

A systematic review on factors influencing Middle Eastern women's utilization of healthcare services: The promise of mHealth

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Abstract

Objectives: The 2030 Sustainable Development Agenda stresses a feminist approach for healthcare services. Cultural and religious influences impact utilization of healthcare services by Muslim women within the Middle East, posing unique challenges. This paper aimed to investigate the factors influencing Middle Eastern women's utilization of healthcare services within the region.

Methods: In the year 2024, a systematic review was conducted. PubMed, Scopus, ProQuest, and the Cochrane Database of Systematic Reviews were searched for this purpose. The quality of the included articles was assessed using the Accuracy, Coverage, Objectivity, Date, Significance (ACODS) checklist. Subsequently, the Joffe method of thematic analysis was employed to analyze the data obtained from the review.

Results: A final selection comprising 59 studies was made for inclusion in the research. The studies demonstrated a high level of quality, and the risk of bias within them was deemed acceptable. The thematic analysis revealed seven principal themes, which encompassed Demographic Factors, Level of Education and Awareness, Sources of Information, Risk Factors, Personal Factors, Level of Service Access and Quality, and Organizational Factors.

Conclusions: This study highlighted key factors influencing women's utilization of healthcare in the Middle East and potentially the healthcare systems with a large number of Middle Eastern female immigrants around the globe: educational factors such as awareness campaigns and patient education, and personal barriers like fear and cultural norms. Moreover, Telehealth, particularly mHealth, was suggested to enhance women's participation and utilization of healthcare services. Further research is needed to explore this assertion with greater precision.

Keywords

Women, patient participation, stakeholder participation, patient-centered care, telemedicine

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Introduction

Recently, leaders from various sectors, including national governments, global health institutions, civil society, academia, and corporations, are urged to concentrate on the promotion of gender equality and alter gender norms for better health results.¹ In this regard, the 2030 sustainable development agenda underscores the significance of gender equality and women's empowerment, stressing the necessity for unified actions across interconnected sustainable development goals to ensure health equity and well-being for all.² Furthermore, the World Health Organization has proposed a feminist global health agenda that aims to achieve gender

equity and enable women and girls to exercise their bodily autonomy and make informed choices about their health.³

Multiple reports have delineated that women tend to utