, male, FMS, north, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"In terms of daily workload, physician friends and nurse friends etc. are forgotten, of course, the priority is to solve the first complaint of the patient, then preventive medicine. If the necessary conditions are met, the patient density decreases, the population decreases, and transportation is facilitated, it could be a more appropriate system for patients." (K96, female, FMS, west, urban)

"In fact, what constitutes the main workload is the patient volume, you know, we see a lot of patients. When something like this happens, we cannot spare time for anything other than just taking care of patients, providing outpatient clinic services and examinations." (K106, male, FMS, south, urban)

"When it's busy, we can't really provide much information or guidance. We can only manage this during quieter times. Here, even though we're a small facility, we often see 40–50 patients a day because people in our area enjoy visiting the family health centre." (K128, female, FHW, east, rural)

3.1.2. The burden of other duties for which the family physician is responsible

The workload of family physicians is further increased by bureaucratic work and reporting. Work such as reports, prescriptions for cancer screening, appointment scheduling and health centre management reduce the time they have to spend on patient care. Some physicians stated that they were engaged in secretarial work and that bureaucratic procedures and correspondence took a lot of time.

"In multiple groups, we are asked to keep a tally of how many screenings we have done for breast cancer, cervical cancer and colon cancer, in monthly groups. This is also a hassle; doing it one by one." (K101, female, FMS, east, rural)

"On one hand, physicians attend to the other needs of a population of 3500-4000. On the other hand, they need to catch up with the bureaucratic side of it all. He/She will manage the ASM and, at the same time, try to do these cancer screening programmes effectively. I deem it very difficult." (K100, male, FMS, east, urban)

"In the past, patients could call KETEM directly to schedule their own screenings, but now only the family doctors can make these appointments. So we're handling appointment scheduling, which feels like secretarial work." (K96, female, FMS, west, urban)

"While I was examining my patient at work at 9:30 in the morning, there was something in my mind. I received a letter from EBYS, and today was the last day [to respond]. I have to write an answer today. Here is what was asked of me, I have to do it. Today is the last day of monthly reports. So it didn't come to my mind then or I want to finish the examination as soon as possible and focus on my other work." (K100, male, FMS, east, urban)

"They also say, well, do cancer screenings. What we're asking for isn't much. Just a certain number of screenings per day. Then someone else comes along and asks for all the data we've already sent whenever they feel like it. I already send it to you every month. But because they don't know how to pull it from the system, they ask for the data again, saying it has to be sent by such-and-such time. They want that data. Now, for example, let's say our only concern was cancer screenings. You'd do it really well because you'd focus on it. But that's not the case, is it?" (K99, male, PFP, east, urban)

"The bureaucratic burden in family medicine is significant. I spend much of my day replying to requests for statistics, legal inquiries, and reports—data that health centres, provincial health directorates, or public health offices could easily access. These routine reports are excessive and, frankly, unnecessary. In primary care, there's simply too much paperwork and related correspondence." (K100, male, FMS, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

3.1.3. Workload of family health workers:

It has been noted that the workload of family health workers (FHWs) is also high, making it challenging for them to fulfil their duties completely. The heavy workload of nurses limits their capacity to contribute effectively to screening programmes.

"In the end, when I tell my nurse to handle this too, I wouldn't want a response like 'I can't manage,' but if it's not possible, then it's not my fault either." (K108, female, SAHU, west, urban)

"Yes, the nurses have a lot on their plate." (K110, male, PFP, east, urban)

3.1.4. Factors affecting the functioning of family medicine:

Issues such as personnel shortages and difficulties in obtaining supplies negatively affect the operation of the family medicine system. Many family health centres report a shortage of Family Health Workers, particularly nurses, and some centres face material shortages. The physical layout of ASM (Family Health Centres) is also mentioned frequently, as a lack of sufficient space for patient privacy poses challenges in providing effective healthcare services.

Personnel shortage:

"Currently, many family physicians don't have Family Health Workers. Working in community health centres or district health directorates has become much more advantageous for nurses and midwives." (K100, male, FMS, east, urban)

"We have a serious shortage of nurses. There are nine physicians and only four nurses. Some doctors don't even have a nurse." (K115, male, SAHU, east, rural)

Material shortage:

"There can sometimes be issues with obtaining supplies from the directorates." (K117, male, FMS, north, rural)

"We don't have a shortage of supplies right now. We faced it at one point, but these things can happen." (K113, female, SAHU, central, urban)

Physical characteristics of the family health centre:

"If my nurse had a separate room to attend to patients, they could spend more time with them." (K104, female, FMS, west, urban)

"There's no possibility of a separate room here; two nurses share one room. For instance, one nurse may be attending to her patient, or there could be a male patient inside. Privacy issues can arise." (K141, female, FHW, north, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

3.2. Cultural/Regional characteristics

Cultural and regional factors affect participation in breast cancer screenings. Culturally, especially in rural areas, women tend to be reluctant about screenings like breast examinations, often preferring not to be alone during the exam. This reluctance can negatively impact their participation in screenings, even when recommended by physicians. In some regions, women only visit physicians when they have specific complaints, not utilizing preventive healthcare services sufficiently.

Regional differences also play a significant role. While access to healthcare services is easier in urban areas, women in rural areas face difficulties in reaching healthcare centres due to transportation challenges and social barriers. Factors such as not being allowed by their husbands or being burdened with household chores limit their participation in screenings. In urban areas, easier access to healthcare facilities increases participation in screening programmes.

Cultural characteristics:

Cultural factors, especially in places where the physicians are men, often prevent women without specific complaints from undergoing clinical breast exams.

"The nature of this society is clear. If I go through with it, even with good intentions, it could be misinterpreted. There's a cultural and social barrier here. If I say all women should come for an annual breast examination with me, it might cast a shadow over my intentions." (K110, male, PFP, east, urban)

"There are mostly cultural barriers, social and cultural ones. Patients don't think, 'I'll go to the doctor for an annual breast examination even if nothing's wrong.' They might want to do it if they understand its importance, but they'd need someone with them in the room for reassurance." (K115, male, SAHU, east, rural)

"Honestly, due to the cultural structure here, if there's no complaint, I can't bring it up. I wonder, 'What if I mention it? How will it be received?' A misunderstanding could happen. Even accusations of harassment could arise. So, you end up doing the examination only if there is a complaint." (K111, male, PFP, east, rural)

"When a cancer screening is mentioned, they say 'never mind, never mind that. You prescribe the medicine I want, I'll go out, I don't have time for that', and in fact they don't even want to put it on their agenda. When I tried to explain its importance, I saw that they usually ignored it. Women were still trying to get more services. But when we tried to provide these services, I even saw that they silenced me because it was not the service they wanted to receive. I mean, [they go as far as] the child won't stay put, so write [my prescription/report] and let me go. You see. I saw that society does not want to receive this service." (K101, female, FMS, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Regional characteristics:

Regional attitudes and behaviours impact women's participation in breast cancer screenings. In more educated areas, there are fewer barriers. However, in rural areas, women often do not prioritize their health, struggle to travel to health centres for screenings, and are restricted by farming and livestock duties or limitations on travelling alone.

"In İstanbul, people want to get their blood tested monthly. Here, you can't even get people to give blood once a year. Community here is very different. I think unmet health needs should be discussed on a regional basis." (K101, female, FMS, east, rural)

"Since this is a different area, you can even talk to the local imam here about encouraging their husbands to send them." (K103, female, FMS, east, urban)

"Rural women don't prioritize their health. Their husbands don't care much, so they don't care much either. This leads to postponing things [health checks] in rural women." (K116, female, FHW, east, rural)

"The rural area is remote; people can't easily go to hospitals, so they come to us for everything. The centre is not like a centre." (K134, female, FHW, east, urban)

"Women in the centre can go to the hospital or KETEM in five or ten minutes, while rural women can't. Husbands don't give permission, they say, 'You can't take the bus; you can't go to the centre.' And the woman will say, 'I have livestock; I can't leave them.' If she leaves, her husband might get angry. I say, why can women in the centre reach everything, but rural women can't? Our municipality and others try hard; they send buses to gather women, but still, there are many women who want to go but can't. If I could arrange a car for the village, maybe I'd gather all the women, but they still wouldn't want to go." (K135, female, FHW, west, rural)

"For example, I never experienced this in T...[name of location], or with certain tribes. If a patient refuses, we just submit the form but there is no follow-up from the directorate, nobody calls us back. But when I worked in Ş...[name of location] in 2015, if there was a vaccine refusal [case], the ASM staff—doctor, nurse—would go and talk to them. The directorate would send a team to visit their homes to try to convince them." (K142, male, PFP, north, rural)

"People living along the coast seem more open-minded. Here, as the average age decreases, the belief in it increases." (K142, male, PFP, north, rural)

"Transportation is critical. For example, in A...[name of location], someone can walk to the district health centre in 10–15 minutes and get screened with KETEM. There, neighbours see each other going, and it becomes a norm. But in O...[name of location], I'm 15 km away, I need a vehicle, have to schedule the patient, and arrange KETEM transport. Women face big issues: telling their husbands they need a ride and an exam. If she mentions this, he might say, 'Is there something wrong? No? Then why are you going?'" (K142, male, PFP, north, rural)

"It's regionally different. In Ş...[name of location], I worked in a village with a population of two thousand, all in one neighbourhood. Just by calling one person, you could easily reach others. But here, people live scattered, so gathering everyone together or reaching them is more challenging." (K142, male, PFP, north, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

3.3. Barriers and motivating factors

Women's reluctance to get mammograms stems from various barriers. These include a lack of knowledge, cultural and gender-based privacy concerns, fear of the results, difficulty in accessing healthcare services, spousal restrictions, transportation problems, and the lengthy process of scheduling appointments. Additionally, many women do not see the need for screenings unless they have symptoms, or they harbour fears based on misinformation regarding mammograms. Women in rural areas, in particular, face obstacles such as economic constraints, lack of spousal permission, and daily life responsibilities that make getting mammograms challenging. Privacy concerns become a more prominent issue during breast exams conducted by male physicians.

However, certain factors do encourage women to get mammograms. Women with higher levels of education and better socioeconomic status show more interest in health screenings. Especially among informed individuals, it was noted that they are consistent with routine health checks.

Barriers to women getting mammograms:

Interviews with family physicians and family health workers revealed that barriers for women included "lack of awareness, cultural differences, gender, privacy, fear of results, not getting screenings unless symptomatic, inability to go alone, some women never visiting the family health centre, desire to finish quickly and leave, preference for services to be customized, fear that something might be found, neglect of self-care, lack of access to services, transportation, spousal pressure, delayed appointments, delayed results, forgetfulness, unwillingness to learn, lack of information, reluctance to receive services, and misinformation (especially from the internet)" as obstacles to mammography.

"There are some who say they're afraid of the smear, or that the mammogram hurts, though this is rare." (K96, female, FMS, west, urban)

"In the periphery, transportation is the main difficulty. And for cultural or educational reasons, they may not be able to go due to financial reasons. Financial constraints may be connected with transportation. So, the woman may not be able to go alone, her husband won't take her, or she may not have the money." (K97, male, PFP, west, urban)

"People aren't concerned about their health until they have symptoms. I try to explain that it's essential to catch these things beforehand, but unfortunately, most people don't get screened until something happens." (K100, male, FMS, east, urban)

"In general, there's fear. There is no other reason. The women I encounter are afraid that something will come up." (K102, male, PFP, central, urban)

"They don't allocate the time. They may think, 'What benefit is there for me? Why should I go?' Or perhaps their husbands don't allow it." (K103, female, FMS, east, urban)

"There's also a privacy issue in our practice—patients feel embarrassed. It's more common with smears, but there's also shyness in breast cancer screenings. For example, if I tell a woman, 'Come in, I'll perform a clinical breast exam,' it's difficult, especially as a male doctor. My wife works in the same family health centre, so sometimes I direct them to her when they feel uncomfortable." (K114, male, SAHU, central, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"First, there is a strange fear of being sick. I mean, there is the idea that even if I have a disease, I should not know about it. I don't know how to express it, but I think there is a desire not to find out about a bad situation in our society. Secondly, 'breast' is an organ that is perceived as private and shamed by women. Thirdly, laziness, workloads, the hustle and bustle of daily life, [need to find] with whom to leave the children, the fields, vineyards and gardens, the shop, women…'" (K114, male, SAHU, central, rural)

"Convincing patients to get a mammogram can be challenging. They think mammograms are painful, and there's also this misconception that it exposes them to too much radiation. They're afraid of the risks of repeating it every two years, and unfortunately, they find misinformation online. There can be a difficulty in that regard. In other words, we may have some difficulties in persuading the patient to get a mammogram." (K136, female, PFP, south, urban)

"The fact that it's free of charge actually works against us. People tend to think it has little value because it's free." (K142, male, PFP, north, rural)

Motivators for women getting mammograms:

In-depth interviews with family physicians and family health workers revealed that women who get mammograms are driven by "being educated, having a good economic situation, breastfeeding, being aware, and feeling pressured."

"My patient population is a bit more educated, and some go to private clinics for their screenings. They already get their smears, breast ultrasounds, or mammograms during check-ups." (K96, female, FMS, west, urban)

"When serving a socio-economically well-off population, people show interest and want to get screenings done when I explain the importance of screenings for all three types of cancer." (K101, female F, FMS, east, rural)

"In our centre, we have knowledgeable patients. Many go for their annual check-ups on their own, without us having to remind them." (K125, female, PFP, south, urban)

"I try to give information, especially to women who are breastfeeding. They're more open to communicating with us and receptive." (K128, female, FHW, east, rural)

3.4. Gender perception:

Family physicians, especially male physicians, express that they avoid performing breast examinations and find it challenging to approach female patients on this topic. Male physicians prefer to conduct breast examinations with a nurse present or to refer the patient to a female healthcare provider due to concerns about misunderstandings and cultural sensitivities. Cultural and societal norms make it difficult for male physicians to address more intimate health matters with female patients. Furthermore, many women tend to place their health as a low priority and prefer to communicate with female physicians or nurses. This shyness emerges as a significant barrier, particularly for breast examinations. Male physicians feel that their efforts to call women to the family health centre (ASM) for screening-related breast examinations may lead to misunderstandings within the community. However, they indicate that they do perform examinations if the woman has a complaint related to her breast.

"I think a group of family doctors, especially men, can't even raise this topic with women." (K101, female, FMS, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"I haven't encountered outright resistance when bringing it up with patients, since they're part of my regular population, and I see them all the time. I don't want to leave a negative impression because it's not just them but also their spouse, friends, and everyone in their network. To avoid misunderstandings, I feel hesitant. And we don't always have a female nurse available to assist with a breast exam." (K107, male, FMS, west, urban)

"I've worked here for 10 years, so I've become close with my patients. Because of the cultural context here, female patients often feel uncomfortable expressing their complaints to a male doctor or someone they know quite well." (K111, male, PFP, east, rural)

"A male doctor with a female nurse is more active in delivering cancer screening information and preventive healthcare services." (K101, female, FMS, east, rural)

"There's shyness here. If I were a woman, they'd come." (K100, male, FMS, east, urban)

"We tell them to come in if there's a problem, but the structure of society is clear. My intentions could be misconstrued if I were to routinely perform breast exams. I avoid doing it for this reason. There's a cultural and social barrier here. If I said, 'All women should come in every year for a breast exam,' it could cast a shadow over my intentions." (K110, male, PFP, east, urban)

3.5. Impact of the pandemic/earthquake:

Following the earthquakes on February 6, 2023, breast cancer screening activities faced disruptions. Family physicians and family health workers in the earthquake-affected areas reported that they were unable to remain active in screening activities due to working in temporary locations. Some health centres were destroyed or closed, leading to the provision of healthcare in tents or containers, which relegated screening programmes to a lower priority. Additionally, earthquake survivors showed resistance to screenings, expressing sentiments like "I lost everything in the earthquake; am I going to get cancer screening now?" Inconsistent transportation from KETEM and travel difficulties further complicated the screening process..

Impact of the earthquake:

After the earthquakes on February 6, 2023, both physicians and family health workers noted significant disruptions in breast cancer screenings. Structural damage to KETEM and family health centres (ASM) affected their ability to continue services under the same conditions as before.

"We are not in our active location. We are currently far from our neighbourhood in a temporary spot, so we're distant from our community." (K94, female, FHW, south, rural)

"Our location here was destroyed, so we are in a temporary place now. We aren't as active, but we still inform patients when they request appointments." (K94, female, FHW, south, rural)

"They used to send a vehicle from KETEM, but now it's inconsistent. Convincing the community is already difficult." (K99, male, PFP, east, urban)

"Some family physicians have left, and those who stayed are covering for them. Even with a reduced population, it's still crowded. Some family health units are closed, especially those located in lower buildings. They're now providing services in tents, containers, and temporary settings. With this arrangement, regular operations continue, but all screening programmes are on hold." (K99, male, PFP, east, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"We have already developed resistance to screening, and the earthquake... I mean, now we have tried cancer screening, we said whether we should do it or not, the cervix... no, we were convincing [women to get] the cervix [screening] by force anyway. The patients say I don't have a vehicle, they say I lost everything in the earthquake. They say, "Am I going to get cancer screening among all these problems?" (K126, male, PFP, south, rural)

Impact of the pandemic:

Participants stated that the pandemic period had a negative impact on breast cancer screening programmes and that participation in screening programmes decreased. It was stated that before the pandemic, vehicles regularly transferred patients for screening and more people participated in screening programmes. During the pandemic, there were gaps in screening activities, patients' participation decreased, and the workload of nurses increased with new health platforms (DMP). After the pandemic, screening activities became more passive and started to be carried out through spontaneous applicants.

"Before the pandemic, patients were talking about it here. Every week, every two weeks or so, a vehicle would come here to the district health directorate and transport people to the cancer screening centres from here, you know, cancer screenings were carried out there, and what the doctors said at that time and what I heard from the patients, they say that the screening was really much better in those periods, the rates were higher.." (K107, male, FMS, west, urban)

"With the pandemic, there was a gap. Then the Disease Management Platform (HYP) started, which increased the workload of nurses. So we said, let KETEM handle it, and we'll just refer people. We aren't actively doing it now, but we have a designated space and desk." (K112, female, FMS, central, urban)

"Due to the pandemic... Screenings were more rigorous before the pandemics. But afterwards, things started to get done only for patients who showed up at their own will. It's the same for all the [screening] programmes." (K120, male, SAHU, north, urban)

4. Recommendations

Family physicians and family health workers (FHW) have provided numerous suggestions to increase breast cancer screening participation rates. These suggestions, when evaluated collectively, can be grouped under several main headings. Some recommendations are system-related and require decisions from policymakers. Others are more general, encompassing actions that both official and non-governmental organisations can implement through social media and broadcasting channels. These suggestions include raising awareness, improving health literacy, providing public education, and delivering public service announcements via mainstream channels. In-service training recommendations for healthcare providers also emerge as a significant group of proposals.

4.1. Recommendations for policymakers (system-related)

Family physicians and family health workers have suggested various improvements for breast cancer screening and healthcare services.

MARMARA ÜNİVERSİTESİ YAYINEVİ

4.1.1. System renewal

A more efficient system is needed to integrate mammogram results and cancer screening data, making it easier to track. The current system is seen as slow, and the reporting processes need to be more effective.

"That's why I think there needs to be a system where we can spend more time with patients, especially given the high patient volumes." (K102, male, PFP, central, urban)

"It seems like it could be easily fixed if there were a reporting system where we could access the results directly, which would make tracking much better." (K119, male, PFP, central, urban)

"We can see mammograms on e-nabız [national health portal], but we don't have any integrated system for mammogram results." (K129, female, PFP, south, urban)

"Cancer screening data isn't uploaded to our system. When someone goes to an OB-GYN for a smear, unfortunately, we can't merge it with our cancer screening system. We can't see it." (K105, female, FMS, west, urban)

4.1.2. Reducing the registered population of family physicians

It was emphasized that high population rates increase the workload on family physicians and that working with a smaller population would improve both preventive medicine practices and cancer screening services.

"If the number of patients I see or the number of patients registered were lower, I could ideally carry out cancer screenings and other preventive health tasks." (K96, female, FPS, west, urban)

"When patient numbers drop, the quality of service improves because there's less congestion. When the number of people who come as patients decreases, the quality of the service increases. Inevitably, we are able to prioritize preventive health services." (K101, female, FMS, east, rural)

"Reducing the patient load is essential because reaching so many people isn't easy. High patient numbers also mean high clinic visits, which affects the quality of time spent with each patient." (K138, female, FMS, west, urban)

4.1.3. Revising the pay-for-performance system of the family physician system

The pay-for-performance system is seen as essential for encouraging family physicians. Including cancer screenings in this system with both financial and non-financial rewards is recommended.

"We call for vaccinations because of the performance incentives. There's a financial penalty tied to it." (K97, male, PFP, west, urban)

"Our priority should be these screenings. Right now, these screenings fall behind clinic duties and paperwork. Maybe performance incentives should be higher for these screenings." (K121, male, SAHU, north, rural)

"It could be included in the performance [pay for performance]. We're currently penalized for not doing baby vaccinations or prenatal checkups, so cancer screenings could be part of performance too." (K98, female, midwife, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Both physician, midwife and patient. I don't know what the method of this is, because this is how the person's thing works. It works with the method of rewarding. There can also be [pay-for-] performance. For example, health personnel are given performance. Performance can be applied to this in the same way as it is applied to vaccination." (K97, male, PFP, west, urban)

"It should be included in the performance system, but family physicians' workload should be reduced simultaneously." (K103, female, FPS, east, urban)

4.1.4. Meeting the need for additional healthcare personnel

Family health centres often face staffing shortages, especially regarding nurses. A lack of sufficient healthcare personnel negatively affects service quality and scope.

Family health centres need to increase nurse hours and perhaps even provide extra nurse shifts." (K110, male, PFP, east, urban)

"If we want to move from curative to preventive healthcare, we need more staff support. Family health centres need to be staffed appropriately, patient loads adjusted, and doctors should undergo periodic training. There will be exams, maybe once a year. They will have points, maybe they will have money. I think it can be solved in a complex way." (K97, male, PFP, west, urban)

4.1.5. Implementing some sanctions

There's a call for sanctions for individuals who avoid screenings, arguing that the responsibility of following up on one's health should not fall solely on physicians. People need to take responsibility for their health.

"I should have some authority to say, 'Why wasn't this done?' if it wasn't completed. I can't handle this on my own." (K108, female, SAHU, west, urban)

"I find it unfair that when people do not want to receive the service, the penalty for this is not imposed on the patient in any way, and that the doctor is responsible for the lack of effort to protect one's own health." (K101, female, FMS, east, rural)

"People should also learn to monitor their health. If they haven't done certain screenings, there should be a system or penalty in place." (K139, female, PFP, west, rural)

4.2. Recommendations related to training

Training for both the public and healthcare providers is crucial for increasing the effectiveness of breast cancer screening programmes. The lack of sufficient information about mammography among women negatively affects screening participation. Therefore, enhancing health literacy, raising awareness through public service announcements, educational materials, and media or social media is emphasized. Participants noted that more visible and accessible public service announcements and educational content would help normalize the process and dispel misconceptions.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Additionally, it has been suggested that in-service training for healthcare providers should be increased regularly. Face-to-face training sessions can boost healthcare professionals' motivation, promoting more active participation in screening programmes. Strengthening educational initiatives for both the public and healthcare providers will play a critical role in the success of breast cancer screening programmes.

4.2.1. Recommendations for public

Increasing awareness:

"We explain it, but visual awareness is more impactful, creating greater awareness." (K125, female, PFP, south, urban)

"Television reaches a broad audience, and so does social media. With this awareness, it could perhaps be more normalized. Right now, mammography, or breast imaging, seems a bit private or seen as something sensitive. It could be made more ordinary." (K122, male, SAHU, north, rural)

"Patients don't develop awareness unless it happens to them or someone close to them. So, as I said, we need to bring this awareness to the forefront." (K122, male, SAHU, north, rural)

"If the sensitivity of the citizens [e.g. gender issues, regional-cultural barriers etc.] are eliminated, problems are solved [screening participation problems will also be resolved]. [Because] Anyone can get checked here. Anyone can reach them [the services]. If they are not aware of it, awareness is somehow created when they come to the ASM. There are television programmes. There is also the sensitivity of people to protect their own health. So, I think, when these come together, I think we [can] achieve success above the average." (K97, male, PFP, west, urban)

Increasing health literacy:

"I think increasing health literacy is important because, frankly, I don't want to spend my time convincing people." (K100, male, FMS, east, urban)

"Increasing health literacy contributes. Gains in health depend on improving people's perception of health." (K101, female, FMS, east, rural)

"The population here is more health-conscious, with higher health literacy levels, so generally, they're less resistant on these topics." (K107, male, FMS, west, urban)

Organizing public education programmes:

"When family health centres first opened, they weren't very effective. We gradually familiarized patients, public health centres provided informative brochures, supported us, and explained the importance." (K102, male, PFP, central, urban)

"There are signs, banners, advertisements everywhere, even billboards asking, 'Have you had your breast exam?" (K125, female, PFP, south, urban)

"I think our information efforts are helping patients become more aware over time." (K140, male, PFP, east, urban)

"Public health education meetings can be organised in community health centres." (K111, male, PFP, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Creating public service announcements:

"I think public service announcements could help break through these barriers. Effective information in these announcements could make a difference." (K100, male, FMS, east, urban)

"Direct public service announcements would be effective, like reminders on national televisions to get screenings. Maybe the best approach is to assign individual responsibility to each patient. This is how it's reportedly done abroad; we even have patients who tell us, 'I have to get my screening or my health insurance or government won't cover me.'" (K113, female, SAHU, central, urban)

"Public service announcements should be broadcast on the most-watched channels, ideally featuring community leaders or role models." (K100, male, FMS, east, urban)

4.2.2. Recommendations for all healthcare providers:

"More frequent training sessions would help if these could regularly remind us..." (K98, female, midwife, west, urban)

"In-person training is beneficial. Internal professional trainings, where everyone gathers, shares ideas, and participates in Q&A [question and answer], are more motivating. But when the training is integrated into the system, we just go through it out of necessity." (K98, female, midwife, west, urban)

"Proper, thorough in-service training is needed. Sometimes the health directorate organises training, but they just give someone a pre-made presentation to read through, which feels insincere. But at a conference, for example, a topic on cancer screening might be presented by a renowned surgeon, and it sticks in your mind. You take it more seriously. Meaningful, well-conducted in-service training helps keep the motivation alive." (K99, male, PFP, east, urban)

D. RESULTS FROM KETEM HEALTHCARE PERSONNEL:

In Türkiye, all KETEMs provide free screening exams and tests for three types of cancer. The workflow in KETEMs typically begins with taking an anamnesis from each woman who visits the centre. Pregnancy and breastfeeding history are usually asked; however, menstrual status is often not inquired. Some centres do ask women about their menstrual cycle and inform them that this period may be more painful if relevant. Nevertheless, nearly all centres avoid asking these questions to avoid deterring visitors. Additionally, some women are not asked due to being in menopause.

Generally, healthcare personnel other than physicians do not perform breast exams at KETEMs. However, at one centre, healthcare personnel rotate monthly to ensure that everyone is familiar with each task, maintaining continuity of services. When the KETEM physician performs a clinical breast examination (CBE), they are also expected to instruct women on self-breast examinations. In some KETEMs, the absence of a physician or lack of training in CBE among healthcare personnel leads to some women being sent for imaging without a prior CBE. Other centres conduct a CBE first and provide training on self-breast examinations if necessary. If the woman meets the eligibility criteria (age range per the Ministry of Health's screening guidelines), she is scheduled for imaging that day or on an appointed day. In cases where a mammography machine is unavailable, women are directed to a district state hospital.

In two of the regions visited for this research, KETEMs did not have a service building, and could only perform cancer screenings using mobile units. Cancer screening activities are ongoing within District Health Directorates (ISMs), but these centres lack mammography equipment. Women are referred to district hospitals for mammograms if equipment is available there.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Only one KETEM in the sample (located in Western rural) accepts patients by appointment only, while all other centres accept both appointments and walk-ins. Healthcare personnel generally attempt to conduct screenings the same day; if particularly busy, they may schedule appointments for another day within the week. Women are seldom turned away to ensure no opportunity is missed.

KETEMs in the Western and Central regions report being busier in the winter, while those in the Northern-Rural and Eastern-Rural regions experience higher activity in the summer when people return to their hometowns for holidays, visits, or work.

All KETEMs offer mobile services. However, since KETEMs do not have dedicated mobile mammography trucks, screenings are performed in remote districts or villages upon request, using trucks provided by the province. KETEM healthcare personnel note that while mobile services increase accessibility, they are not ideal due to reduced screening quality and privacy issues. Additionally, a District Health Directorate (ISM) personnel in the Southern rural area highlighted the challenging working conditions associated with mobile services, such as working in the winter without heaters, difficulties finding a place to eat during long work hours, and challenges in record-keeping due to limited access to electricity and internet. All participants agreed that screenings should ideally be conducted in KETEMs. To overcome transportation barriers, ISMs also use transport vehicles to bring women from family health centres to KETEMs for mammograms.

KETEMs are generally located within Healthy Life Centres (SHM). Although KETEMs have separate signs, these signs are not always prominently displayed in SHMs. Access to KETEMs is typically through the side or back of the building, and centres operating within ISMs do not have a dedicated building or signage.

Table B.10: Features of KETEMs.

Region	Residence	City	Location	Clinical Breast Examination Services	Mammography Services
West	Urban	İstanbul	HLC	No	Yes
	Rural	Kırklareli	HLC	Yes	Yes
Central	Urban	Ankara	HLC	Yes	Yes
	Rural	Çorum	DHD	No	No
East	Urban	Kars	HLC	No	Yes
	Rural	Bayburt	HLC	No	No
South	Urban	Antalya	HLC	Yes	Yes
	Rural	Burdur	DHD	No	No
North	Urban	Samsun	HLC	Yes	Yes
	Rural	Gümüşhane	HLC	No	Yes

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table B.11: List of the main themes and sub-themes obtained in the analysis of KETEM healthcare personnel.

Main Theme	Sub-Themes
1. KETEM healthcare personnel's views on the breast cancer screening program	1.1. Accessibility and ease of screening services 1.2. Quality and reliability of screening services 1.3. Women's satisfaction with KETEM services 1.4. Women's education and awareness 1.5. Systemic shortcomings
2. Motivators and barriers for KETEM healthcare personnel in the breast cancer screening program	2.1. Personnel motivation and teamwork 2.2. Training and professional development of health workers' 2.3. Personnel issues 2.4. Regional and cultural barriers 2.5. Attitudes and behaviours of health workers
3. KETEM healthcare personnel's suggestions regarding the breast cancer screening program	3.1. Systemic and technological improvements 3.2. Increasing public education and awareness 3.3. Personnel management 3.4. Physicians' referrals for women's screenings

1. KETEM Healthcare Personnel's Views on the Breast Cancer Screening Program

1.1. Accessibility and ease of screening services:

The most frequently mentioned views on the breast cancer screening programme by KETEM healthcare personnel stated that the service provided at KETEM is free and accessible. Only one participant believed that being free might devalue the service.

"It is very valuable to be free, to be among the people, and to be accessible." (K151, south, urban)

"The fact that mammograms are free and accessible. It's also very important that the health directorate and public health centres help those who can't come." (K154, north, rural)

"In my opinion, being free sometimes reduces rather than increases these screenings. It devalues them." (K147, central, urban)

"They prefer us because we are more accessible." (K147, central, urban)

Participants, particularly in rural areas, stated that women who apply to KETEM and meet the necessary criteria can receive services. They also emphasized that screening services at KETEM are faster than those provided in hospitals.

"Since we are a small city, if they meet the criteria, we take them immediately; we try not to send them back." (K154, north, rural)

"To avoid any inconvenience, we take the women who apply on the same day. In summer, we can accommodate them within the day or one to two days. In winter, the maximum is 10 days." (K145, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"At a hospital, they gave an appointment for a mammogram six months later. Then the person does some research and somehow hears that things move faster with us, at least I'll get my CD, get the image, and take it to a surgeon. Because we really operate faster than hospitals." (K145, west, urban)

One KETEM healthcare worker emphasized central location of a KETEM has an on its public use:

"It used to be in a central location. When we moved here, our patient [clients] numbers dropped." (K154, north, rural)

KETEM also provides services through mobile units or transport vehicles. Due to the country's geographical and cultural structure, access to healthcare is particularly challenging in rural areas. Screening services are conducted either by reaching regions where transportation is difficult or by facilitating women's transport to KETEMs. One participant emphasized that transporting women to the centre may be more beneficial than mobile services. Another participant (south, rural) mentioned conducting the breast cancer screening programme through mobile services but noted that physical conditions (heating, food, internet, and electricity issues) make service delivery challenging.

"Support services rent the minibus. It's been around for a few years now, maybe five years. We arrange our days by coordinating ourselves." (K146, west, rural)

"There are other provinces too, but there are women in V... [name of location] who have never come down to the centre. Such people exist, and it seems very far to us, but it's real. Those mobile vehicles are very valuable there." (K153, north, urban)

"They come in groups; KETEM has a vehicle that brings women from remote areas. They register women from remote areas and ASM and bring them to us." (K147, central, urban)

"We even set up a transport system. We arrange for women to come here. There is also a screening vehicle from the cancer department." (K151, south, urban)

"We're fortunate in our district; we have a mammogram machine in our hospital. We direct our patients there, and if necessary, we transport women from villages using our own vehicle to the state hospital, where they can get their mammograms the same day." (K148, central, rural)

1.2. Quality and reliability of screening services

KETEM personnel view the cancer screening programme as high-quality and continuously updated. They emphasized that KETEMs use quality equipment, conduct double-blind readings, and employ qualified healthcare personnel.

"It is a screening programme that is constantly developing in terms of age limits and the quality of tests performed, improving itself in every way from the time it started." (K153, north, urban)

"Our old machines [mammography] were quite painful. Now, the new machines are much less painful. They are great and don't emit much radiation either." (K154, north, rural)

"The quality, the way it's done, and the equipment we use has improved significantly. From the beginning, we've used good machines, which have always set us apart. That's why breast cancer screening is such a valuable screening."(K153, north, urban)

"The double-blind evaluation is fantastic." (K153, north, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Additionally, one centre mentioned that artificial intelligence is now being used in reporting, noting this as a positive development.

"You witnessed it today as an example. Over the last 2-3 months, we have transitioned to reporting with artificial intelligence, and it's progressing faster." (K147, central, urban)

One participant highlighted that the programme aligns with WHO recommendations, emphasizing its importance:

"It's also valuable that it's conducted in accordance with the World Health Organization's recommendations." (K151, south, urban)

Before this study, delays in mammography reporting occurred nationwide, leading to diagnostic delays and mistrust among women.

"There were long-standing issues with mammograms, which caused us a lot of trouble. The films weren't read on time. We informed some women of their cancer six months later." (K151, south, urban)

"There are some patient-related issues. For example, not many patients apply to KETEM, and the results take a while, which is also a problem." (K150, east, rural)

"There is an issue with results [mammography reports]... the length of the process brings us to this point." (K154, north, rural)

"After the pandemic, the delays in reporting results, and the prolonged process affected our efforts, let's say. The trust aspect, the length of the process, our returns were all impacted..." (K153, north, urban)

"It's better now, but the mistrust remains, and its affected patients and those who applied to us. Many said they no longer want to have it done here, and I doubt they'll return. News like this spreads." (K151, south, urban)

"At KETEM, reports can take 1-2 months, which can be problematic. We got responses like, 'we trusted KETEM; how could this happen?' and citizens expressed this." (K153, north, urban)

1.3. Women's satisfaction with KETEM services

Some KETEM personnel noted that women appreciate the cleanliness of KETEM facilities and the positive approach of its staff. It is believed that women's satisfaction with KETEM affects their participation in screenings.

"Indeed, satisfaction is very important. In fact, we still have patients coming from that period." (K153, north, urban)

"When I went, the centre was so bright and beautiful. It's positive; sometimes it's supported by other positive aspects." (K153, north, urban)

"They learn that such places exist. Like, 'I went to such a place and was really satisfied.' So, more awareness leads to a higher chance of women coming." (K145, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

1.4. Women's education and awareness

All KETEM personnel mentioned the training organised within KETEM. Women's knowledge and awareness about breast cancer are significantly increased through institutional training, public education, or events held in public spaces. During the training, BSE (breast self-examination) and CBE (clinical breast examination) are explained and demonstrated.

"Quran courses, public education courses, sewing courses, courses offered by municipalities. We organise training sessions wherever we can reach the public." (K151, south, urban)

"When they come here, or when we go to these training sessions, we provide education on breast self-examination." (K148, central, rural)

"We go to the training sessions with a doctor, and they also demonstrate the manual examination [BSE]." (K154, north, rural)

In the northern region, KETEM staff mentioned forming a women's marching band to raise awareness:

"Thanks to Ms. Doctor's leadership, we formed a marching band as female healthcare workers to create awareness." (K153, north, urban)

They emphasized that awareness among women increases after training and noted that the new generation includes more informed women. In rural areas with lower literacy rates, women's awareness and knowledge are assessed as insufficient, whereas in urban areas, more knowledgeable women have greater awareness. They also observed an increase in conscious women in changing rural communities.

"When we raise awareness about why one should go to KETEM, the interest and the demand increase. They come more often." (K147, central, urban)

"The public here is very reserved, really, and culturally, they are not knowledgeable. I don't want to say they are ignorant. They just don't know." (K150, east, rural)

In rural areas, announcements are made before training or screening services to inform women.

"When we realize that we might not reach our performance targets, we request it every three weeks, and they make announcements." (K148, central, rural)

KETEM personnel also mentioned that women hear about KETEM from each other or through the media.

"There are many events, as you know; they hear about it from the media or friends. Most often, they are influenced by friends and come." (K147, central, urban)

"They hear about it from others." (K151, south, urban)

"Most people come on their own after hearing from others, it works like a chain. And once they learn from someone else, they come more confidently." (K145, west, urban)

"We have field activities like handing out brochures or setting up booths, and these provide significant guidance." (K145, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

While public knowledge about the cancer screening programme and KETEMs is generally evaluated as weak, it is also noted that other healthcare workers are not familiar with KETEMs.

"There is a serious lack of health literacy. I think public health is very inadequate in this regard." (K151, south, urban)

"I don't think enough promotion is done for KETEMs." (K147, central, urban)

"Even doctors don't know, and think of rural areas. People in rural areas go straight to hospitals." (K147, central, urban)

"There are so many people in the community who have no idea what they do, like district health or SHM. Nobody knows what public health workers do." (K151, south, urban)

1.5. Systemic shortcomings:

Due to the lack of an adequate and properly functioning integrated system, screenings at KETEMs rely on women's personal declarations. Screenings conducted at hospitals or KETEMs cannot be viewed across different institutions, as there is no shared system. This sometimes leads to screenings being repeated at intervals shorter than the recommended two years. Additionally, KETEM personnel mentioned that follow-up for diagnosis or treatment of women cannot be conducted at KETEMs.

"She may have had it done a month ago or even just a week ago and says, 'I'll have it done here too,' but even in two major hospitals, when you enter one, you can't see the ultrasound result from the other." (K153, north, urban)

"The fact that results doesn't automatically show up in the system wears us out a bit. We can't enter the results into the system. We're seen as having referred the patient, but we can't enter her results just yet." (K148, central, rural)

Women with suspicious results from screenings at KETEM are directly referred to the responsible KETEM contact at hospitals, where further diagnostic procedures are expedited. However, in some hospitals, appointment delays occur due to high demand, which can result in diagnostic delays.

"Appointments can still be delayed due to the hospitals' excessive workload. But when we refer them from KETEM, we send them with their address, phone number, and referral form to those diagnostic centres." (K147, central, urban)

"We create an entry, then schedule an appointment and send the patient to the hospital. Our hospital has a quota of 20 patients per day, so we can send up to 20 patients a day... When we refer them, they can get screened the same day as a priority." (K148, central, rural)

"Our patients can be seen right away without an appointment. We issue a referral form, and they can be seen." (K150, east, rural)

"We make a referral, and there is an oncology unit at the hospital through our mediation. We send them directly there. The nurses there can access it; there is a cancer diagnosis centre." (K154, north, rural)

"A patient coming from KETEM was previously accepted as having made progress in the process. But now that's not the case... They go there and can't find the doctor. Even if they find the doctor, they get an ultrasound appointment month later, at least three months." (K153, north, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Furthermore, the appointment system used by family physicians was noted as not user-friendly, causing challenges in scheduling appointments and accessing screening services.

"The family physician said the KETEM appointment system wasn't user-friendly. The family physician has to search each day individually to find an available slot, and they see it as a waste of time, so they rarely use it." (K146, west, rural)

2. Motivators and Barriers for KETEM Healthcare Personnel in the Breast Cancer Screening Program

2.1. Personnel motivation and teamwork:

A team-based approach is maintained at each KETEM. KETEM personnel express that they work with great dedication and value the work they do. They view their role in the cancer screening programme as a "voluntary task." The opportunity to make an impact on women's lives motivates healthcare workers.

"We're doing well here, I think. I believe we're a good team. We trust each other. We speak kindly, and as they say here, we're all 'sweet-talking' and bring patients in that way." (K150, east, rural)

"Our doctors follow up daily on these patients' results, tracking who has and hasn't received their results." (K147, central, urban)

"We genuinely come to work with love. We do it from the heart. It truly makes us happy if we can make a difference to even one person." (K153, North, Urban)

"KETEM work is voluntary... Touching these people's lives, I guess I'm a bit on the emotional side of it. I really enjoy making an impact on their lives." (K151, south, urban)

However, delays in results, the inability to refer patients directly to a surgeon, or the lack of prioritization for referred patients dampen KETEM personnel's motivation.

"As a physician, I write a note, send something to the surgeon, indicating a suspicious finding or something, yet they still get an ultrasound appointment three months later." (K151, south, urban)

KETEM personnel reported feeling pressured to reach target populations. However, due to the country's demographic variations, population sizes in regions fluctuate— for instance; the population in eastern regions is often lower than anticipated during winter, which decreases motivation for service provision. At one KETEM, staff noted they were required to call women individually to invite them for screenings, expressing dissatisfaction with this responsibility.

"Our biggest issue with these target rates, we've experienced it with vaccinations as well. The rates are based on registered addresses. The numbers come from there. At least half of the people registered at these addresses aren't even here." (K154, north, rural)

"We always exceed 50% of our target, but I can't remember a time we reached 100%." (K148, central, rural)

"I mean, we hold public education sessions and make announcements, but then we have to call people individually like salesmen. Whether it's a call from us or a water purifier company, it sometimes makes me feel like a telemarketer." (K151, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

2.2. Training and professional development of healthcare workers

The importance of in-service training for healthcare providers was emphasized. One KETEM mentioned that, in the past, in-service training sessions were held for healthcare workers, which were very beneficial. Another participant noted the positive impact of specialized training in family medicine. The lack of training for KETEM personnel, however, poses a barrier to effective service delivery. In most KETEMs, nurses do not play an active role in breast cancer screening. One participant cited inadequate training as the reason for not performing breast examinations (CBE).

"I came to KETEM without knowing what it was. We heard from people around us about its role, and without knowing what a breast examination is or how it's done, we got into this work. That's why in-person training or meetings are so beneficial; they make you feel like a hero." (K153, north, urban)

"For myself, I feel I've fallen quite behind in terms of in-service training, particularly regarding breast exams, breast imaging, or breast ultrasounds, including the latest developments and things we shouldn't overlook. We learn from each other." (K151, south, urban)

"We don't perform manual exams [CBE]. I mean, due to the nature of our profession, I don't really understand it—I mean, we read and learn, but still, we can't really know." (K150, east, rural)

2.3. Personnel issues

Participants discussed other personnel issues impacting screening services at KETEMs. Complaints were common across regions regarding the lack of permanent healthcare personnel and/or frequent turnover. In areas, especially rural ones with irregular services, personnel adaptation to their roles becomes challenging. Additionally, while family physicians benefit from performance-based pay, which increases their motivation, KETEM personnel (particularly in rural Western areas) noted that they work for lower wages than other primary health care personnel.

"Staff turnover is very high. One of the reasons is that there is no rotational allowance at KETEM." (K152, south, rural)

"When family doctors refer someone, they get their performance incentive and don't follow up. That's the issue—they say, 'I referred them; whether they go or not, it's up to them.'" (K150, east, rural)

"There has been a slight increase related to family doctors' positive performance incentives..." (K154, north, rural)

2.4. Regional and cultural barriers

KETEM healthcare personnel face challenges in reaching women or persuading them to participate in screenings due to regional and cultural differences. In Eastern or rural regions, many women still cannot make independent decisions, often needing approval from their husbands or elders. In rural areas, the familiarity of community members with one another also poses an obstacle. Furthermore, participation is affected in rural areas where women are occupied with farm or livestock duties, while in urban areas; women report difficulties obtaining permission from their workplaces to attend screenings.

About 50% of them are still not fully aware, and we still have people living in villages with their mothers-in-law—they can't come without their permission." (K150, east, rural)

"It's a problem for working women, too. They need to get permission to come to KETEM." (K151, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"In the village, people's tasks have started now. Farm work has started, so it's not easy for them to come. We say, excuse me, 'Your health is more important than livestock and property; without you, none of it matters." (K153, north, urban)

"They use work as an excuse; they say they're taking care of kids and don't come." (K145, west, urban)

"This place is small. Everyone knows each other." (K150, east, rural)

2.5. Attitudes and behaviours of healthcare workers

It was noted that having open appointment slots at family health centres for women and allowing family physicians to directly schedule appointments positively impacts participation in screenings. However, there were comments that the system does not work perfectly and still has issues. Some participants mentioned that the primary health care sector is not adequately effective in screening services or that some physicians are not responsive to screening services, which disrupts the program's operations.

"Family physicians send them, so they come in for screening." (K154, north, rural)

"Only family physicians can book appointments, not citizens themselves. If the family physician is interested, they schedule the appointment and send them; if not, they don't bother, saying they have no information." (K146, west, rural)

"Generally, if family physicians are older, they tend to view family medicine as a place with less responsibility, good pay, and a chance to relax. In our country, primary [health] care is not very effective. Not just KETEM, but also family health centres have been seen as places for writing prescriptions or being used passively. That's why people tend to go directly to hospitals." (K147, central, urban)

"Now it's not like that. Once they refer a patient [woman, client], they get their payment. They don't really care since they're getting paid either way." (K150, east, rural)

"Even though they know we'll be at the family health centre, family physicians don't refer their patients [women, clients], to us. Those who care will make the referral, but we've never been able to overcome this resistance." (K153, north, urban)

All KETEMs strive not to miss any patients who come in. Menstrual status is not questioned, and if possible, screenings are conducted immediately or the woman is referred to the associated hospital. Patients can even be screened during their menstrual periods.

"We always check for pregnancy and other factors, but we don't ask if they're on their period." (K147, central, urban)

"Mammogram appointments aren't scheduled according to menstrual cycles." (K146, west, rural)

In areas with limited hospital integration, surgeons' attitudes toward patients can negatively impact the screening process.

"Even something like the doctor not wanting to review the CD for the patient is a setback for us-we send them, and the doctor says they won't look at the CD today. But there's no issue with that; it's a CD that can run on their systems. We've confirmed this with the hospital." (K151, south, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"Previously, when we did the reporting here, our general surgeons also reviewed them; they would match up films and ultrasound results and evaluate. But now, surgeons strictly require reports. We provide CDs to patients, flagging them for issues like a family history of cancer, but the feedback we get is that if there's no report, they won't even look at the CD." (K153, north, urban)

"In hospitals, they won't do your ultrasound without a mammogram. When patients bring their CDs, they're told the computer won't read the CD. I've heard from a few patients that they had to get a report because they [hospital staff] weren't willing to review it directly." (K147, central, urban)

Support from administrators for the screening programme positively impacts screening services.

"With the recommendation of the chief physician, the procedures for patients referred from KETEM are completed very quickly; even the biopsy can be done the next day. So, the patient is always evaluated promptly." (K147, central, urban)

"Our doctor works wonderfully. Since they started, our patient [woman, client], numbers have increased." (K150, east, rural)

3. KETEM Healthcare Personnel's Suggestions Regarding the Breast Cancer Screening Program

3.1. Systemic and technological improvements

KETEM personnel working in integration with family health centres noted the positive impact of family physicians referring women to KETEM for cancer screening services. They shared suggestions on standardizing the system and operating it as a package service.

"I believe the patient [woman, client] should come here, receive their diagnosis here, and the diagnosis process should be accelerated. Breast cancer mammogram results should be interpreted faster. There should be a concept like a partner hospital where the patient won't have to wonder for days with worry. It's not logical to give an appointment and send the patient home. Both the primary [health] care physician and the KETEM physician should be informed of the entire process and results. Therefore, it needs to be made into one package program." (K147, central, urban)

"I think the most important thing is continuity of service and maintaining standardization. Integration with secondary and tertiary care is also important." (K151, south, urban)

KETEM personnel suggested an integrated software system that includes information on the mammogram history and results, with alerts for those requesting a new screening within two years or for women considered at risk.

"One thing we want, but still don't have, is this integration. We rely on personal statements because we have no other information." (K153, north, urban)

"There could be a reminder for those whose two-year period has expired, prompting follow-up when they come in. Setting up information systems is actually quite simple." (K147, central, urban)

"There could be an automatic alert for integration... something that says 'Your mammogram date has arrived." (K153, north, urban)

"Previously, breast cancer was mostly in older ages; now, we're often surprised to hear of very young cases. Perhaps for those with a family history or symptoms, a priority button could be created to help flag them." (K145, west, urban)

MARMARA ÜNİVERSİTESİ YAYINEVİ

It is believed that speeding up mammogram reporting would enhance screening effectiveness, with artificial intelligence also seen as a helpful tool in the reporting process.

"If reporting and result transmission to the patient are sped up, it would be more efficient. The reporting process needs to be effective, ideally within a week." (K154, north, rural)

"Maybe AI could be a solution." (K153, north, urban)

Most participants also felt that KETEMs should be integrated with hospitals. Specific clinics or quotas could be set aside for patients referred from KETEM.

"An ultrasound clinic should be allocated for our screenings; a specific clinic for KETEM patients could be established at hospitals." (K151, south, urban)

"Hospitals should have special quotas for KETEM patients." (K153, north, urban)

A KETEM healthcare personnel who does not use a digital appointment system expressed the problem with manually assigning appointments as follows:

"I write the appointments by hand here; we need a more automated system, something like the central [physician] appointment system (MHRS[8]). We're still doing it manually." (K153, north, urban)

It was also suggested that KETEMs should have ultrasound and radiologists on-site.

"Definitely, we should have an ultrasound machine along with a radiologist. Sometimes we see a lump, but we are not the ones who make the final decision." (K147, central, urban)

"I also wonder if an ultrasound unit could be part of KETEM." (K145, west, urban)

"If we could have ultrasound available for those under 30 [year] or in combination with mammography, it would be beneficial. They can come to us more comfortably, without hesitation." (K145, west, urban)

Units without their own mammography device requested a mammography device, a radiology technician or a vehicle for women's transportation.

"The number of mobile units could perhaps be increased, or a technician and nurse could be assigned to each location. Alternatively, a mammography machine and technician could be sent to KETEM, so women who come to here and family health centre could be screened here instead of going to the hospital." (K148, central, rural)

[8] *MHRS; The central physician appointment system; a system that manages the appointment systems of all public hospitals in Turkiye from a centre. It is a system where citizens can call of their choice from live operators Alo 182, on the web or from the MHRS mobile application and make an appointment with the hospital*

MARMARA ÜNİVERSİTESİ YAYINEVİ

One participant suggested mobile services, while another recommended increasing the number of centres.

"They could visit workplaces or factories with the mobile truck, especially for people who cannot come during regular hours." (K146, west, rural)

"Instead of mobile trucks, more buildings could be constructed for this purpose." (K145, west, urban)

It was also suggested that KETEMs should have separate signage and be located on the ground floor.

"It would work more actively if it were on the ground floor." (K150, east, rural)

"The lack of an external sign for the building is a major issue, in my opinion. From outside, no one would know there's a KETEM here." (K146, west, rural)

3.2. Increasing public education and awareness

Nearly all participants emphasized the need to improve public health education on these topics. One participant highlighted the importance of including men in the education process and fostering cancer awareness from a young age.

"Health literacy is very important. That means people should get accurate information from the right sources." (K153, north, urban)

"The lack of health literacy is fundamental. That's why even as adults, people are unaware of this. We need to start education early, covering both boys and girls together. I want it to be taught even to high school students, ideally incorporated into the curriculum. Basic health literacy education should start in schools." (K151, south, urban)

"We've been here for seven years, and there are still people saying, 'Oh, I didn't know this was here.' The more we promote it, the more awareness we create." (K145, west, urban)

Public service announcements, billboards, advertisements, and social media were considered effective tools for raising awareness among the public.

"I think if the ministry used media more effectively, especially on television—since not everyone uses social media-those public service ads with a single focus, specifically promoting KETEM units, would work better. People don't know KETEM exists or what it does. This should not only happen during cancer awareness weeks. I believe television, radio, billboards, etc., have a huge impact, and this promotion should be ongoing." (K147, central, urban)

"Doctors could casually mention KETEM or screenings, even in group settings. Sitting down and monotonously reading from a script doesn't increase viewership or retention. Media, especially television, could be very helpful." (K147, central, urban)

"Instead of just seeing clothes in store windows, these messages could be displayed in certain store windows. People need to see them continuously." (K150, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

"There are public service ads, but since the government is providing these cancer screenings free, there should be constant reminders on platforms like Instagram. For example, I'm shown age-appropriate ads; my mother sees them because of her age, so I should see frequent information related to breast cancer." (K153, north, urban)

"We need to continuously see and hear this information to demystify it and remove the fear culture. Social media and other channels must be consistently used." (K153, north, urban)

"There could be more public service ads, especially on billboards, and instead of fast food ads, we need more ads focusing on women's health." (K145, west, urban)

"The best way is through advertising, whether it's on TV or municipal channels." (K146, west, rural)

One participant suggested organising events or special days to encourage women's participation.

"For example, we could plan a day when 12–15 people can come at a set time, complete their screenings and we could offer tea or light refreshments around 3 pm. We even have ample space for this." (K154, north, rural)

Collaborating with community leaders in these processes was seen as a way to increase community participation:

"We will go there first, but the local headman, the imam, and the teacher should also be supportive." (K153, north, urban)

Some participants noted the importance of emphasizing the free service but suggested going beyond this approach:

"Emphasizing that it's free is important." (K145, west, urban)

"We need to move beyond just emphasizing that it's free." (K147, central, urban)

3.3. Personnel management

The need for training healthcare workers on breast cancer screenings and examinations after obtaining their undergraduate degrees was emphasized.

"We need a specially trained community of experts. We need people within diagnostic centres who are willing to volunteer for these training programmes and want to be involved." (K153, north, urban)

One participant mentioned that turnover rates at KETEMs are very high, while in centres where personnel have worked longer, the service is more effective.

"That's why these people must be trained, and I think it's very important for them to stay. If they don't stay, they don't take ownership." (K146, west, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Supporting healthcare workers through financial or other incentive methods was suggested.

"They should stay on a permanent basis, and it shouldn't just be based on voluntary work. There should definitely be financial support. They should be satisfied. It shouldn't be that they bear all the burden just because they're good at their job; there should be compensation." (K153, north, urban)

"We need to encourage family physicians a bit more in this regard because they don't promote it enough. The more they refer, the more people end up coming here, as they hear about it from each other. That's how it works." (K145, west, urban)

"Then, continuous training and some form of reward or motivation for personnel could be provided." (K151, south, urban)

There was also mention of lifting the target number requirement for screenings at KETEMs. Once the system is established, it's believed that the majority of the target population will be reached. In high-density areas, family physicians don't have enough time for screenings, and the assigned population per family physician should be reduced.

"There's sometimes too much pressure to meet certain numbers. They should let go of that, and if you have a good system over time, the numbers will naturally balance out." (K151, south, urban)

"People who come are often too challenging to even handle properly. It's really hard to get them to hold still and have their mammogram done. We actually don't want it to be viewed in terms of numbers; mammograms shouldn't be measured as a performance metric. What matters here is not trying to cram a lot of patients into a short time frame, but I want this to be considered as well." (K153, north, urban)

"A family physician with a high population obviously doesn't have the extra time to give each patient proper attention. If the Ministry were to reduce the assigned population per family physician, say to 2,500 people, I think most conscientious physicians would be able to devote more time to these patients, and this would likely help the screening programmes improve." (K148, central, rural)

3.4. Physician referrals for women's screenings

It is believed that when all physicians in the area direct women to KETEM, it positively affects women's participation in screenings. One participant noted that for women in their area, a specialist in obstetrics and gynaecology is more influential than a family physician.

"I realized that if you just give a dry invitation, they don't come. If you say, 'You should come to KETEM,' they'll respond, 'Alright, I'll go,' and hang up. But if you say, 'You should come to KETEM; let's schedule an appointment right away for a time that suits you,' it's much more effective." (K147, central, urban)

"They'll say, 'Go here, get this test done.' It's like an order, 'You're getting these tests done, and that's it.' It's not, 'Can you get it done?' but rather, 'You're doing it.'" (K150, east, rural)

"For example, when a gynaecologist refers a woman to KETEM, she takes it seriously. But when a family doctor gives the referral or suggests a test, she doesn't pay as much attention. She values what the gynaecologist says more." (K150, east, rural)

MARMARA ÜNİVERSİTESİ YAYINEVİ

Some participants suggested that the Ministry of Health send reminder messages and closely monitor participation, similar to how child vaccinations are tracked.

"Messages could be sent to patients because there is already a scheduling system. We'd just be using the existing system: 'Your appointment is on this date,' or 'Your KETEM screening is scheduled for this date.' Just like when they get a message saying, 'Your child's vaccination is scheduled for this date,' patients could receive a message saying, 'your screening is scheduled for this date." (K147, central, urban)

"I had told the Director, 'Many patients respond well to SMS reminders; we should implement that." (K150, east, rural)

"A formal message from the Ministry [of Health] would be effective, but if it's an unknown number calling, it's less impactful. A message from the Ministry could have a stronger effect." (K151, south, urban)

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

DISCUSSION

In this study, in-depth interviews were conducted with women in the target group for breast cancer screening and early diagnosis services, as well as with healthcare workers responsible for providing these services, across Urban and Rural areas of five different socio-demographic regions of Türkiye in 2023-2024. These interviews aimed to investigate the perceptions, beliefs, and behaviours affecting early breast cancer diagnosis. As a result, detailed qualitative data regarding Türkiye's breast cancer screening and early diagnosis programme and system were obtained.

The barriers faced by women who have not had a mammogram in the past two years, the motivators for those who did have a mammogram, and the views and suggestions of family physicians, family healthcare workers, and KETEM personnel on the breast cancer screening programme provide valuable insights for improving the efficiency of breast cancer screening programmes in Türkiye.

According to the National Breast Cancer Screening Guide by the Ministry of Health of Türkiye, women over the age of 20 are advised to perform monthly breast self-examinations (BSE); women between the ages of 20-40 are advised to undergo a clinical breast examination (CBE) every two years and annually from the age of 40. Additionally, women aged 40-69 are advised to have a mammogram every two years. This service, which aims to reach 70% of the target group through a community-based screening program, is provided free of charge at KETEMs.

In the World Cancer Report by the World Health Organization (2014), it is emphasized that cancer screenings should only be implemented in population-based programmes to maximize benefits and minimize harm. Population based screening programmes identify and individually invite every person in the eligible population for each round of screening. Individual invitations are intended to provide each woman in the eligible population an equal chance to benefit from screenings, thereby aiming to reduce inequalities in access to healthcare services.

Women's Perspectives

In this study, women expressed an awareness of the importance of early breast cancer diagnosis. Similarly, a cross-sectional study by Özaydın et al. in İstanbul-Bahçeşehir (n:908) found that three out of four women without a prior breast cancer diagnosis knew that breast cancer was the most common cancer among women. They were also aware that breast cancer could be diagnosed early by mammography and treated accordingly [42].

In a study conducted in Bursa, 81.5% of women stated that early diagnosis saves lives [43]. In the United States, women highlighted the importance of early diagnosis and held strong beliefs about its necessity [44]. However, this study revealed that many of the interviewed women lacked sufficient information about institutions offering screening services, with most unaware of KETEM or that screenings were available for free. These findings suggest that while women value early detection, due to their lack of knowledge about where to access screenings, they could not take advantage of primary healthcare services sufficiently.

In this study, women who had undergone mammography described breast cancer as a silent and fast-progressing disease. The majority were aware of the life-saving potential of early cancer detection and the importance of screening. They often learned about screening programmes through various channels, including media and social networks. Their suggestions focused on creating more engaging and empowering promotional strategies to increase awareness about screening programmes. Özaydın et al. found that women who received mammography information from physicians, attended gynaecological check-ups regularly, exercised regularly, were more educated, or belonged to higher socio-economic groups, were more likely to undergo mammography than those who learned about it from friends or television [42]. Similarly, a cross-sectional study by Yıldırım et al. in İstanbul-Moda (n:1271)

MARMARA ÜNİVERSİTESİ YAYINEVİ

revealed that most women were aware of breast cancer, with television being the most common source of information and healthcare personnel the least. In this study, women who are highly educated, who have social security benefits, and who read newspapers on a daily basis had more frequent mammograms [35].

In a study by Yıldız et al. (2024), participants described breast cancer as a severe illness and expressed fears about mortality [45]. However, some viewed it as less deadly, likely due to knowing survivors in their community who, despite having breast cancer, lived healthily for years. This supports the notion that early diagnosis reinforces the perception of breast cancer as a treatable disease [46]. Early detection is strengthening the belief that breast cancer is a treatable disease. The belief that breast cancer can happen to anyone is a recurring finding in this study. With globalization and improved access to information, awareness of breast cancer has increased, reinforcing the perception that it can affect anyone.

In this study, having a family history of breast cancer emerged as a factor increasing women's perceived risk. In Özaydın et al.'s study, those with a first-degree relative diagnosed with breast cancer were aware of their increased risk [42]. Literature emphasizes genetic predisposition as a significant risk factor for breast cancer, with BRCA1 and BRCA2 gene mutations associated with a higher risk [47].

According to the results of this study, factors such as having children later in life or not at all are considered significant risk factors for breast cancer. Women perceived childlessness and advanced age as risk factors. These factors could motivate women to participate in screening programmes. In Özaydın et al.'s study, early menarche and late menopause were identified as risk factors unknown to most women [42]. Ashari et al. found that women's screening behaviors were shaped by factors such as fear of illness and death, disbelief in the likelihood of getting sick, and feelings of shame, all influenced by cultural context [48].

In Türkiye's National Breast Cancer Screening Guide, initially defined in 2007 and updated in 2013, healthcare providers in KETEMs, midwives, nurses, and family physicians are expected to conduct clinical breast exams and teach women how to perform breast self-exams (BSE).

This study found that many women in Türkiye did not know about BSE or, if they did, did not perform it correctly or regularly. Studies in Türkiye have shown that BSE awareness ranges from 43.4% to 72.1%, with accurate frequency and timing ranging from 24.5% to 42.6% [49, 50, 51, 52]. Jelinski reported BSE rate of 61% [53]. In Açıkgöz et al.'s study, 52.5% of women said they did not perform BSE due to lack of knowledge, and 43.8% due to neglect [54].

Clinical breast examination (CBE) frequency is reported in Sadler et al. study at at 57% [55], while CBE rates in Türkiye range from 10.5%-30.4%, with mammography rates between 10.5%-40.6% [53, 55, 56, 57]. These findings align with other studies in Türkiye. CBE remains a vital screening method, particularly in low- and middle-income countries [58]. Shame and embarrassment were found to be significant barriers to screening participation in this study [59]. Social and cultural factors, including feelings of shame and modesty, were prominent barriers to participation in breast cancer screening programmes.

This study identified primary barriers to mammography as lack of knowledge, insufficient information and guidance from physicians, neglect, and lack of symptoms. Women were generally unaware that KETEMs provide free mammograms and cancer screening services. Similar results have been found in other studies [60, 61]. In Açıkgöz et al.'s study, 46.2% of women who did not undergo mammography cited lack of knowledge, 31.7% neglect, and 12.5% disbelief in its necessity [54]. In this study, women considered going to the physician without symptoms as "creating unnecessary trouble." Many women also appeared to neglect their health, prioritize family responsibilities, and/or feel obligated to put others' needs before their own. Not seeking preventive health services without symptoms was

MARMARA ÜNİVERSİTESİ YAYINEVİ

identified as a major barrier to accessing community-based breast cancer screening programmes, particularly in societies with low awareness [62, 63]. This study found that women generally did not participate in screening programmes unless they had noticeable symptoms. In general, there is hesitation and negligence within society about visiting physicians or health institutions for "breast health" matters. Many women postpone screenings unless they experience a significant complaint. Women cited the lack of symptoms as the main reason for delaying screenings. Studies with Turkish women have similarly noted that screenings are often neglected due to the absence of symptoms [62, 64].

For working women, both domestic and workplace responsibilities make it challenging to allocate time for cancer screenings. Furthermore, women without immediate health issues often struggle to obtain time off from work for these services.

Another barrier is the fear of "what if something is found." Studies have identified "fear of a breast cancer diagnosis" as both a barrier to and a motivator for screening participation [65]. In this study, although some women underwent regular screenings due to breast cancer fears, a larger portion found that fear to be a deterrent.

Avoiding screening programmes because of fear of a breast cancer diagnosis is widespread among women [48]. This study identified shame and embarrassment as the second most frequently expressed emotions after fear. Türkiye's large geographic and cultural diversity means that cultural differences are noticeable from east to west and from urban to rural areas. Due to cultural norms, the "breast", as a body region that remains a taboo and shameful subject, abstained or even cannot be mentioned as a word, is excluded, disregarded. That is why there is a high sensitivity about its intimacy; leading to extreme privacy concerns and societal judgment fears, participation in mobile screenings is low and the participation to breast cancer screenings negatively influenced [48].

Furthermore, women's most common concerns regarding mammography include pain, discomfort, and radiation exposure. Women, especially those having mammography for the first time, are often prejudiced about the pain and discomfort due to negative feedback from others. Pain during mammography is commonly reported in various cultures as a barrier to screening participation [66, 67]. Additionally, radiation exposure is a known concern in different societies [66]. In this study, few women mentioned radiation exposure concerns, while one participant expressed concern about the potential for cyst rupture during mammography.

Some participants reported that they perceived the pain felt during mammography as a barrier to participation in screening and avoided mammography even if they had complaints. The pain associated with breast examination and mammography is closely related to women's menstrual cycle. Breast examinations and mammograms at the beginning of the menstrual cycle (days 7-8) will be more painless. However, neither are women aware of this, nor are mammography appointments at KETEMs scheduled according to the menstrual cycle of the women who apply. This problem is addressed through new technology and devices. However, changing widespread negative beliefs and removing obstacles to screening heavily depends on informative activities for the public and health personnel, who could also ensure examination and mammography appointments are made at the beginning of women's menstrual cycle.

In this study, gender roles and perceptions of gender in healthcare were identified as the primary socio-cultural barriers to cancer screening participation. Some women feel privacy concerns during mammography and prefer female staff over male healthcare workers. In a study conducted in İzmir with elderly women, participants similarly preferred female healthcare personnel for breast cancer screening [62]. Studies in other cultures have also shown that women avoid male healthcare providers and prefer female personnel due to embarrassment [65, 66]. These concerns can stem from a patriarchal social

MARMARA ÜNİVERSİTESİ YAYINEVİ

structure, fear of stigmatization, or religious beliefs. If a female radiology technician, a female physician is not available, they do not go for examinations and do not participate in screenings. Increasing women's education and awareness about breast health and screenings is essential to improving participation in breast cancer screenings. Women need more information about breast cancer, the screening process, and available services.

A study in İzmir found that informative sessions facilitate screening participation [62]. In this study, women suggested holding informational meetings, inviting breast cancer survivors to speak, distributing brochures, and sending informational messages to their phones. These requests indicate a demand for greater access to information. In Kratzke's study in a rural area, many women expressed a desire for informational and mammography reminder messages about breast cancer [68]. Message-based reminders may be an effective method. Similarly, healthcare workers in this study, especially KETEM staff, noted the impact of public education and media, highlighted that educational efforts in KETEMs improved breast cancer awareness and had a positive effect on women's awareness levels.

Healthcare providers' recommendations play a significant role in increasing women's motivation to participate in screenings. During post-menopausal check-ups or family physician visits, physicians' referrals positively impact participation in screenings. Women emphasized the importance of family physicians' roles in screening processes. Literature indicates that women have gaps of knowledge and awareness and are more likely to participate if informed by healthcare providers [62, 66]. Many studies have demonstrated that physician recommendations increase screening participation regardless of age, socio-economic status, or ethnicity [69, 70]. In this study, all women were registered with family physicians, and most had visited for various reasons. Since the majority of the population in Türkiye is included in the family medicine system, integrating family physicians into screening programmes and having them encourage participation would be a critical step. Physician recommendations are recognized as a motivator in breast cancer screenings [71]. As observed in this study, physician recommendations are one of the most significant factors in increasing breast cancer screening participation. Social support also plays a critical role in encouraging participation in screening programmes [72]. The relationship between social support systems and health behaviours is well-documented. Encouragement from family and friends significantly influences women's participation in breast cancer screenings.

Healthcare service challenges in Türkiye, especially in rural areas and low-income neighbourhoods of large cities, are more pronounced. The attitudes of healthcare personnel and the quality of service are significant determinants in this regard. When asked about the factors that women prioritized when choosing the institution where they would undergo screening, ease of transportation was the most frequently mentioned factor. Screening centres that are accessible and open to everyone are their major demand. Women frequently mention the need for screening services in districts and villages, as well as the importance of mobile screening services in areas without screening centres. These requests align with the Ministry of Health's policy; the Directorate of Cancer Control provides mobile mammography and mobile KETEM services to facilitate access to screenings [26].

One of the most frequently raised issues regarding the operation of screening centres is the length and difficulty of the appointment process. Women wish for easy appointment scheduling, avoidance of lengthy waiting times, and a quick turnaround for mammography results and completing the procedures with as few visits to the health institution as possible. Additionally, women who are referred for further diagnostic and treatment procedures should not face difficulties finding appointments, and ultrasound (USG) appointments should not be scheduled too far in advance. Rapid diagnosis and treatment access are important to women. The appointment process and long wait times can pose barriers, particularly for older individuals, deterring them from getting screened [62].

MARMARA ÜNİVERSİTESİ YAYINEVİ

The conclusions of this study confirm the findings of Özturk (2021) [73], Seçginli and Nahcivan (2004) [74], Aslaner (2019) [75], Çetin et al. (2007) [64], and Özaydın et al. [42], in identifying enduring barriers and motivators influencing women's participation in breast cancer screening in Türkiye. As Özturk observed, significant cultural and social obstacles, such as fear, modesty, and lack of awareness about screening services, remain major deterrents to participation, a theme also underscored in this study's findings. This study's alignment with Özturk is further evident in the emphasis on the Health Belief Model (HBM) dimensions—such as perceived severity and susceptibility—as key factors motivating women's health behaviors, a pattern also reflected in Seçginli and Nahcivan's, and Aslaner's research [74, 75]. Echoing Özturk's findings on awareness gaps, this study reveals that many women remain unaware of KETEMs and the availability of free mammography, with knowledge deficits posing a major barrier [73]. In line with Ozturk's study, this study further highlights the critical role of physician guidance in encouraging screening participation, reinforcing healthcare providers as essential motivators for preventive care [73]. The recurrence of these recommendations in literature over the years suggests insufficient progress in addressing these barriers within the healthcare system, pointing to an ongoing need for targeted public education, improved healthcare access, and culturally sensitive strategies to effectively increase breast cancer screening participation in Türkiye.

Family Physicians and Family Health Workers' Perspectives

Family physicians view breast cancer screenings and preventive medical services as their core responsibilities, and recognize the need to refer women registered with them for mammography based on the Ministry of Health's National Breast Cancer Screening Guide for Türkiye. However, due to their heavy workload, they often focus on women who visit them for other health issues, a practice known as opportunistic screening, rather than population-based screening. The World Cancer Report (2014) by WHO emphasizes that to maximize benefit and minimize harm, cancer screenings should be implemented solely in community-based programmes. Community-based screening programmes identify and invite every individual eligible for each screening round. Individual invitations aim to provide each eligible person with equal opportunities for screening, thereby reducing healthcare access inequalities [30]. A study evaluating nine countries from Southeastern Europe and Central Asia found that countries with prevalent non-standardized opportunistic screenings often rely on clinical breast examinations (CBEs) as opportunistic screenings [76]. Cardoso et al.'s study on breast cancer screening programmes in European countries reported the increasing implementation of opportunistic screenings alongside organised screenings [77].

The European Health Interview Survey (EHIS), covering 32 countries, found that mammography rates are above 70% in countries with a Human Development Index (HDI) >0.90 but below 36% in countries with an HDI <0.85. This study revealed an inverse relationship between a country's level of development and breast cancer incidence. Türkiye is currently classified as a pilot programme country [in EHIS], with no updated mammography figures. Our study's results offer qualitative insights into local practices in Türkiye Breast Cancer screenings, within the framework of comprehensiveness, person-centeredness, primary care management, and community orientation—which form the core principles of the discipline of Family Medicine—are considered among the fundamental practices of primary care as part of preventive healthcare implementation [78]. In Türkiye, primary healthcare services are restructured under the Family Medicine Regulation, in which cancer screenings are among the primary duties of family physicians [79].

Each Family Health Unit comprises a physician and a nurse. Türkiye has 27,762 Family Health Units, and primary health institutions with multiple units are called Family Health Centres (ASM). According to 2022 data from the Ministry of Health, Türkiye has 8,172 ASMs. With an average of 3,072 registered patients per unit, the number of annual visits to Family Health Units is 332,907 as of 2022 [80]. The

MARMARA ÜNİVERSİTESİ YAYINEVİ

high patient population per unit increases daily visits, with physicians reporting seeing an average of 60–80 patients daily. Physicians note that much of their work involves administrative tasks such as prescription renewals, report writing, monthly notifications, and primary care services, which limit the time available for cancer screenings and patient education. Despite emphasizing that screenings are a core duty, physicians report that they do not consider themselves sufficient for breast cancer screenings. The attitudes of physicians in this study were supportive of screenings, aligning with findings by Jensen et al., which highlighted the critical role of physician attitudes in the success of screening programmes [81]. In addition to supportive attitudes, addressing individual barriers, if any, will enhance programme success. Guidelines that shape preventive medicine practices are published all over the world. However, in order for these guidelines to be implemented successfully, primary healthcare workers should support the implementation and any barriers to implementation should be removed [82, 83].

Özdemir et al.'s mixed-methods study also highlighted that family physicians primarily conduct screenings for patients visiting the ASM, making access to screenings challenging for those with lower education levels or living far from the centre. Physicians participating in this study reported that handling the workload alone was challenging [84].

Although breast cancer screenings in Türkiye adhere to the Ministry of Health's guidelines, practices vary. Only a few family physicians conduct follow-ups for registered women using patient lists. More often, the practice is to inform women who visit the clinic with complaints and refer them for mammography. Women who are due for mammography are directed to the nearest KETEM, and district health departments arrange transportation for remote areas. Overall, the general approach to screenings in Türkiye can be characterised as opportunistic rather than community-based [85].

The Turkish family medicine system partially aligns with the European Definition of General Practice/Family Medicine (2023) but has notable differences. While it shares core competencies such as continuity and comprehensiveness, challenges include a high patient-to-physician ratio, which may hinder personalized care and proactive health promotion as recommended by WONCA Europe (World Organization of Family Doctors). Additionally, Türkiye's system sometimes prioritizes acute care over preventive services, partly due to workload and resource constraints. Improvements in patient follow-up and integrated referral systems could enhance compliance with European standards [78,84].

Family physicians in Türkiye are required to use electronic record systems for their services. However, these systems are not standardized; although generally similar, there is different private software systems purchased and used by each physician. Some software systems can alert physicians of missing screenings when a woman or her family member visits the family physician, but this feature is not universal. The Disease Management Platform (HYP) is a relatively new application designed primarily for monitoring chronic diseases, and it is helpful for identifying women due for cancer screenings. The Ministry of Health describes this platform as enabling "health specialists to detect chronic diseases early and control symptoms and findings with appropriate treatment plans in line with evidence-based medical guidelines" [86]. The Ministry of Health also launched a pay for performance initiative to encourage family physicians to use this platform. However, the expected impact has not been achieved due to high patient loads among family physicians, limiting their ability to benefit from the performance initiative fully. If widely adopted, this program's use could contribute significantly to all cancer screenings.

It has been identified that factors facilitating women's access to mammography include District Health Directorates and Public Health Directorates periodically requesting ASMs to prepare lists of women due for screening, sending vehicles to transport women on ASM lists to KETEM, KETEM proximity to or establishment within District Health Directorates or Healthy Life Centres.

MARMARA ÜNİVERSİTESİ YAYINEVİ

In our research, it was determined that referrals of women for mammography were insufficient, and it was also noted that the results were reported with significant delays. To achieve the goal of sustaining population-based mammographic screenings and reaching 70% of the target group, there is a need to address delays in the central reporting system for mammograms and to implement planning based on regional characteristics.

The Global Breast Cancer Initiative (GBCI-2023) has identified one of its three goals as reducing breast cancer mortality by 2.5% annually, aiming to save 2.5 million women's lives by 2040. This includes completing the period from screening to final histopathological diagnosis within 60 days [4]. In this study, however, it was noted that even the reporting of mammogram results from screenings can take months before reaching women, leading to decreased interest and confidence in screenings. Given the regional characteristics of settlements, transportation infrastructure, cultural factors, the alignment of healthcare personnel involved in screenings with regional attributes (e.g. being female), and the increasing individualization of healthcare services today, risk-based planning is also worth exploring.

Breast cancer screening guidelines require teaching breast self-examination at an early age to raise awareness about breast cancer. Physicians in this study reported that they conducted breast self-examinations (BSE) while performing breast exams or providing information on screenings; however, they could not do this systematically and sometimes received support from collaborating nurses. Due to regional cultural differences, these examinations, perceived as private in some communities, may sometimes even hinder discussions on these topics between male physicians and female patients within the scope of counselling, with nurses serving as valuable support in such cases. Nurses and midwives working as family health personnel in ASMs encounter women registered in ASMs more frequently due to pregnancy and childbirth, and, as they reside in the area, they are seen as reliable figures who can be more effective in breast education. Most nurses reported being able to provide BSE training more frequently and more easily.

In a 2017 thesis study by Lüleci, it was reported that women's knowledge about breast cancer and screening services was insufficient and that women primarily obtained information through social media [85]. More health education should be provided in primary healthcare institutions (ASMs). The same thesis also highlighted a lack of trained human resources and infrastructure in the field of breast cancer screening in Türkiye [85]. Similar findings emerged in this study, with physicians working in ASMs stating that they needed additional support staff for screening efforts due to their heavy workload.

This study found that clinical breast examinations (CBE) are almost never conducted by family physicians. Cultural barriers arising from gender differences, the physicians' association of screening solely with mammography and daily workload appear to render clinical breast examination for screening purposes ineffective. There is a need for research to re-evaluate the role of clinical breast examination in screenings. Huang et al. compared the effectiveness of CBE with that of breast self-examination and ultrasound findings, finding no differences in outcomes [87].

This study identified the challenges family health workers face in achieving the expected effectiveness of breast cancer screenings. These include the high number of patients per unit, high daily outpatient visits, document-based tasks such as prescription renewals, and the lack of supportive personnel for screening activities. The electronic record systems used in ASMs are also inadequate for creating follow-up lists for women to be invited for screening, which hampers the planning, execution, and monitoring of population-based breast cancer screenings.

Physicians working in ASMs have identified community indifference towards the issue and personal reasons, such as fear of mammographic examination and its results, as barriers to breast cancer screenings. One of the most critical factors determining whether women's experiences during mammographic screening are positive or negative is the communication between healthcare workers

MARMARA ÜNİVERSİTESİ YAYINEVİ

and the women [85]. It would be beneficial for healthcare workers to receive regular and continuous training to ameliorate their communication with individuals and the community.

The distance between KETEMs and rural areas, as well as district centres, also poses a barrier. Facilitating transportation with public means or bringing KETEMs closer to women can increase participation.

The main recommendations of physicians and nurses for more adequate service provision are to eliminate patient overcrowding and staff shortages. Nevertheless, they emphasize that addressing staff shortages alone will not be enough, and that women should also demand to participate in breast cancer screenings. Some participants stated that this demand can be created by increasing social and individual awareness about breast cancer screening, and introducing sanctions that make breast cancer screening compulsory for women. Khosravi et al. found that cultural and religious factors hinder women's participation in breast cancer screening in the Middle East, and they suggested that awareness campaigns, education, and telemedicine services could facilitate women's access to healthcare [88].

Perspectives of KETEM Healthcare Personnel

Providing breast cancer screening services free of charge to women in the target age group at public health facilities, covered by the public budget, are expected to increase participation rates in screening, as it will eliminate economic barriers among women in the target group and ensure equal service provision to all women at risk (determined by gender and age). In this study, KETEM personnel noted that the accessibility and free nature of services positively impact participation in screenings. They also pointed out that their centres offer faster services compared to hospitals. However, regional differences in KETEM services have been identified. For instance, while some KETEMs use an appointment system, most operate without one. Studies aimed at increasing participation in breast cancer screening programmes in Türkiye emphasize the importance of an effective appointment system. Ala and colleagues report that a structured appointment system enhances the planning and efficiency of the screening process [89]. Yet, especially in rural areas, providing services without appointments has been noted to increase participation rates, similar to observations in this study. In this study, appointment-free service is preferred not to miss the incoming patient. The location of KETEM is also crucial for ease of access. Proximity to district health directorate buildings, being housed within Healthy Life Centres [90], or being close to or in the same building as Family Health Centres (ASMs) facilitates patients' access to services. KETEMs also provide mobile services or transportation options. Health workers reported that mobile services increase access to healthcare in rural areas. Similar to the findings of this study, it has been previously reported that there may be problems regarding quality and privacy in mobile services. Although it increases access, especially in rural areas, there are reported deficiencies in terms of quality of service and ensuring privacy.

KETEM personnel also assert that the screening services are not only fast but also of high quality and reliability. They emphasized that most mammography machines are new and healthcare personnel are well-trained. From time to time there have been problems in reporting, but it is stated that these problems have been overcome. Healthcare personnel believe that women are generally satisfied with the services they receive from KETEMs, which has a positive impact on participation in screening. They also stated that the services provided at KETEMs are supported by public training which serves to increase breast cancer awareness among women. Despite these efforts, KETEM personnel reported low awareness levels about KETEMs and cancer screening programmes. A study by Doğu et al. (2016) [91] among hospital patients found that only 18.5% were aware of KETEMs, with 35% never having heard of cancer screening programmes. Kılıç et al.s' 2023 study with women diagnosed with cancer similarly revealed that most were not diagnosed through screening programmes, were unaware of KETEMs, and

MARMARA ÜNİVERSİTESİ YAYINEVİ

had not visited them. The same study found that there was a positive correlation between educational level and participation in screening programmes, and women who knew about KETEMs were more likely to be screened [92]. Increasing awareness of KETEM and cancer screening is a crucial strategy for combating breast cancer. A thesis study showed that women's activity level is linked to breast cancer screening, which, in turn, is associated with education level and health literacy [93]. While raising awareness is a solution, improving education levels appears to be a more fundamental approach.

Motivated personnel are known to improve the quality of services. Personnel who believe in their work and put trust in their institution, interpersonal relationships, and service quality are likely to have higher motivation [94]. In this study, the factors that increase and hinder the motivation of KETEM healthcare personnel were discussed. It is emphasized that work motivation of healthcare workers plays an important role in the effectiveness of screening programmes. Veenstra and colleagues reported that factors negatively impacting health workers' motivation disrupt programme operations, reducing participation rates [95]. Continuous and periodic in-service training is crucial in addressing developments in the health field, and the rate of relocation/reassignment of healthcare workers is very high. KETEM personnel emphasized that in-service trainings supports their personal development and motivation.

The most significant operational issue identified in KETEMs is the lack of integration between ASMs, KETEMs, and diagnostic centres, particularly in the referral system. These deficiencies in the health system lead to delays in the follow-up of screening results and in the timely and appropriate treatment of those who are diagnosed as patients, resulting in the loss of the patient benefit expected from early diagnosis [4]. Another issue reported is the shortage of permanent staff in certain regions and low wages. Healthcare personnel working in the public sector receive pay-for-performance in proportion to their services. KETEM personnel's work is not bound by a performance system, and they receive fewer wage compared to their colleagues of equal rank, which negatively affects their motivation and causes them to leave KETEMs. The recommendations of KETEM healthcare personnel were summarized as improving systems and technology, raising public awareness, amelioration of personnel management, provision of in-service training, and ensuring all physicians in health institutions referred women for screening.

Identifying issues from the perspective of the personnel and working on proposed solutions should be considered a priority to expand breast cancer screenings.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

CONCLUSION

In this study, in-depth interviews were conducted in 2023-2024 with women living in the urban and rural areas of five different socio-demographic regions of Türkiye, who are part of the target group for breast cancer screening and early diagnosis services, as well as with the healthcare workers responsible for providing these services, to explore the perceptions, beliefs, and behaviours affecting early breast cancer diagnosis.

The barriers preventing women who have not had a mammogram in the past two years from doing so, the motivators for women who have had a mammogram in the past two years, the views and suggestions of family physicians and family health workers regarding the breast cancer screening program, as well as the views and suggestions of KETEM healthcare personnel about the screening program, offer significant insights for improving the efficiency of the breast cancer screening programme in our country. This study found that:

- Women expressed their awareness around the importance of early diagnosis in breast cancer treatment.
- Many women interviewed had insufficient information on institutions providing screening services. Most women either have never heard of KETEM or don't know about the free screenings at these centres.
- "Women who have had a mammogram" described breast cancer as an insidious and fast-progressing disease.
- The majority of participants were aware of the life-saving potential of early cancer detection and the importance of screening.
- Participants obtained information about the programmes through various channels, including media and social networks.
- Having a family history of breast cancer was identified as a factor that increases women's perception of risk.
- A large portion of women in Türkiye do not know how to perform breast self-examination (BSE). Among those who do know, many either perform it incorrectly or fail to do it regularly.
- Social and cultural factors, especially shame and embarrassment, serve as barriers for women to participate in breast cancer screening programmes.
- The most common obstacles to women getting a mammogram identified are: lack of knowledge, not being adequately informed or directed by physicians, neglect, and lack of symptoms.
- Women regarded going to the physician without any complaints -while they perceived themselves as healthy- as "creating unnecessary trouble."
- Women neglect themselves, prioritize family responsibilities and household chores over their own health, and/or are compelled to do so.
- "Not going to the physician because she has no complaints" was identified as one of the most significant barriers to accessing preventive health services and population-based breast cancer screening services. Women do not participate in screening programmes unless they have a distinct symptom.
- The dual responsibilities of working women at home and work made it difficult for them to make time for cancer screenings. Moreover, women who do not have health problems generally face difficulties in obtaining permission from work to go for screenings.

MARMARA ÜNİVERSİTESİ YAYINEVİ

• Another barrier for women is the fear of "what if something comes up". Although some women said that they had regular screening because of their 'fear of breast cancer', a larger proportion of women reported fear as a barrier to go for a screening. The emotions most commonly expressed after fear were those of "shame and embarrassment" attributed to cultural sensitivities through which the "breast" is still considered a taboo body part and it is shameful to call it by its name. Hence, it is avoided as a point of discussion.

• Among the most common concerns surrounding mammograms are pain and discomfort. Women, particularly those getting a mammogram for the first time, tend to be prejudiced against it due to negative comments they have heard from others, focusing on pain and discomfort.

• The concern about radiation exposure was expressed by a small number of women. Additionally, one participant expressed concern about the possibility of a cyst bursting in the breast during a mammogram.

• The biggest socio-cultural barrier to women's participation in cancer screenings was identified as "gender roles" and "gender perception in health". Some women have privacy concerns during a mammogram and prefer female health staff over male health staff. If there is no female radiology technician or physician, they avoid examinations, and similarly, they do not participate in screenings.

• The guidance of physicians was identified as an important factor that increases women's motivation to participate in screenings. In post-menopausal follow-ups or visits to family physicians, the guidance of physicians toward screening positively influenced women's participation in screenings. Women characterised the role of family physicians in the screening process as essential.

• Women's criteria in choosing the institution where they will be screened prioritised ease of transportation. Screening centres where everyone can receive services and physical access is easy are the most important demands of women. Taking screening services to districts and villages, and conducting mobile screening in harder to reach places were frequently mentioned.

• Regarding the operations of screening centres, difficulties related to the appointment process, such as long waiting times, were among the most frequently mentioned issues. Women expect the ability to easily make appointments, avoid long delays, receive mammography results quickly, complete procedures with minimal visits to healthcare facilities, and have no trouble securing appointments for further tests and diagnosis at diagnostic centres. Additionally, they seek to have ultrasound appointments scheduled promptly, all in the interest of reaching a definitive diagnosis and treatment without unnecessary delays.

• Family physicians consider breast cancer screening and preventive medicine services as their main job and know that they should refer women registered with them to mammography according to the screening guidelines of the T.R. Ministry of Health. However, due to their workload, they mostly make such referrals for women who visit them for a health problem (opportunistic screening, rather than population-based screening).

• Family physicians complain that they cannot spare much time for screening and patient education due to their workload. Although they emphasize that screening is their duty, physicians also state that they do not find themselves competent in breast cancer screening. The attitude of the physicians participating in our research toward screenings is quite positive and supportive of screenings.

• Although breast cancer screenings are conducted according to the guidelines of the T.R. Ministry of Health, the methods of application vary. While there are a small number of family physicians who conduct follow-ups based on the lists of women registered with them, women who apply to the FHC for any reason are referred to the nearest KETEM, and vehicles are arranged from District Health Directorates for regions far from the centre. Accordingly, it appears that the general practice in our country is more about opportunistic screening rather than population-based screening.

MARMARA ÜNİVERSİTESİ YAYINEVİ

• In Türkiye, only a few of the electronic recording systems used by family physicians can show the missing screenings of women registered with the family physician, and remind the physician when the woman herself or a member of her family visits the family physician. The factors that facilitated women's access to mammography were found to be: District Health Directorates and Public Health Directorates periodically requesting FHCs to prepare lists of women who will be referred to and who are due for screening, sending vehicles to KETEMs for the women on the FHC lists, the proximity of KETEMs or the location of KETEMs within District Health Directorates or healthy life centres. It was noted that the result reports of mammograms taken during screenings could reach women months later, which decreases interest and trust in the screenings.

• Physicians reported conducting Breast Self-Examination (BSE) training while performing breast examinations or providing information about screenings. However, they cannot do this systematically, and they occasionally rely on support from nurses.

• Regional cultural differences sometimes prevent these examinations from being carried out, or to be discussed between male physicians and female patients in the context of counselling, as breast examinations are perceived to be an intimate encounter in the community. Female nurses are able to provide BSE training more easily and frequently.

• Physicians working in Family Health Centres (ASMs) need more auxiliary personnel due to the high workload in screening.

• Clinical breast examinations (CBEs) are almost never performed by family physicians. Both the cultural barriers created by gender differences, physicians' adoption of mammography as the only screening method, and their daily workload seem to have rendered clinical breast examination for screening purposes dysfunctional. Healthcare workers in the FHCs cited the following barriers to the breast cancer screenings: the high number of patients assigned to units, the frequency of daily outpatient visits, the large volume of administrative tasks such as prescription refills, report writing, monthly notifications, and the lack of support staff.

• The T.R. Ministry of Health initiated a "pay-for-performance" programme to encourage family physicians to use HYS. The desired impact has not been achieved since family physicians overseeing a large population could not benefit from this programme, and the programme's usage is not yet fully effective.

• Regarding the characteristics of the community in which the service is provided, physicians mentioned insensitivity of the community and personal reasons, such as fear of mammographic examination and its results, as barriers to breast cancer screening. The geographical characteristics of the region also pose a barrier, with KETEMs being difficult to reach from rural areas and district centres. It was noted that the proximity of KETEMs and the availability of free transport options would facilitate participation in screenings.

• The healthcare personnel emphasized that a demand to participate in breast cancer screenings needed to be created among women. They added that creation of the demand requires raising population and individual level awareness about these screenings, and perhaps introducing sanctions that make breast cancer screening compulsory for women. It is expected that providing free breast cancer screening services to women in the target age group at KETEMs, funded by the public budget, would eliminate economic barriers among women in the target group. It contributes to increasing participation rates by ensuring equal access for all women at risk (determined by gender and age group).

• KETEM personnel noted that the free and accessible nature of the services provided at KETEMs has a positive impact on participation in screenings.

MARMARA ÜNİVERSİTESİ YAYINEVİ

- KETEM personnel also added that their institutions provide faster services compared to hospitals.
- Regional differences were observed in KETEM services. Some KETEMs used an appointment system, while most operated without appointments. It was stated that non-appointment services are preferred to avoid losing incoming patients.
- The location of KETEMs is also of great importance for ease of access. It was emphasized that being centrally located, within the District Health Directorates or healthy life centres, or in close proximity to Family Health Centres (ASM) facilitates patient access to services.
- Some mobile clinics of certain KETEMs provide breast cancer screening, while other KETEMs transport women from distant FHCs with a shuttle to ensure access to services.
- Healthcare personnel reported that mobile services increase access to healthcare, especially in rural areas.
- Problems related to quality and privacy aspects of mobile clinics were noted. Although mobile clinics increase access, especially in rural areas, there are deficiencies noted in terms of quality of service and ensuring privacy. These problems are compounded by the barriers created by regional/cultural differences. Women stated a preference for female radiology technicians to perform mammograms.
- KETEM healthcare personnel emphasized that the service they provide is not only fast but also of high quality and reliability.
- Most mammography devices are new and that the personnel are qualified.
- Although there have been occasional delays in reporting, these problems have been resolved.
- Personnel believe that women are generally satisfied with the services they receive from KETEMs, which positively affects participation in screenings.
- Services provided at KETEMs are supported from time to time by public training and serve to increase breast cancer awareness among women since the general public has low awareness of KETEMs and cancer screening programmes.
- KETEM personnel emphasized the impact of public education and media efforts and noted that the training provided at KETEMs positively affects women's awareness of breast cancer and increases their level of awareness.
- Job motivation of healthcare workers plays an important role in the effectiveness of screening programmes.
- KETEM personnel highlighted the positive impact of in-service training on their professional development and motivation.
- The most significant problem identified in KETEM operations is the lack of integration and referral systems between ASM-KETEM-Diagnostic Centres.
- The lack of permanent personnel and low wages in the region are cited as problems.
- The discrepancy between public health personnel, who get performance pay in proportion to their services, and KETEM personnel, who do not receive such pay, is noted. KETEM personnel are paid less than their colleagues of equal rank, which negatively affects their motivation and causes them to leave KETEMs.
- KETEM personnel emphasized the importance of referring women to breast cancer screenings and recommended that physicians in all other healthcare institutions should do so, too.

MARMARA ÜNİVERSİTESİ YAYINEVİ

RECOMMENDATIONS

The most valuable finding of this study is that no critical, widespread, complex, or challenging obstacles were identified within the "BSE-CBE-Mammography" service chain, extending from the family physician to KETEM and to the diagnostic centre. The common desires and suggestions of both service providers (FHCs, FP, FHW, KETEM healthcare personnel) and service users/clients (women aged 40-69) are to establish a *"user-friendly service chain in terms of time, effort, ease of application, and accessibility."* For this purpose:

i. KETEM physical locations and establishment within the organisational structure should not be frequently changed. If change is inevitable and necessary, we recommend that this change be effectively and promptly announced to service recipients via *"website, internet, social media, etc."*

ii. When the location and duties of the KETEM in the organisational chart are changed, we recommend that the job descriptions of the personnel be updated in parallel with this change, that interactive, face-to-face, adaptation to their new duties-in-service trainings be provided, and that in-service trainings be held at regular intervals to both increase the motivation of the personnel and to update their knowledge and skills.

iii. Family physicians are supported with easy, fast; user-friendly software that will allow them to refer registered women aged 40-69 for mammograms and receives feedback on results to monitor these women.

iv. Family physicians and family health workers undergo regular interactive face-to-face in-service training to increase both personnel motivation and update knowledge and skills.

v. Local Health Administrations organise the integration of Diagnostic Centres-KETEM-ASM, organise collaborations that will make the service faster, more up-to-date, more user-friendly, and establish to operate a managerial system that will ensure continuous feedback flow to the institutions in the service chain by monitoring and evaluation.

vi. At the central level, the T.R. Ministry of Health Public Health General Directorate Cancer Department should update the number and distribution of KETEMs across the country according to the growing population and should open new KETEMs (As of December 2023, there are 335 KETEMs, with at least one in each province. Considering Türkiye's total population is 85,372,377 and the plan to have one KETEM per 100,000 population, 850 KETEMs should be operational).

vii. Mammography devices at KETEMs are of sufficient quality to provide high-quality imaging, and regular maintenance and quality control of these devices should be maintained.

viii. In order to address disruption of service in the central mammography reporting system, it needs to be re-organised to operate without interruption and provide timely feedback in line with the early diagnosis criteria of the World Health Organization, with continuous quality assessment.

ix. Mammography devices in existing KETEMs are able to transmit high-quality images to the central reporting system, ensured by continuous inspection, regulation, and monitoring of systems.

x. Cancer screenings and mammography conducted by the 46 mobile units providing mobile breast cancer screening services should be closely and continuously monitored according to quality criteria. If the sustainability of quality service cannot be ensured, we recommend transitioning to a transport-based service model instead of mobile units to meet the need.

MARMARA ÜNİVERSİTESİ YAYINEVİ

xi. The T.R. Ministry of Health develops and implements a screening programme for women who are not registered with family physicians.

xii. The oversight of the quality of mammography at the health institutions other than KETEMs should be taken by Ministry of Health.

xiii. A system needs to be developed to enable the mammography results taken in health institutions other than KETEMs to be shared with the family physicians of the individuals concerned so as to facilitate the monitoring of women by their family physicians.

xiv. The Breast Cancer Screening, Early Detection and Diagnosis Services provided in accordance with the National Breast Cancer Screening Criteria in the institutions of the Ministry of Health should be continuously promoted and publicized; i. to all health workers in the country, ii. to the public.

xv. To convey awareness and promotional activities to all places, individuals, and widely, we recommend working in close cooperation with NGOs working in the field of cancer and health, as well as with international organizations.

xvi. The T.R. Ministry of Health integrates information on breast health, BSE, and locations to receive services in the country into school curricula, starting from high school, ensuring that this information is presented to the public in an organised and continuous manner.

xvii. The T.R. Ministry of Health works in cooperation with the Council of Higher Education (YÖK) to integrate information on breast health, BSE, CBE, and locations to receive services in the country into the pre-graduation training programmes of Medical Schools, Faculties of Health Sciences, Nursing Faculties, and Departments of Medical Imaging Techniques, ensuring that this information is presented to the public in an organised and continuous manner.

xviii. As the last and most effective intervention, the T.R. Ministry of Health actively and continuously informs the public about breast cancer via various communication channels such as public service announcements, TV series, songs, press releases, etc.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

REFERENCES

1. World Health Organization. National cancer control programmes: policies and managerial guidelines. 2nd ed. 2002: Geneva.

2. World Health Organization. Cancer prevention and control in the context of an integrated approach. 2017; Available from: https://apps.who.int/gb/ebwha/pdf_files/wha70/a70_r12-en.pdf.

3. World Health Organization. Controlling cancer. [cited 2024] Available from: https://www.who.int/activities/controlling-cancer.

4. World Health Organization. Global breast cancer initiative implementation framework: assessing, strengthening and scaling-up of services for the early detection and management of breast cancer. 2023.

5. Fidaner, C., Eser, S.Y., and Parkin D.M., Incidence in Izmir in 1993–1994: first results from Izmir Cancer Registry. European Journal of Cancer, 2001. 37(1): p. 83-92. https://doi.org/10.1016/s0959-8049(00)00355-5

6. Türkiye Cancer Statistics Yearbook, 2018. General Directorate of Public Health, Ministry of Health, Ankara, 2022. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/Kanser_Rapor_2018.pdf

7. Türkiye Cancer Statistics Yearbook, 2009. Turkish Public Health Institution, Ministry of Health, Ankara, 2014. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/2009kanseraporu-1.pdf

8. Türkiye Cancer Statistics Yearbook, 2010. Turkish Public Health Institution, Ministry of Health, Ankara, 2015. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/2010_Yili_Turkiye_Kanser_istatistikleri.pdf

9. Türkiye Cancer Statistics Yearbook, 2011. Turkish Public Health Institution, Ministry of Health, Ankara, 2015. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/2011_Kanser_Istatistikleri_ANA_rapor.pdf

10. Türkiye Cancer Statistics Yearbook, 2012. Turkish Public Health Institution, Ministry of Health, Ankara, 2015. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/ANA_rapor_2012sooonn.pdf

11. Türkiye Cancer Statistics Yearbook, 2013. Turkish Public Health Institution, Ministry of Health, Ankara, 2016. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/ANA_rapor_2013v01_2.pdf

12. Türkiye Cancer Statistics Yearbook, 2014. Turkish Public Health Institution, Ministry of Health, Ankara, 2017. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/2014-RAPOR._uzuuun.pdf

13. Türkiye Cancer Statistics Yearbook, 2015. General Directorate of Public Health, Ministry of Health, Ankara, 2018. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/Trkiye_Kanser_statistikleri_2015.pdf

14. Türkiye Cancer Statistics Yearbook, 2016. General Directorate of Public Health, Ministry of Health, Ankara, 2019. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/Turkiye_Kanser_Istatistikleri_2016.pdf

MARMARA ÜNİVERSİTESİ YAYINEVİ

15. Türkiye Cancer Statistics Yearbook, 2017. General Directorate of Public Health, Ministry of Health, Ankara, 2021. Available from: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Istatistikler/Turkiye_Kanser_Istatistikleri_2017_OZETLI.pdf

16. TURKSTAT. Address Based Population Registration System. 2023; Available from: https://nip.tuik.gov.tr/Home/Adnks

17. Women for Women's Human Rights (WWHR). Convention on the Elimination of All Forms of Discrimination against Women. Available from: https://kadinininsanhaklari.org/savunuculuk/uluslararasi-sozlesmeler-ve-mekanizmalar/cedaw/

18. Arslan G. United Nations Convention On The Elimination Of All Forms Of Discrimination Against Women (Rights And Procedures). Journal of Istanbul University Law Faculty. July 2011;62(1-2):3-43

19. Primary Education and Training Law. 1961. Available from: https://develi.meb.gov.tr/meb_iys_dosyalar/2024_01/12192451_222ilkogretimveegitimkanunu.pdf

20. TURKSTAT. Education Statistics 2023; Available from: https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Kadin-2022-49668

21. TURKSTAT. Labor Statistics. 2023; Available from:

https://data.tuik.gov.tr/Bulten/Index?p=Isgucu-Istatistikleri-2023-53521

22. Ayta, F. and Şen, M., General Outlook of Women's Employment in Türkiye: Examples of Selected Countries Within The Scope of Increasing Employment. International Journal of Economic and Innovation. 2023. 9(2): p. 421-454. https://doi.org/10.20979/ueyd.1327737

23. TURKSTAT. Marriage Statistics. 2023; Available from: https://data.tuik.gov.tr

24. TURKSTAT. Türkiye Income and Living Conditions Survey 2024. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Gelir-Dagilimi-Istatistikleri-2023-53712

25. Republic of Turkey Ministry of Health. General Directorate of Public Health. Türkiye Cancer Control Program. Ankara.2021. https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/Dokumanlar/Raporlar/17.Agustos_2021_Kanser_Kontrol_Programi_versiyon-1.pdf

26. Republic of Turkey Ministry of Health. Public Health Public Health Institution. Cancer Department. Türkiye Cancer Control Program, Ankara, 2016. Available from: https://www.scribd.com/document/515297824/TURKIYE-KANSER-KONTROL-PROGRAMI-2016?language_settings_changed=English

27. Republic of Turkey Ministry of Health. Directorate of Public Health Public Health Institution. Breast Cancer Screening Program National Standards. 2012. Available from: https://hsgm.saglik.gov.tr/depo/Mevzuat/Genel_Nitelikli_Yazi_ve_Gorusler/Meme_Kanseri_Tarama_Programi_Ulusal_Standartlari.pdf

28. General Directorate of Public Health, Ministry of Health, Unit Activity Report 2021, January 2022. Available from: https://hsgm.saglik.gov.tr/depo/birimler/butce-ve-projeler-db/Dokumanlar/HSGM_2021_Birim_Faaliyet_Raporu.pdf

29. S.Baskan, Atahan, K., Arıbal, E.,Özaydın, N., Balcı, P., Yavuz E., Screening and Diagnosis in Breast Cancer (Istanbul Breast Cancer Consensus Conference 2010). The Journal of Breast Health. 2012 Vol:8, No:3.

30. McGuire S. World Cancer Report 2014. Geneva, Switzerland: World Health Organization, International Agency for Research on Cancer, WHO Press, 2015. https://doi.org/10.3945/an.116.012211

MARMARA ÜNİVERSİTESİ YAYINEVİ

31. T.R. Ministry of Health General Directorate of Public Health. Cancer Department. Cancer Screenings. 2023. Available from: https://hsgm.saglik.gov.tr/tr/kanser-taramalari

32. American College of Radiology. Breast Imaging Reporting & Data System (BI_RADS). Available from: https://www.acr.org/Clinical-Resources/Reporting-and-Data-Systems/Bi-Rads

33. Yayın, E. and Alper, Y.,Transition to Family Medicine Model in Turkey and An Evaluation of the Social Security Institution's Practice on the Social Insurance Status of Family Physicians. Çalışma ve Toplum, 2023. 1(76): p. 121-158. https://doi.org/10.54752/ct.1241213

34. SSI. What is the General Health Insurance premium amount for 2024? Available from: https://www.sgk.gov.tr/Content/Post/146ba5fa-f757-4fc1-b316-30859c42d21e/2024-yili-icin-Genel-Saglik-Sigortasi-prim-tutari-ne-kadardir-2024-01-12-03-17-48#:~:text=Geliri%20brüt%20asgari%20ücretin%20üçte,600%2C08%20TL'dir

35. Yıldırım, A.D., Özaydın, A.N., Sources of Breast Cancer Knowledge of Women Living in Moda / İstanbul and Their Attendance to Breast Cancer Screening. European Journal of Breast Health, 2014. 10(1): p. 47-56. https://doi.org/10.5152/tjbh.2014.1762

36. TURKSTAT, Türkiye Health Interview Survey 2016. 2019. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Turkiye-Saglik-Arastirmasi-2019-33661

37. Çevik, C., Güneş, S., Hattatoğlu, T. D., Satıcı, M. A., Bulut, B., Şahin, S. C., Kocataş, M., Çiflik, L., Kaygusuz, S., Eser, E., Knowledge, Attitude and Behaviors of Women between the Ages of 40-69 on Early Detection of Breast Cancer. Turkish Journal of Family Medicine and Primary Care, 2019. 13(2): p. 119-128.

38. Ozmen V, Nilufer Ozaydin A, Cabioglu N, Gulluoglu BM, Unalan PC, Gorpe S, Oner BR, Aribal E, Thomas DB, Anderson BO. Survey on a mammographic screening program in Istanbul, Turkey. Breast J. 2011 May-Jun;17(3):260-7. https://doi.org/10.1111/j.1524-4741.2011.01065.x Epub 2011 Mar 31. PMID: 21450016.

39. Santos, E.F.d.S., et al., Social inequalities in access to cancer screening and early detection: A population-based study in the city of São Paulo, Brazil. Clinics, 2023. 78: p. 100160. https://doi.org/10.1016/j.clinsp.2022.100160

40. Rahman S, Price JH, Dignan M, Rahman S, Lindquist PS, Jordan TR. Access to Mammography Facilities and Detection of Breast Cancer by Screening Mammography: A GIS Approach. Int J Canc Prev. 2009;2(6):403-413. PMID: 20628557; PMCID: PMC2902003.

41. Hacettepe University Institute of Population Studies. (2019). 2018 Turkey Demographic and Health Survey. Hacettepe University Institute of Population Studies, T.R. Presidency of Turkey Directorate of Strategy and Budget and TÜBİTAK, Ankara, Turkey. Available from: https://fs.hacettepe.edu.tr/hips/dosyalar/Ara%C5%9Ft%C4%B1rmalar%20-%20raporlar/2018%20TNSA/TDHS2018_mainReport_compressed.pdf

42. Ayşe N. Özaydın, Bahadır M. Güllüoğlu, Pemra C. Ünalan, Serra Gorpe, Neslihan Cabioğlu, Birce R. Öner, Vahit Özmen. Breast cancer knowledge, source of information and breast health practices of women in Bahcesehir. Journal of Breast Health, Vol 5, issu 4, 214-224, Oct 2009.

43. Yılmaz, H.B. and Aksüyek, H.,Fieldwork About Importance Of Awareness In Early Diagnosis Of Breast Cancer In Bursa. The Journal of Breast Health 2012 Vol: 8 No: 2.

MARMARA ÜNİVERSİTESİ YAYINEVİ

44. Silverman E, Woloshin S, Schwartz LM, Byram SJ, Welch HG, Fischhoff B. Women's views on breast cancer risk and screening mammography: a qualitative interview study. Med Decis Making. 2001 May-Jun;21(3):231-40. https://doi.org/10.1177/0272989X0102100308 PMID: 11386630.

45. Tok Yıldız, F., Evcili, F., Gürler, H. (2024). Illness Perception in Breast Cancer Patients: A Mixed-Method Research. J Educ Res Nurs, 21(1), 65-71. https://doi.org/10.14744/jern.2023.77200

46. National Breast Cancer Foundation, NBCF. Early detection of breast cancer. 2024. Available from: https://www.nationalbreastcancer.org/early-detection-of-breast-cancer/

47. Kuchenbaecker, K.B., et al., Risks of breast, ovarian, and contra lateral breast cancer for BRCA1 and BRCA2 mutation carriers. JAMA. 2017;317(23):2402-2416. https://doi.org/10.1001/jama.2017.7112

48. Ashari A, Soleimanvandi Azar N, Nojomi M, Ranjbar H, Mirzaei K, Nafissi N, Roohravan Benis M, Rampisheh Z. Risk perception regarding social determinants of health among women with breast cancer in Iran: a qualitative study. BMJ Open. 2024 Aug 17;14(8):e081839. https://doi.org/10.1136/bmjopen-2023-081839 PMID: 39153768; PMCID: PMC11331842.

49. Fındık ÜY, Turan N. Kadınların Meme Kanserinin Erken Tanısına Yönelik Davranışlarının Belirlenmesi. Hemşirelik Forumu 2004; 8: 54-59.

50. Parlar S, Bozkurt AI, Ovayolu N. Bir Ana Çocuk Sağlığı Merkezine Başvuran Kadınlara Verilen Meme Kanseri ve Kendi Kendine Meme Muayenesi ile ilgili Eğitimin Değerlendirilmesi. C.Ü.Hemşirelik Yüksekokulu Dergisi 2004; 8: 9-15.

51. Sirin A, Atan Su, Tasci E. Protection From Cancer and Early Diagnosis Applications in Izmir, Turkey: a Pilot Study. Cancer Nurs 2006; 29: 207-13. https://doi.org/10.1097/00002820-200605000-00007

52. Dundar PE, Ozmen D, Ozturk B et al., The Knowledge and Attitudes of Breast Self Examination and Mammography in a Group of Women in a Rural Area in Western Turkey. BMC Cancer 2006; 24: 43. https://doi.org/10.1186/1471-2407-6-43

53. Jelinski, S.E., et al., The Influence of Breast Self-Examination on Subsequent Mammography Participation. American Journal of Public Health, 2005. 95(3): p. 506-511. https://doi.org/10.2105/AJPH.2003.032656 PMID: 15727985; PMCID: PMC1449210.

54. Açıkgöz A, Çehreli R, Ellidokuz F. Determining the Knowledge and Behaviour of Women Working in Hospitals About Early Diagnosis Methods for Breast Cancer and Examining the Effectiveness of the Implemented Planned Training. J Breast Health ,2015, vol.11, pp.31-38. https://doi.org/10.5152/tjph.2014.2322

55. Sadler GR, Ko CM, Cohn JA, White M, Weldon RN, Wu P. Breast cancer knowledge, attitudes, and screening behaviours among African American women: the Black cosmetologists promoting health program. BMC Public Health. 2007 Apr 17;7:57. https://doi.org/10.1186/1471-2458-7-57. PMID: 17439662; PMCID: PMC1858685.

56. Göçgeldi E, Açıkel CH, Hasde M, Aygut G, Çelik S, Gündüz İ, Karadeniz Y, Ayas R, Şahin E, Deniz C. Investigation of Attitudes and Behaviors of a Group of Women who Reside at in Ankara Gölbaşı on Self-Breast Examination. Fırat Tıp Dergisi. August 2008;13(4):261-265.

MARMARA ÜNİVERSİTESİ YAYINEVİ

57. Gençtürk N. The Status of Knowledge and Practice of Early Diagnosis Methods for Breast Cancer by Women Healthcare Professionals. The Journal of Breast Health 2013; 9(1): 5-9.

58. Newman LA. Breast cancer screening in low and middle-income countries. Best Pract Res Clin Obstet Gynaecol. 2022 Sep;83:15-23. https://doi.org/10.1016/j.bpobgyn.2022.03.018 Epub 2022 Apr 20. PMID: 35589536.

59. National Cancer Research Institute. Fear, anxiety and embarrassment stop women going for breast screening 2024. Available from: https://www.ncri.org.uk/fear-anxiety-and-embarrassment-stop-women-going-for-breast-screening/

60. Zeliha Koç, Pınar Çelebi, Ayşegül Memiş, Zeynep Sağlam, Figen Beyhan. Evaluation of the Impact of Nurses' Healthy Lifestyle Behaviors on Utilization from Breast Cancer Early Diagnosis Methods. J Breast Health 2014; 10: 166-173 https://doi.org/10.5152/tjbh.2014.2087

61. Erkal Aksoy Y, Çeber Turfan E, Sert E, Mermer. G. Barriers on Breast Cancer Early Detection Methods. J Breast Health. 2015; 11: 26-30. https://doi.org/10.5152/tjbh.2014.2296

62. Kissal, A. and A. Beser, Knowledge, facilitators and perceived barriers for early detection of breast cancer among elderly Turkish women. Asian Pac J Cancer Prev, 2011. 12(4): p. 975-984.

63. Ponce-Chazarri, L., et al., Barriers to breast cancer-screening adherence in vulnerable populations. Cancers, 2023. 15(3): p. 604. https://doi.org/10.3390/cancers15030604 PMID: 36765561; PMCID: PMC9913751.

64. Çetin, N., et al., Meme kanseri ve meme kanseri taramasına ilişkin Türk Kadınlarının bilgi, tutum ve görüşleri. Dirim, 2007. 82(1): p. 311-321.

65. Azaiza, F. and M. Cohen, Between traditional and modern perceptions of breast and cervical cancer screenings: a qualitative study of Arab women in Israel. Psycho-Oncology, 2008. 17(1): p.34-41. https://doi.org/10.1002/pon.1180 PMID: 17352007.

66. Trigoni, M., Griffiths, F., Tsiftsis, D. et al. Mammography screening: views from women and primary care physicians in Crete. BMC Women's Health 8, 20 (2008). https://doi.org/10.1186/1472-6874-8-20

67. Morris N. When health means suffering: mammograms, pain and compassionate care. Eur J Cancer Care (Engl). 2015 Jul;24(4):483-92. https://doi.org/10.1111/ecc.12272 Epub 2014 Dec 17. PMID: 25521596.

68. Kratzke C, Wilson S, Vilchis H. Reaching rural women: breast cancer prevention information seeking behaviors and interest in Internet, cell phone, and text use. J Community Health. 2013 Feb;38(1):54-61. https://doi.org/10.1007/s10900-012-9579-3 PMID: 22706805.

69. Halabi S, Skinner CS, Samsa GP, Strigo TS, Crawford YS, Rimer BK. Factors associated with repeat mammography screening. J Fam Pract. 2000 Dec;49(12):1104-12. PMID: 11132060.

70. Bazargan M, Bazargan SH, Calderón JL, Husaini BA, Baker RS. Mammography screening and breast self-examination among minority women in public housing projects: the impact of physician recommendation. Cell Mol Biol (Noisy-le-grand). 2003 Dec;49(8):1213-8. PMID: 14983989.

MARMARA ÜNİVERSİTESİ YAYINEVİ

71. Peterson EB, Ostroff JS, DuHamel KN, D'Agostino TA, Hernandez M, Canzona MR, Bylund CL. Impact of provider-patient communication on cancer screening adherence: A systematic review. Prev Med. 2016 Dec;93:96-105. https://doi.org/10.1016/j.ypmed.2016.09.034 Epub 2016 Sep 28. PMID: 27687535; PMCID: PMC5518612.

72. Documet P, Bear TM, Flatt JD, Macia L, Trauth J, Ricci EM. The association of social support and education with breast and cervical cancer screening. Health Educ Behav. 2015 Feb;42(1):55-64. https://doi.org/10.1177/1090198114557124 Epub 2014 Nov 12. PMID: 25394824; PMCID: PMC4526257.

73. Ozturk, K., Tarım, M. (2021). Women's Mammography Screening Journeys : An Action Research Study. Sağlık Akademisyenleri Dergisi, 8(1), 1-7.

74. Secginli S, Nahcivan NO. Reliability and validity of the breast cancer screening belief scale among Turkish women. Cancer Nursing. 2004 Jul-Aug;27(4):287-294. https://doi.org/10.1097/00002820-200407000-00005 PMID: 15292724.

75. Aslaner, Ç., Investigation of breast cancer prevention behaviors by mixed method of women who attended to a family health center. 2019. [Thesis, İstanbul University]. Available from: https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=eNzHCe5wA7LxWsjnFiB0Wg&no=Zew4vJUVnV_XNeAyhsRgJw

76. Znaor A, Ryzhov A, Losada ML, Carvalho A, Smelov V, Barchuk A, Valkov M, Ten E, Andreasyan D, Zhizhilashvili S, Dushimova Z, Zhuikova LD, Egorova A, Yaumenenka A, Djanklich S, Tril O, Bray F, Corbex M. Breast and cervical cancer screening practices in nine countries of Eastern Europe and Central Asia: A population-based survey. J Cancer Policy. 2023 Dec;38:100436. https://doi.org/10.1016/j.jcpo.2023.100436 Epub 2023 Aug 5. PMID: 37544479; PMCID: PMC10695765.

77. Cardoso R, Hoffmeister M, Brenner H. Breast cancer screening programmes and self-reported mammography use in European countries. Int J Cancer. 2023 Jun 15;152(12):2512-2527. https://doi.org/10.1002/ijc.34494 Epub 2023 Mar 17. PMID: 36883419.

78. WONCA EUROPE 2023 Edition. The European Definition of GP / FM 2023; Available from: https://www.woncaeurope.org/page/definition-of-general-practice-family-medicine

79. R.T. MoH. Family Medicine Practice Regulation. Official Gazette. Number: 28539. January 25, 2013. Available from: https://www.resmigazete.gov.tr/eskiler/2013/01/20130125-26.htm

80. Republic of Turkey, Ministry of Health, General Directorate of Health Information Systems, Turkey Health Statistics Yearbook. 2022. p 150. Available from: https://dosyasb.saglik.gov.tr/Eklenti/48054/0/siy202205042024pdf.pdf

81. Jensen, L.F., Mukai, T.O., Andersen, B. et al. The association between general practitioners' attitudes towards breast cancer screening and women's screening participation. BMC Cancer 12, 254 (2012). https://doi.org/10.1186/1471-2407-12-254

82. Sebo, P., Maisonneuve, H., Fournier, JP. et al. General practitioners' views and preferences about quality improvement feedback in preventive care: a cross-sectional study in Switzerland and France. Implementation Sci 12, 95 (2017). https://doi.org/10.1186/s13012-017-0623-7

83. Neugut AI, MacLean SA, Dai WF, Jacobson JS. Physician Characteristics and Decisions Regarding Cancer Screening: A Systematic Review. Popul Health Manag. 2019 Feb;22(1):48-62. https://doi.org/10.1089/pop.2017.0206 Epub 2018 Jun 11. PMID: 29889616.

MARMARA ÜNİVERSİTESİ YAYINEVİ

84. Özdemir R, Ural S, Karaçalı M. Challenges in Cancer Control Services Provided by Family Physicians in Primary Care: A Qualitative and Quantitative Study From Karabuk Province in Turkey. J Cancer Prev. 2018 Dec;23(4):176-182. https://doi.org/10.15430/JCP.2018.23.4.176 Epub 2018 Dec 30. PMID: 30671400; PMCID: PMC6330987.

85. Lüleci D.,Kılıç B. Sociocultural and Political Analysis of Breast Cancer Screening Process with Mammography in Turkey. [Thesis, Dokuz Eylül University, Faculty of Medicine, Department of Public Health] Available from: https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=ceJ-B-tPgoZ5QgMrJBbHVg&no=bHad5zZDQgfPc2ngH63Byw

86. HYP. Disease Management Platform. Available from: https://hyp.saglik.gov.tr/

87. Huang N, Chen L, He J, Nguyen QD. The Efficacy of Clinical Breast Exams and Breast Self-Exams in Detecting Malignancy or Positive Ultrasound Findings. Cureus. 2022 Feb 21;14(2):e22464. https://doi.org/10.7759/cureus.22464 PMID: 35371742; PMCID: PMC8942605.

88. Khosravi M, Mojtabaeian SM, Aghamaleki Sarvestani M. A systematic review on factors influencing Middle Eastern women's utilization of healthcare services: The promise of mHealth. SAGE Open Med. 2024 Aug 31;12:20503121241276678. https://doi.org/10.1177/20503121241276678 PMID: 39224892; PMCID: PMC11367701

89. Ala A, Alsaadi FE, Ahmadi M, Mirjalili S. Optimization of an appointment scheduling problem for healthcare systems based on the quality of fairness service using whale optimization algorithm and NSGA-II. Sci Rep. 2021 Oct 6;11(1):19816. https://doi.org/10.1038/s41598-021-98851-7 PMID: 34615890; PMCID: PMC8494746.

90. Öztürk, Y. E., Söyler, S. (2021). A New Practice in Primary Health Care: Service Provision in Healthy Life Centres, Problems Encountered and Solution Suggestions. Ekonomi İşletme Siyaset Ve Uluslararası İlişkiler Dergisi, 7(2), 403-418.

91. Dogu GG, Atceken A, Cetinkaya G, Oner M, Yagın NN, et al. (2017) Patients Admitted to Tertiary Health Care Center: Cancer Screening Program Awareness Study. Glob J Medical Clin Case Rep 4(2): 028-030. DOI: http://doi.org/10.17352/2455-5282.000040

92. Kılıç ME, Özcan S, Kılıç G, Küçükzeybek BB, Atmalar Y, Koç BT. Diagnosis Rates Through Cancer Screening Programs in Patients with Breast Carcinoma. Florence Nightingale J Nurs. 2023 Jun;31(2):91-96. https://doi.org/10.5152/FNJN.2023.22271 PMID: 37404211; PMCID: PMC10440967.

93. Alduran, O., Women's Breast Cancer Screening Behavior and Patient Activation. 2021. [Thesis, Dokuz Eylul University, Faculty of Medicine, Departmant of Family Medicine] Available from: https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

94. Okello DR, Gilson L. Exploring the influence of trust relationships on motivation in the health sector: a systematic review. Hum Resour Health. 2015 Mar 31;13:16. https://doi.org/10.1186/s12960-015-0007-5 PMID: 25889952; PMCID: PMC4384237.

95. Veenstra GL, Dabekaussen KFAA, Molleman E, Heineman E, Welker GA. Health care professionals' motivation, their behaviors, and the quality of hospital care: A mixed-methods systematic review. Health Care Manage Rev. 2022 Apr-Jun 01;47(2):155-167. https://doi.org/10.1097/HMR.0000000000000284 PMID: 32271199; PMCID: PMC8876425.

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Appendix 1:

The Team Members of the Project



Project Coordinator

Prof. Ayşe Nilüfer Özaydın MD, MPH, PhD

She graduated from Hacettepe University Faculty of Medicine in 1984. She completed her Master's and Doctorate programmes in the field of Public Health at Hacettepe University Institute of Health Sciences.

She studied Epidemiology and Statistics at Liverpool School of Tropical Medicine. She attended specialization training at Ankara University European Community Research Centre.

She participated in national and international certificate programmes in the fields of management and leadership knowledge and skills, epidemiology and statistics, sexual and reproductive health, educational skills, occupational and worker health and sports medicine.

She worked at Gaziantep Karşıyaka Health Centre, Maternal and Child Health Departments of Gaziantep Provincial Health Directorate, Ankara-Çubuk Central Health Centre, Ankara Provincial Health Directorate and General Directorate of Maternal and Child Health - Women's Health Department of the T.R. Ministry of Health.

Since 2001, she has been teaching as a lecturer at Marmara University Faculty of Medicine, Department of Public Health, and as a guest lecturer at Cyprus Eastern Mediterranean University Faculty of Medicine and Atlas University Faculty of Medicine.

She became an associate professor in 2015 and a professor in 2021 in the field of Public Health.

Topics she is interested in are women's health, sexual and reproductive health, family planning, primary and secondary prevention of diseases and breast health.

She was a member of the WHO Global Breast Cancer Initiative (GBCI) working group. She is the Türkiye Coordinator of the Geneva Foundation for Medical Education and Research (GFMER). She is a member of the European Society of Reproductive Health and Contraception (ESC), a member of the Ethics Committee of Umraniye Training and Research Hospital, İstanbul, a member of the Cancer Epidemiology and Preventive Oncology Group of the Turkish Health Institutes, a member of the Turkish Medical Association, a member of the Public Health Specialists Association (HASUDER), and a member of the Turkish Medical Education Development Association (TEGED). She was the President of Marmara Health Education and Research Foundation (MARSEV) (2017-2019). She is the chairman of the board of directors of the Breast Health Association (MEMEDER) (2023-2024).

MARMARA ÜNİVERSİTESİ YAYINEVİ



Project Execution Officer

Prof. Arzu Uzuner MD, PhD

Uzuner graduated from İstanbul University Cerrahpaşa Faculty of Medicine in 1985. She received her specialty training in Family Medicine at İstanbul Haydarpaşa Numune Hospital between 1990-94. She worked as a specialist physician at İstanbul Ümraniye Mother and Child Health Family Planning Centre until 2001. She completed her doctorate in Microbiology at Marmara University Health Sciences Institute between 1990-97.

In 2001, she started her academic career at Marmara University Faculty of Medicine, Department of Family Medicine. She received the title of associate professor in 2008 and professor in 2015. She served as Head of the Department between the years 2008-2013 and 2015-2018. She retired as a professor from the same department in 2024.

She personally contributed to the training of countless medical school students and many family medicine specialists; she advised 23 theses; she has 72 research articles, 141 papers, book chapters and translations, and 408 citations (impact factor: 11). She continues her work as a Researcher-Writer-Editor. She is fluent in English and French.

As a clinician, she focused on general medicine, reproductive health, obesity, and management of chronic diseases. She continues her work on these issues. She has been the Chairman of the Board of Directors of the Marmara Health Education and Research Foundation since 2024. In 2010, she founded the periodical scientific journal named Turkish Family Physician and served as its editor, a position she still holds.

Organizations she is a member of Turkish Family Physicians Specialization Association (TAHUD) Central Board (2008-2015), TAHUD General Secretary (November 2010-2012), İstanbul Medical Chamber Specialty Education Working Group (UEÇG) (2005-2010), European Forum for Primary Care (EFPC) (2013-2014; 2020-2021; 2023), European General Practice Research Network (EGPRN) (2022), European Association of Scientific Editors (EASE) (2022-...).

MARMARA ÜNİVERSİTESİ YAYINEVİ



Technical Advisor

Kirstin Öztürk MSC, PhD

Öztürk holds a Master's degree in Health Policy and Management from Harvard T.H. Chan School of Public Health (1998). She completed her doctorate in Health Policies and Management at Marmara University (2020).

She conducts research and projects on health policies, women's health and breast cancer screenings. Throughout her career, she has focused specifically on women's health and breast cancer screenings. In her doctoral thesis, she conducted an action research study examining the mammography screening processes of women in Türkiye. This study addressed women's access to health care and the importance of early diagnosis and offered suggestions for making mammography screenings more accessible.

She currently works as a Senior Chief Researcher at TÜBİTAK Marmara Research Centre (MAM). Additionally, she took part in the Smart Life and Health Products Road Map project of the Turkish Ministry of Industry and Technology.

Interests; health system strengthening, women's health, digital health technologies and health policies.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ



Fatma Burcu Doğanç MD

Born in 1985 in Trabzon, Türkiye. Doğanç graduated from Karadeniz Technical University Faculty of Medicine in 2009. After one year of general practice experience, she passed the Haydarpaşa Numune Training and Research Hospital Emergency Medicine Department with the Medical Specialization Exam and graduated from there in 2014 and received the title of Emergency Medicine Specialist.

She worked as an occupational physician in a private institution for 2 years. After approximately 7 years of emergency specialization, she took the Medical Specialization Exam again in 2021 and started working as a research assistant at Marmara University Faculty of Medicine, Department of Public Health.

She provides training on women's health, reproductive health, family planning and first aid.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ



Beyza Nur Ataoğlu MD

Born in İstanbul, Türkiye in 1995. Ataoğlu graduated from İstanbul Medeniyet University Faculty of Medicine in 2019.

After working as a general practitioner at the Pendik District Health Directorate for 8 months, she took the Medical Specialization Exam and started working as an assistant physician/ research assistant at Marmara University Faculty of Medicine, Department of Public Health.

During the COVID-19 pandemic, she took part in field services and undertook patient follow-up duties in the wards of Marmara University Faculty of Medicine Hospitals.

She provides training on evidence-based medicine and research planning.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ



Cemre Hilal Kesen Yurtcanlı MD

Born in 1994 in Samsun, Türkiye. Yurtcanlı graduated from Marmara University Faculty of Medicine in 2018. Between 2018 and 2020, she worked as a general practitioner at the Marmara University Pendik Training and Research Hospital, in the emergency department, blood transfusion centre, adolescent substance abuse rehabilitation centre and pandemic hospital.

She has been working as a research assistant at Marmara University Faculty of Medicine, Department of Public Health since 2020. She is interested in the field of Public Health, especially in primary healthcare and field epidemiology.

Additionally, she works as a research assistant in Introduction to Clinical Practice, Evidence-Based Medicine and Community-Oriented Primary Health Care courses.

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Appendix 2: Informed Consent Forms and Questionnaires

A. For Women's Interviews:

a. Informed Consent

Hello Ms.....

I am Dr. ..... I am calling you to discuss "breast health." I obtained your phone number from.....

We Are a group of female physicians from Marmara University School of Medicine conducting interviews with women aged 40-69 across Türkiye to identify "Perceptions, Beliefs, and Behaviors Influencing Early Breast Cancer Diagnosis in Türkiye." We would like to invite you to share your views on this topic.

Your valuable suggestions will contribute to breast health services for all women in our country. We will record your thoughts, feelings, and suggestions. The interview will last approximately 20-40 minutes. All personal information you share with us will be kept strictly confidential, and your opinions will not be evaluated individually, but rather as part of the collective views of "Women in Türkiye."

We would like to hear your views on breast health services (such as free mammography and breast examinations), whether you have ever had a mammogram or breast examination, and if you have not undergone these tests in the past two years, we would like to understand the reasons in detail. If you intended to but were unable to go, please share with us the conditions that would make it easier for you to participate in these tests regularly.

"I, ... (City/Full Name),

agree to participate in this interview about breast health with full consent and willingness."

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

b. Participant Information Form:

1. Could you please tell me your year of birth? .....

2. Could you provide information about your current marital status?:

○ 1. Single ○ 2. Married ○ 3. Widowed ○ 4. Divorced ○ 5. Other

3. What is the last school you graduated from?

○ 1. Illiterate ○ 2. Literate ○ 3. Primary school graduate ○ 4. Middle school graduate

○ 5. High school graduate ○ 6. Undergraduate graduate ○ 7. Postgraduate graduate

4. Are you employed in a job that generates income?

○ 1. Yes ○ 2. No ○ 3. Unknown/Not specified

5. What is your occupation? .....

6. How would you describe your income?

○ 1. Income less than expenses

○ 2. Income equals expenses

○ 3. Income exceeds expenses

7. Do you have health insurance?

○ 1. Yes ○ 2. No ○ 3. Unknown/Not specified

8. Do you have private health insurance (PHI)

○ 1. Only PHI ○ 2. Both PHI and public insurance (SGK)

○ 3. Supplementary insurance ○ 4. None ○ 5. Unknown/Not specified

9. Weight: ____ kg Height: ____ cm (Last Recalled Date: ____ day/month/year)

10. What is your age at menarche?.....

11. What is your age at menopause?.....

12. Have you ever used assisted reproductive technologies (e.g., IVF)?

○ 1. Yes ○ 2. No

13. Have you ever received hormone therapy after menopause (e.g., hormone replacement therapy)?

○ 1. Yes ○ 2. No

How long did you use it and why (Was it prescribed by a physician, or did you take it yourself? Who decided the duration of use?)

MARMARA ÜNİVERSİTESİ YAYINEVİ

14. Have you ever used or are currently using addictive substances such as tobacco, alcohol, etc.?

○ 1. Smoking ○ 2. Alcohol ○ 3. Substance ○ 4. Other (specify:).....

15. If you smoke, how long have you been smoking? .....

16. How many packs do you smoke per day? .....

17. Have you been diagnosed with any disease by a physician? Please specify:.....

18. Are you taking any regular medications? Please specify: .....

19. Have you ever been diagnosed with cancer by a physician?

○ 1. Invasive breast cancer ○ 2. Ductal carcinoma in situ ○ 3. Ovarian cancer

○ 4. Other cancer (specify:) .....

20. Does anyone in your family have cancer? (Specify if there is a history of breast and/or ovarian cancer in 1st or 2nd degree relatives)

○ 1. Yes ○ 2. No ○ 3. Unknown/Not specified

21. Have you ever had a breast biopsy? (Please specify the number and diagnosis).....

22. Have you used or are you currently using any birth control methods? (Please specify which methods and for how long, especially hormonal oral/injectable contraceptives, pills, hormonal IUD, etc.

○ 1. Yes ○ 2. No

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

c. Semi-Structured Interview Form for Women Who Have/Have Not Had a Mammogram:

1. How do you assess your own health as a woman? What do you pay attention to?

2. If you wanted to get a breast health check-up, where and how would you do it? What would your process be (e.g., private hospital, state hospital, family health centre)?

At what age do you think it is appropriate to start the check-ups?

3. Who do you talk to about your breast health, and why?

4. Where do you turn for issues related to your breast health? Why?

5. How do you evaluate the health system in our country (public/private)? Do you trust the healthcare system? Why or why not? Can you give examples?

6. What do you know about breast cancer? What type of illness do you think breast cancer is?

7. From where have you received or heard the most information about breast cancer?

8. Who do you think is more likely to get breast cancer (e.g., knowledge of risk groups)? Have you ever thought about whether you might get this disease?

9. How do people around you treat women who are diagnosed with breast cancer? How do husbands, families, friends, and employers behave if the woman is working?

10. How is a woman with breast cancer perceived by society? How do husbands, families, friends, and employers behave if the woman is diagnosed? Is breast cancer freely discussed in terms of privacy?

11. Do you think breast cancer is different from other cancers? If so, how is it different?

12. What can be done to avoid getting breast cancer? What do you do yourself (e.g., no smoking, no alcohol, exercise, etc.)?

13. What is important in early detection of breast cancer, in your opinion? Is early detection possible? What does the phrase "early detection saves lives," which you might have heard on TV or the internet, mean to you?

14. If people want to have a breast examination, mammogram, or breast X-ray, where do you think the right places are to go?

15. What have you heard about breast cancer screening programmes in our country? (Would you get checked before a disease occurs? Where would you go for this? Have you heard of KETEM? Where did you hear about it? Have you ever been? Do you know of others who have?)

16. When do you think is the most suitable time to have a breast examination, breast X-ray, or mammogram?

17. What channels can be used to encourage people to get breast examinations, X-rays, or mammograms (TV, cinema, radio, SMS, YouTube, etc.)?

MARMARA ÜNİVERSİTESİ YAYINEVİ

18. What could convince people to have a breast examination or mammogram?

19. Have you had a clinical breast examination by a physician? If not, why? What would motivate you to go? What are the barriers?

20. Have you ever had a mammogram or breast X-ray? Why? What would motivate you to go? What are the barriers?

21. For women who have had a mammogram in the last two years, what was the most important factor that led you to get it? (Please explain in detail.)

22. In your opinion, why don't women in your area get mammograms? (Social barriers? Stigma? Gender of the physician or X-ray technician?)

23. When you need any healthcare services, where do you go first? Why?

24. Where do you think a woman diagnosed with breast cancer should go for treatment (consider public vs. private healthcare)? Why would she go to the public or private sector first? (Gynaecologist? Oncologist? Radiologist?)

25. Is there anything else you would like to add?

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

B. For Family Physicians and Family Health Workers:

a. Informed Consent:

Hello,

We are conducting a qualitative study titled "Perceptions, Beliefs, and Behaviors Influencing Early Breast Cancer Diagnosis in Türkiye," in collaboration with the Public Health and Family Medicine Departments at Marmara University School of Medicine. We sincerely thank you for agreeing to participate in our study.

As you know, the Turkish Ministry of Health has been running a breast cancer control programme since 2007, and primary health care services have been successfully carried out by you, our esteemed family physicians, since 2010. Since breast cancer is a disease that can be diagnosed early, the services you provide are highly significant.

"I, _____ (City/Full Name), willingly and with great enthusiasm accept the invitation to discuss breast health with you."

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

b. The Participant Information Form for Family Physicians and Family Health Workers:

1. Could you please tell me your year of birth? _____

2. (For women over 40 years old:) Have you entered menopause?

○ 1 Yes ○ 2 No ○ 3 Unknown/Not specified

3. Your gender?

○ 1 Female ○ 2 Male ○ 3 Prefer not to say

4. Do you have private health insurance (PHI)?

○ 1 Supplementary PHI ○ 2 Private health insurance

○ 3 None ○ 4 Unknown/Not specified

5. Could you provide information about your most recent education level?

○ 1 Specialist family physician ○ 2 General practitioner family physician

○ 3 Other (Specify:).....

6. What is the year of your most recent graduation? _____

7. How long have you been working at your current Family Health Centre (ASM)? _____ months/years

8. Did you have experience working at another ASM before your current position? If yes, for how long?

○ 1 Yes Duration: _____ months/years ○ 2 No

9. Does anyone in your immediate family have a diagnosis of breast cancer? If yes, what is the degree of relation?

○ 1 Yes Degree of relation (Specify:)..... ○ 2 No

10. Does anyone in your immediate family have a diagnosis of ovarian cancer? If yes, what is the degree of relation?

○ 1 Yes Degree of relation (Specify:)..... ○ 2 No

11. Do you perform breast self-examinations (BSE) on yourself? If yes, how often?

How long does a BSE take on average? (For men, this question will be asked regarding their partner.)

○ 1 Yes Frequency (Specify:) .....

Duration (Specify:) ..... minutes ○ 2 No

12. Do you have clinical breast examinations performed by another physician? If yes, how often?

○ 1 Yes Frequency (Specify) ..... ○ 2 No

13. Have you ever had a mammogram? If yes, how often?

○ 1 Yes Frequency (Specify:)..... ○ 2 No

14. Do you have a history of any breast disease? If yes, what is it?

○ 1 Yes Please specify: ..... ○ 2 No

MARMARA ÜNİVERSİTESİ YAYINEVİ

c. Semi-Structured Interview Form for Family Physicians and Family Health Workers:

1. What are your thoughts on cancer screening programmes in our country?

2. What are your thoughts on how cancer screening programmes fit into your daily workflow in our country?

3. What do you think about the healthcare services related to early breast cancer diagnosis in our country?

4. Can you describe the operation of the breast cancer screening programme at your Family Health Centre (ASM)?

How is the programme running, in your opinion?

(What are your personal views on this program? Is it beneficial for the public? Is it user-friendly?)

(If no issues arise here:)

If there are problems with the operation of the program, can you discuss them?

(Issues with software, scheduling appointments and patient attendance, patient acceptance of the program, increased workload for family physicians, etc.)

5. What can you say about your roles and responsibilities in this process?

(Is the family physician aware of their responsibilities?

Do they know how the cancer screening programme is addressed in the family medicine guidelines?)

6. How much of the recommendations for breast cancer screening (BSE education, clinical breast exams, and mammogram referrals) do you think you are able to implement? (Please explain.)

7. What are your suggestions for ensuring the successful continuation of the breast cancer screening programme in our country? What do you think should be done?

What type of system would be ideal for you, as family physicians working in ASMs, to work happily and productively within the breast cancer screening system?

What suggestions do you have to increase the participation of women in breast cancer screenings in your region?

8. Is there anything else you would like to add?

MARMARA UNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

C. For Interviews with KETEM Healthcare Personnel:

a. Informed Consent:

Dear Participant,

A qualitative study titled "Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye" is being conducted in collaboration with the Public Health and Family Medicine Departments at Marmara University School of Medicine.

We invite you to participate in this study.

In this context, we aim to gather your opinions on the current breast health services in our country (such as free mammography and clinical breast examinations), understand the situation and process at your screening centre, identify any barriers, and learn about your suggestions and expectations.

We will conduct focus group discussions or in-depth interviews with at least two participants and researchers at a time, at a day, time, and place most convenient for you. Your comments, feelings, and suggestions will be recorded. At least two researchers will conduct the interview with you. We expect you to participate in face-to-face, one-on-one, or online/phone interviews at your centre at a time that is convenient for you. Participation in these interviews is voluntary. If you consent, the interviews will be audio-recorded and written notes will be taken. The interviews are expected to last approximately 20-40 minutes and will continue until no new ideas are presented. The study will conclude once new ideas from different participants are exhausted.

The personal information you share during these interviews will be kept strictly confidential by the researchers. The data you provide will not be evaluated individually but will be analyzed collectively. You have the right to answer or refuse to answer any of the questions posed to you during the interview. There will be no payment for participating in the interviews, and there will be no loss or penalty if you choose not to participate. Your opinions on breast health services will help to inform the planning of more accessible and effective services. We thank you in advance for sharing your sincere views with us.

I have been informed that a study will be conducted by Prof. Dr. Ayşe Nilüfer Özaydın from the Department of Public Health at Marmara University School of Medicine, and I have been provided with the above information about the research. After receiving this information, I have been invited to participate as a "participant" in this study. If I choose to participate, I trust that my personal information, which must remain confidential between me and my physician, will be treated with great care and respect throughout the research process. I am confident that my personal data will be protected with the utmost care when used for educational and scientific purposes. I understand that I can withdraw from the research at any time without giving a reason, but I am aware that it would be considerate to notify the researchers in advance if I decide to withdraw so as not to cause any inconvenience. I acknowledge that I am not financially responsible for any expenses related to the research and that I will not receive any payment.

In case of any issues during the research, I understand that I can contact Prof. Dr. Ayşe Nilüfer Özaydın at (0216) 421 22 22 (extension 5597) at any time. I am aware that I am not obligated to participate in this research, and I may choose not to participate without any pressure.

I have read and fully understood all the explanations provided to me. After taking some time to consider, I have decided to participate as a "participant" in the research project mentioned above. I gladly and voluntarily accept this invitation.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Voluntary Concent Form

I have read the text above, which outlines the information that must be provided to the volunteer before the research. Written and verbal explanations have been provided to me regarding these conditions. Under these conditions, I freely and willingly consent to participate in this research without any coercion or pressure.

Participant's Name-Surname, Signature, Address;

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

b. Semi-Structured Interview Form for KETEM Healthcare Personnel:

1. What is your profession?

2. How long have you been working at this KETEM?

3. What are your thoughts on the current healthcare services related to early breast cancer diagnosis in our country?

4. Can you describe how the breast cancer screening programme is implemented at your KETEM?

5. How do women who come to you for screening get in touch with you?
(Are they referred or do they come directly?)

6. Do you provide information on self-breast examinations to the women who come to you?

7. Is a clinical breast examination performed before imaging? Do you perform it?

8. Do you personally perform clinical breast examinations? If so, how long do they typically take?

9. In your opinion, why do women participate or not participate in the free screening program?

10. What do you think should be done to improve the program?

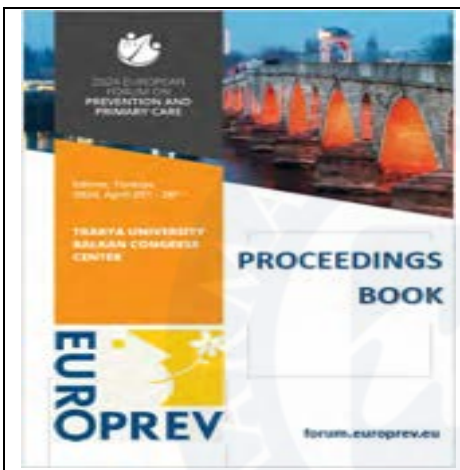
11. Is there anything else you would like to add?

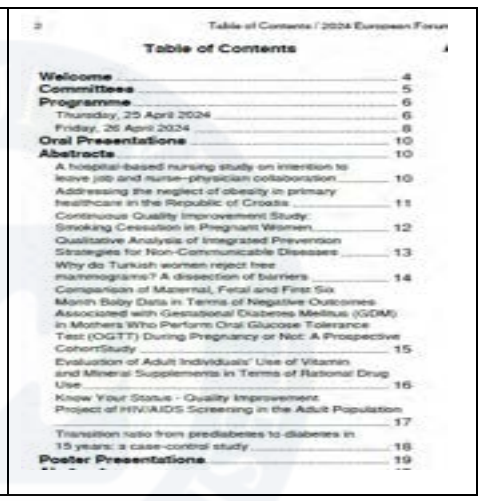
MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Appendix 3: Conference Participation

I. 2024 European Forum on Prevention and Primary Care

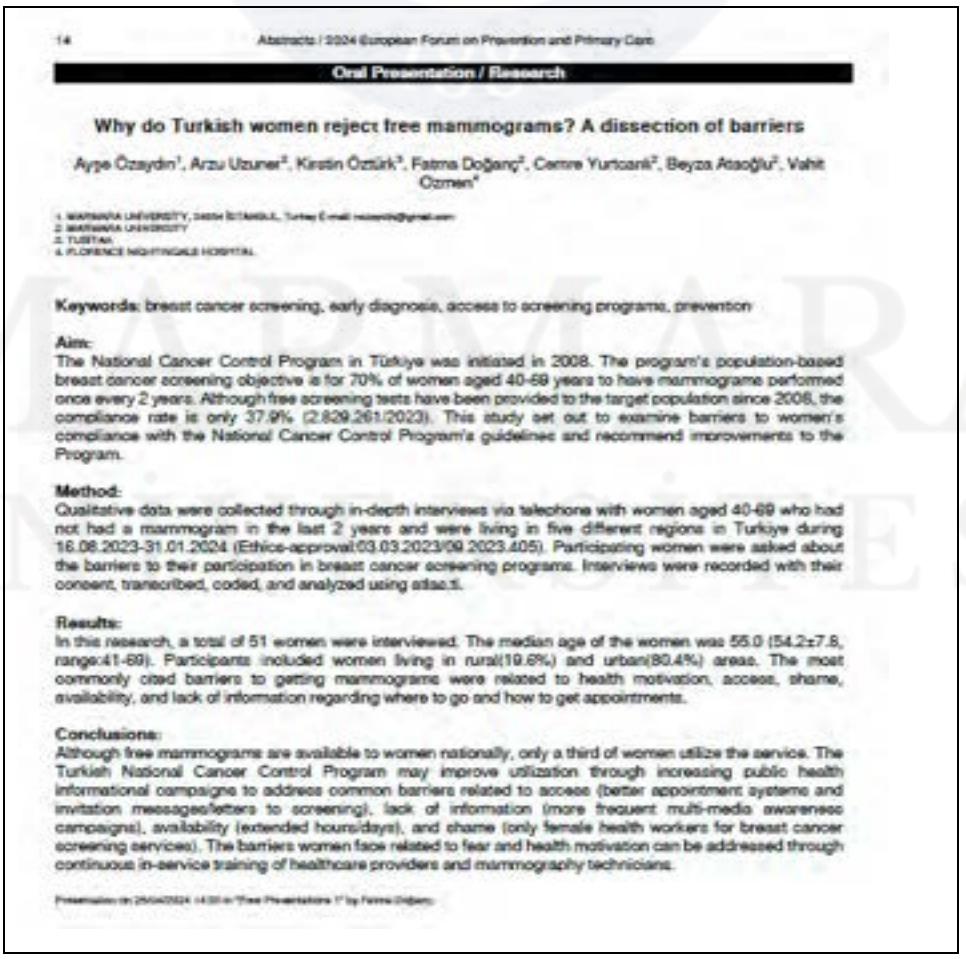




2 Table of Contents / 2024 European Forum

Table of Contents

Welcome 4
Committees 5
Programme 6
Thursday, 25 April 2024 6
Friday, 26 April 2024 8
Oral Presentations 10
Abstracts 10
A hospital-based nursing study on intention to leave job and nurse–physician collaboration 10
Addressing the neglect of obesity in primary healthcare in the Republic of Croatia 11
Continuous Quality Improvement Study: Smoking Cessation in Pregnant Women 12
Qualitative Analysis of Integrated Prevention Strategies for Non-Communicable Diseases 13
Why do Turkish women reject free mammograms? A dissection of barriers 14
Comparison of Maternal, Fetal and First Six Month Baby Data in Terms of Negative Outcomes Associated with Gestational Diabetes Mellitus (GDM) in Mothers Who Perform Oral Glucose Tolerance Test (OGTT) During Pregnancy or Not: A Prospective CohortStudy 15
Evaluation of Adult Individuals' Use of Vitamin and Mineral Supplements in Terms of Rational Drug Use 16
Know Your Status - Quality Improvement Project of HIV/AIDS Screening in the Adult Population 17
Transition ratio from prediabetes to diabetes in 15 years: a case-control study 18
Poster Presentations 19



14 Abstracts / 2024 European Forum on Prevention and Primary Care

Oral Presentation / Research

Why do Turkish women reject free mammograms? A dissection of barriers

Ayşe Özaydın[1], Arzu Uzuner[2], Kirstin Öztürk[3], Fatma Doğanç[2], Cemre Yurtcanlı[2], Beyza Ataoğlu[2], Vahit Özmen[4]

1. MARMARA UNIVERSITY, 34854 İSTANBUL, Turkey E-mail: [illegible]
2. MARMARA UNIVERSITY
3. TUSTAN
4. FLORENCE NIGHTINGALE HOSPITAL

Keywords: breast cancer screening, early diagnosis, access to screening programs, prevention

Aim:
The National Cancer Control Program in Türkiye was initiated in 2008. The program's population-based breast cancer screening objective is for 70% of women aged 40-69 years to have mammograms performed once every 2 years. Although free screening tests have been provided to the target population since 2008, the compliance rate is only 37.9% (2.829.261/2023). This study set out to examine barriers to women's compliance with the National Cancer Control Program's guidelines and recommend improvements to the Program.

Method:
Qualitative data were collected through in-depth interviews via telephone with women aged 40-69 who had not had a mammogram in the last 2 years and were living in five different regions in Turkiye during 16.08.2023-31.01.2024 (Ethics-approval:03.03.2023/09.2023.405). Participating women were asked about the barriers to their participation in breast cancer screening programs. Interviews were recorded with their consent, transcribed, coded, and analyzed using atlas.ti.

Results:
In this research, a total of 51 women were interviewed. The median age of the women was 55.0 (54.2±7.8, range:41-69). Participants included women living in rural(19.6%) and urban(80.4%) areas. The most commonly cited barriers to getting mammograms were related to health motivation, access, shame, availability, and lack of information regarding where to go and how to get appointments.

Conclusions:
Although free mammograms are available to women nationally, only a third of women utilize the service. The Turkish National Cancer Control Program may improve utilization through increasing public health informational campaigns to address common barriers related to access (better appointment systems and invitation messages/letters to screening), lack of information (more frequent multi-media awareness campaigns), availability (extended hours/days), and shame (only female health workers for breast cancer screening services). The barriers women face related to fear and health motivation can be addressed through continuous in-service training of healthcare providers and mammography technicians.

Presentation on 25/04/2024 14:00 in "Free Presentations 1" by Fatma Doğanç

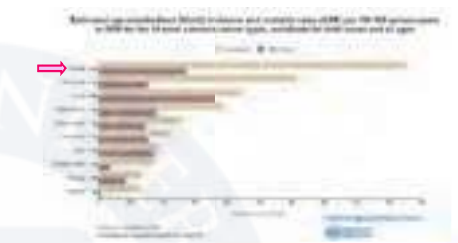
MARMARA ÜNİVERSİTESİ YAYINEVİ

Why Do Turkish Women Reject Free Mammograms? A Dissection Of Barriers

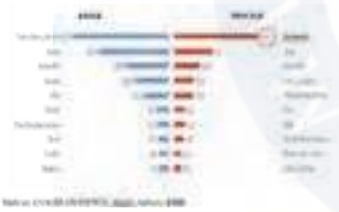
Prof. Dr. Ayşe Nilufer Özaydın[1], Prof. Dr. Arzu Uzuner[2], Kirstin Öztürk[3], Dr. Fatma Burcu Doğanç[4], Dr. Cemre Yurtcanlı, Dr. Beyza Ataoğlu, Prof. Dr. Vahit Özmen[1]

[1]Marmara University Faculty of Medicine, Department of Public Health
[2]Marmara University Faculty of Medicine, Department of Family Medicine
[3]TUBITAK (The Scientific and Technological Research Council of Turkey)
[4]Florence Nightingale General Surgery Clinic

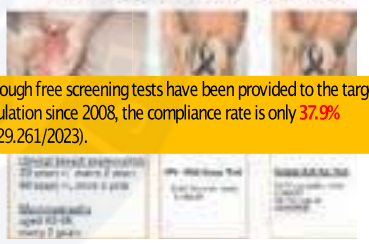
Introduction



Top 10 Cancers in 2018, Turkey (Age Standardized Rate/per 100,000 people)



National Cancer Screening Standarts, Turkey



- Although free screening tests have been provided to the target population since 2008, the compliance rate is only 37.9% (2.829.261/2023).

Aim

- This study set out to examine barriers to women's compliance with the National Cancer Control Program's guidelines and recommend improvements to the Program.

Methods

- This was a qualitative study.
- Universe: Women in the age group of 40-69 years of registered family physicians in both rural and urban areas from 5 regions of Turkey (East, West, North, South and Central) who have **not had** a mammography screening in the last 2 years.
- A total of **51 women** were reached using the snowball sampling method.

Methods

- Qualitative data were collected through **in-depth interviews** via telephone during 16.08.2023-31.01.2024.
- Duration of the interviews: between 12 and 40 minutes, with an average of 30 minutes.
- Participants were given information about the interview and provided their informed consent just before the interviews.

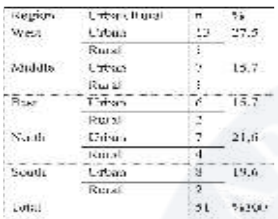
Methods

- During the interviews, participants were asked about their reasons for not participating in a breast cancer screening program and what motivated them to participate in the screening program.
- The interviews were then transcribed and subjected to content analysis using the Atlas.ti program.
- Ethics committee approval was obtained from the relevant university ethics committee on March 3, 2023, with the approval number 09.2023.405.

MARMARA ÜNİVERSİTESİ YAYINEVİ

Results

- Table 1. Women who have not had a mammogram in the last 2 years



- Table 2. Sociodemographic characteristics of women who have not had a mammogram in the last 2 years



- When the interviews with the women were analyzed, a total of **89 codes** were identified. The themes were determined to be **barriers** and **motivators**
- The most commonly cited barriers to getting mammograms were related to **health motivation, access, shame, availability,** and **lack of information** regarding where to go and how to get appointments.

Barriers



Motivators



Discussion

- In our study, as well as in studies conducted in many other countries, lack of knowledge and misinformation have been identified as significant barriers to participation in screening (3,4,5).
- A study conducted in Greece also found that physical access to screening centers affected participation in screenings. For women, particularly those living in rural areas, distance from screening centers, the complexities of scheduling appointments, and limited operating hours of screening sites were barriers to participation (3).
- Some women expressed concerns about privacy during the procedure, and some were apprehensive about male healthcare personnel, preferring female staff for mammography. In a study conducted among elderly people in Izmir, women considered it appropriate for female healthcare personnel to conduct breast cancer screenings according to Turkish culture (6). Studies with women from different cultures have also found that women had reservations about breast examinations and mammograms, feeling uncomfortable with male healthcare workers and preferring female staff (3, 5, 7 8). These concerns may be due to patriarchal societal structures, fears of being stigmatized for undergoing screening, or religious reasons.

Conclusion and Recommendations

- Although free mammograms are available to women nationally, only a third of women utilize the service.
- The Turkish National Cancer Control Program may improve utilization through increasing public health informational campaigns to address common barriers related to
- **access** (better appointment systems and invitation messages/letters to screening),
- **lack of information** (more frequent multi-media awareness campaigns),
- **availability** (extended hours/days),
- and **shame** (only female health workers for breast cancer screening services).
- The barriers women face related to **fear** and **health motivation** can be addressed through continuous in-service training of healthcare providers and mammography technicians.

Conclusion and Recommendations

- Although free mammograms are available to women nationally, only a third of women utilize the service.
- The Turkish National Cancer Control Program may improve utilization through increasing public health informational campaigns to address common barriers related to
- **access** (better appointment systems and invitation messages/letters to screening),
- **lack of information** (more frequent multi-media awareness campaigns),
- **availability** (extended hours/days),
- and **shame** (only female health workers for breast cancer screening services).
- The barriers women face related to **fear** and **health motivation** can be addressed through continuous in-service training of healthcare providers and mammography technicians.

II. World Cancer Congress - 2024

World Cancer Congress
Geneva, Switzerland
17–19 Sept 2024

UICC

11 June 2024
Participant Number: 844

Marmara University School of Medicine Public Health Department
Prof. AYSE NILUFER OZAYDIN
Prof Dr
Basibuyuk Kampusu Tip Fakultesi Basibuyuk Hastane arkasi sokak No2 Maltepe
34854 ISTANBUL
TÜRKIYE

Enhancing Women's Participation in Breast Cancer Screening: Insights from Turkey

AN. Ozaydın, (1) ; A. Uzuner (2) ; K. Ozturk (3) ; FB. Doganac (4) ; CHK. Yurtcanlı (4) ; BN. Ataoglu (4) ; V. Özmen (5)
(1) Public Health, Marmara University, Istanbul, Türkiye; (2) Family Physician, Marmara University, Istanbul, Türkiye; (3) Marmara University, Istanbul, Türkiye; (4) Public Health Assistant, Marmara University, Istanbul, Türkiye; (5) Florance Nightinghale Hospital, İstanbul, Türkiye

Background
Turkey's National Cancer Control Program, launched in 2008, aims for a 70% participation rate among women aged 40-69 in biennial mammography screenings and community-based breast cancer screening. While free screening tests have been available since 2008, Turkey has yet to reach its screening target.

Aim
This study delves into the motivations that drive women to undergo mammography screenings, alongside identifying barriers, akin to a SWOT analysis, to understand the system's capacity to engage women effectively in screenings.

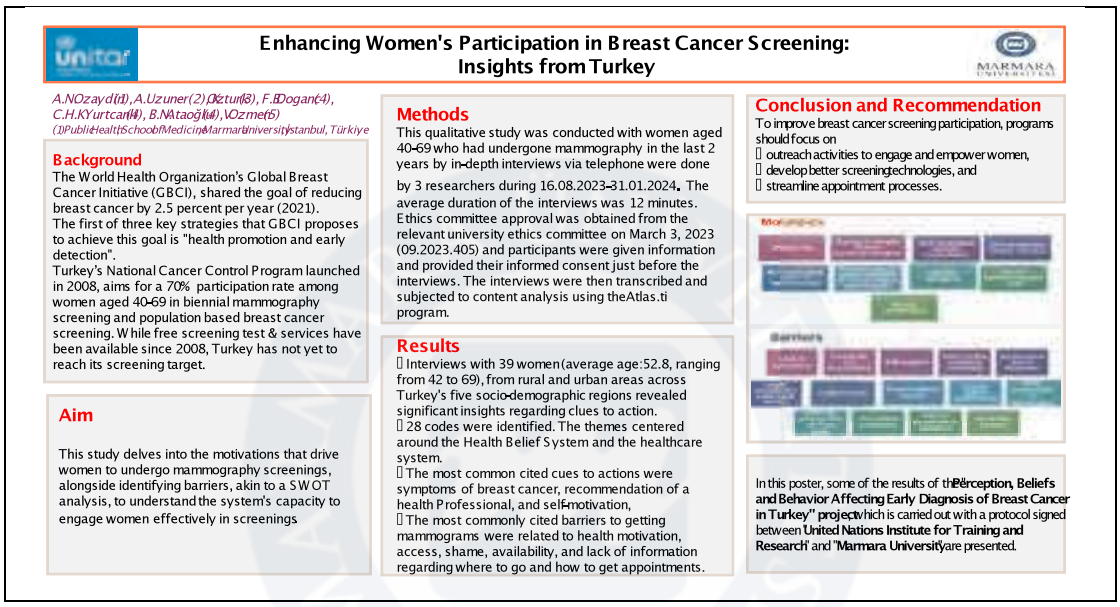
Methods
This qualitative study conducted in-depth interviews with women aged 40-69 who had undergone mammography in the last 2 years. Participants discussed their experiences with mammography screening and what motivated them to get screened. Audio recordings were transcribed into written transcripts, which underwent content analysis to identify themes. Ethical approval and informed consent were obtained.

Results
Interviews with 39 women, with an average age of 52.8 (ranging from 42 to 69), from rural and urban areas across Turkey's five regions revealed significant insights regarding clues to action. Most participants recognized the life-saving potential of early cancer detection and were aware of the significance of screening, often learning about programs through various channels, including media and social networks. Recommendations focused on more engaging and empowering outreach strategies to increase awareness about screening programs. The women also emphasized the importance of developing less cumbersome technological methods and a better appointment scheduling system. Pain was not considered a barrier to getting screened again for this group of women.

Conclusion
To improve breast cancer screening participation, programs should focus on outreach activities to engage and empower women, develop better screening technologies, and streamline appointment processes. Additionally, understanding and leveraging the system's capabilities in engaging women in screenings are crucial for enhancing participation rates.

Image(s):

MARMARA ÜNİVERSİTESİ YAYINEVİ



Enhancing Women's Participation in Breast Cancer Screening: Insights from Turkey

A.NOzaydi(1), A.Uzuner(2), Ozturk(3), F.EDogan(4), C.H.KYurtcan(4), B.NAtaoğlu(4), V.Ozmen(5)
(1)Public Health School of Medicine, Marmara University, İstanbul, Türkiye

Background

The World Health Organization's Global Breast Cancer Initiative (GBCI), shared the goal of reducing breast cancer by 2.5 percent per year (2021).
The first of three key strategies that GBCI proposes to achieve this goal is "health promotion and early detection".
Turkey's National Cancer Control Program launched in 2008, aims for a 70% participation rate among women aged 40-69 in biennial mammography screening and population based breast cancer screening. While free screening test & services have been available since 2008, Turkey has not yet to reach its screening target.

Aim

This study delves into the motivations that drive women to undergo mammography screenings, alongside identifying barriers, akin to a SWOT analysis, to understand the system's capacity to engage women effectively in screenings

Methods

This qualitative study was conducted with women aged 40-69 who had undergone mammography in the last 2 years by in-depth interviews via telephone were done by 3 researchers during 16.08.2023-31.01.2024. The average duration of the interviews was 12 minutes. Ethics committee approval was obtained from the relevant university ethics committee on March 3, 2023 (09.2023.405) and participants were given information and provided their informed consent just before the interviews. The interviews were then transcribed and subjected to content analysis using theAtlas.ti program.

Results

- Interviews with 39 women (average age:52.8, ranging from 42 to 69), from rural and urban areas across Turkey's five socio-demographic regions revealed significant insights regarding clues to action.
- 28 codes were identified. The themes centered around the Health Belief System and the healthcare system.
- The most common cited cues to actions were symptoms of breast cancer, recommendation of a health Professional, and self-motivation,
- The most commonly cited barriers to getting mammograms were related to health motivation, access, shame, availability, and lack of information regarding where to go and how to get appointments.

Conclusion and Recommendation

To improve breast cancer screening participation, programs should focus on
- outreach activities to engage and empower women,
- develop better screening technologies, and
- streamline appointment processes.

In this poster, some of the results of the "**Perception, Beliefs and Behavior Affecting Early Diagnosis of Breast Cancer in Turkey" project**, which is carried out with a protocol signed between "**United Nations Institute for Training and Research**" and "**Marmara University**" are presented.

MARMARA ÜNİVERSİTESİ YAYINEVİ

MARMARA
ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Appendix 4:

Table Appendix 1. List of women who have not had a mammogram in the last 2 years.

Participant no	Age	Education	Profession	Region	Residence
K1	69	Primary Sch.	Housewife	West	Urban
K2	60	Primary Sch.	Cleaner	North	Urban
K3	69	Prim. Incomp.	Housewife	East	Urban
K4	66	High Sch.	Retired	North	Urban
K5	63	Primary Sch.	Housewife	North	Rural
K6	45	Primary Sch.	Housewife	North	Rural
K7	51	Master	Teacher	East	Urban
K8	60	High Sch.	Retired	Central	Urban
K9	55	Primary Sch.	Retired	Central	Urban
K10	55	Primary Sch.	Housewife	South	Urban
K11	57	Primary Sch.	Housewife	North	Rural
K12	48	Primary Sch.	Housewife	South	Rural
K13	62	University	Officer	East	Urban
K14	41	Primary Sch.	Cleaner	South	Urban
K15	49	Master	Teacher	East	Urban
K16	48	High Sch.	Cleaner	North	Urban
K17	61	Primary Sch.	Housewife	Central	Urban
K18	61	Prim. Incomp.	Housewife	East	Rural
K19	58	University	Officer	Central	Rural
K20	57	University	Other (Lawyer)	West	Urban
K21	60	Master	Retired	West	Urban
K22	51	High Sch.	Officer	West	Rural
K23	52	University	Officer	West	Urban
K24	56	Prim. Incomp.	Housewife	North	Urban
K25	50	Prim. Incomp.	Housewife	West	Urban
K26	52	Primary Sch.	Housewife	West	Urban

MARMARA ÜNİVERSİTESİ YAYINEVİ

Participant no	Age	Education	Profession	Region	Residence
K27	41	High Sch.	Housewife	Central	Urban
K28	53	High Sch.	Officer	West	Urban
K29	45	Primary Sch.	Housewife	North	Urban
K30	55	University	Officer	North	Urban
K31	44	Primary Sch.	Housewife	West	Urban
K32	64	Prim. Incomp.	Housewife	Central	Urban
K33	60	University	Retired	South	Urban
K34	47	High Sch.	Officer	South	Urban
K35	45	University	Other (Academic)	West	Urban
K36	57	Prim. Incomp.	Housewife	North	Rural
K37	66	High Sch.	Housewife	South	Urban
K38	41	University	Teacher	West	Urban
K39	63	High Sch.	Housewife	West	Urban
K40	49	Prim. Incomp.	Housewife	Central	Urban
K41	65	High Sch.	Housewife	West	Urban
K42	58	University	Teacher	North	Urban
K43	56	University	Other (Financial Advisor)	Central	Urban
K44	55	University	Retired	South	Urban
K45	41	Primary Sch.	Housewife	East	Urban
K46	69	Primary Sch.	Housewife	West	Rural
K47	49	Secondary	Housewife	West	Urban
K48	54	Primary Sch.	Housewife	East	Rural
K49	52	Secondary	Housewife	South	Urban
K50	44	University	Teacher	South	Rural
K51	60	Primary Sch.	Housewife	South	Urban

Table Appendix 2. List of women who have had a mammogram in the last 2 years.

Participant No	Age	Education	Profession	Region	Residence
K52	67	Primary Sch.	Housewife	West	Urban
K53	67	Primary Sch.	Housewife	West	Urban
K54	42	University	Other (Psychological Counsellor)	East	Urban
K55	47	University	Other (Advertiser)	East	Urban
K56	43	Master	Other (Engineer)	West	Urban
K57	47	Primary Sch.	Other (Lawyer)	North	Urban
K58	50	High Sch.	Housewife	East	Urban
K59	60	High Sch.	Retired	Central	Urban
K60	49	University	Other (Manager)	Central	Urban
K61	42	University	Teacher	Central	Urban
K62	53	Primary Sch.	Housewife	South	Urban
K63	54	High Sch.	Housewife	North	Urban
K64	45	Primary Sch.	Housewife	Central	Urban
K65	53	University	Teacher	East	Urban
K66	57	University	Officer	Central	Urban
K67	68	High Sch.	Retired	Central	Urban
K68	68	University	Retired	East	Urban
K69	54	University	Officer	Central	Urban
K70	53	High Sch.	Retired	West	Urban
K71	44	Primary Sch.	Housewife	West	Urban
K72	42	Primary Sch.	Housewife	East	Rural
K73	43	Primary Sch.	Housewife	North	Urban
K74	51	Secondary	Housewife	Central	Urban

MARMARA ÜNİVERSİTESİ YAYINEVİ

Participant No	Age	Education	Profession	Region	Residence
K75	52	High Sch.	Housewife	West	Urban
K76	53	University	Housewife	West	Urban
K77	62	Primary Sch.	Housewife	South	Urban
K78	49	University	Teacher	South	Urban
K79	49	Primary Sch.	Housewife	East	Urban
K80	59	Master	Retired	Central	Urban
K81	51	High Sch.	Retired	Central	Urban
K82	52	Master	Teacher	North	Urban
K83	53	Master	Housewife	South	Urban
K84	51	University	Teacher	North	Urban
K85	56	University	Teacher	North	Urban
K86	52	University	Officer	South	Urban
K87	49	Primary Sch.	Housewife	West	Urban
K88	67	Primary Sch.	Housewife	North	Rural
K89	58	Primary Sch.	Housewife	South	Rural
K90	69	Primary Sch.	Housewife	West	Rural
K91	48	University	Midwife	South	Urban
K92	51	University	Laboratory Technician	South	Urban
K93	51	University	Retired	South	Urban

MARMARA ÜNİVERSİTESİ

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table Appendix 3. List of family physicians and family health workers.

Participant No	Age	Sex	Profession	Region	Residence
K94	37	Female	Family health worker (nurse)	South	Rural
K95	56	Male	Family medicine specialist	North	Urban
K96	36	Female	Family medicine specialist	West	Urban
K97	57	Male	General practitioner family physician	West	Urban
K98	50	Female	Family health worker (midwife)	West	Urban
K99	52	Male	General practitioner family physician	East	Urban
K100	39	Male	Family medicine specialist	East	Urban
K101	32	Female	Family medicine specialist	East	Rural
K102	59	Male	General practitioner family physician	Central	Urban
K103	35	Female	Family medicine specialist	East	Urban
K104	54	Female	Family medicine specialist	West	Urban
K105	52	Male	Family medicine specialist	South	Rural
K106	53	Male	Family medicine specialist	South	Urban
K107	36	Male	Family medicine specialist	West	Urban
K108	31	Female	Contracted family medicine specialist	West	Urban
K109	49	Male	Family medicine specialist	West	Urban
K110	37	Male	General practitioner family physician	East	Urban
K111	37	Male	General practitioner family physician	East	Rural
K112	35	Female	Family medicine specialist	Central	Urban
K113	45	Female	Contracted family medicine specialist	Central	Urban
K114	31	Male	Contracted family medicine specialist	Central	Rural
K115	33	Male	Contracted family medicine specialist	East	Rural
K116	29	Female	Family health worker (midwife)	East	Rural
K117	33	Male	Family medicine specialist	North	Rural
K118	40	Female	Contracted family medicine specialist	North	Urban
K119	36	Male	General practitioner family physician	Central	Urban

MARMARA ÜNİVERSİTESİ YAYINEVİ

Participant No	Age	Sex	Profession	Region	Residence
K120	47	Male	Contracted family medicine specialist	North	Urban
K121	38	Male	Contracted family medicine specialist	North	Rural
K122	36	Male	Contracted family medicine specialist	North	Rural
K123	57	Female	General practitioner family physician	North	Urban
K124	45	Female	Family health worker	South	Urban
K125	48	Female	General practitioner family physician	South	Urban
K126	30	Male	General practitioner family physician	South	Rural
K127	35	Female	Family medicine specialist	South	Urban
K128	30	Female	Family health worker	East	Rural
K129	39	Female	General practitioner family physician	South	Urban
K130	35	Male	Family medicine specialist	North	Urban
K131	61	Male	General practitioner family physician	Central	Urban
K132	40	Female	General practitioner family physician	Central	Rural
K133	28	Female	Family health worker	Central	Rural
K134	46	Female	Family health worker	East	Urban
K135	36	Female	Family health worker	West	Rural
K136	54	Female	General practitioner family physician	South	Urban
K137	44	Male	General practitioner family physician	West	Rural
K138	40	Female	Family medicine specialist	West	Urban
K139	57	Female	General practitioner family physician	West	Rural
K140	32	Male	General practitioner family physician	East	Urban
K141	31	Female	Family health worker	North	Rural
K142	35	Male	General practitioner family physician	North	Rural
K143	42	Female	Family health worker	North	Urban
K144	48	Female	Family health worker	Central	Urban

MARMARA ÜNİVERSİTESİ YAYINEVİ

Table Appendix 4: Characteristics of visited KETEMs

	Region / Residence		Place	CBE	MMG	Radiology Technician	Total Number of Healthcare Personnel	Number of Healthcare Personnel Interviewed
K145	West	Urban	HLC	No	Yes	2	1 Physician 2 Midwife 1 Nurse 2 Radiology technician	5
K146		Rural	HLC	Yes	Yes	4	3 Physician 4 Midwife 1 Secretary 4 Radiology technician 2 Dietician	9
K147	Central	Urban	HLC	Yes	Yes	2	3 Physician 4 Nurse 2 Radiology technician	5
K148		Rural	DHD	No	No	-	1 Physician 2 Nurse	3
K149	East	Urban	HLC	No	Yes	1	1 Physician 1 Nurse 1 Radiology technician	3
K150		Rural	HLC	No	Yes	1	2 Physician 2 Nurse 1 Radiology technician	5
K151	South	Urban	HLC	Yes	Yes	2	2 Physician 3 Midwife 2 Radiology technician	5
K152		Rural	DHD	No	No	-	1 Physician 1 Nurse	2
K153	North	Urban	HLC	Yes	Yes	2	3 Physician 4 Nurse 2 Radiology technician 1 Secretary	10
K154		Rural	HLC	No	Yes	2	1 Physician 2 Nurse 2 Radiology technician	5

MARMARA ÜNİVERSİTESİ YAYINEVİ

Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye



The "Perceptions, Beliefs, and Behaviors Affecting Early Diagnosis of Breast Cancer in Türkiye" research study is one of UNITAR's Value-Based Health Projects, conducted in Türkiye between August 2023 - October 2024 under the leadership of the Marmara University Faculty of Medicine, Public Health and Family Medicine Department's academic staff and researchers.

Breast cancer is the most common type of cancer among women globally and in our country, but is also one of the most treatable cancers when detected early.

In 2007, Türkiye implemented its National Cancer Control Program with the publication of the first National Screening Standards. The program aims to:

i. reduce the number of cases through preventive strategies,

ii. reach 70% of the target age group with community-based screening, and

iii. increase the survival rate and quality of life by detecting cases at an early stage.

In this study, the functioning and application of Türkiye's National Breast Cancer Screening Program, as well as the factors, obstacles, and problems influencing its implementation, were examined in five socio-demographic regions of Türkiye, ranging from rural to urban areas. The screening program targeted women aged 40-69, family medicine physicians and healthcare professionals, and **KETEM** staff. The study identified effective interventions and solution-oriented suggestions.

We hope that all the project's study findings shared in this report will contribute to improving breast cancer screening and early diagnosis programs and help all women to live healthier lives.

MARMARA UNIVERSITY PRESS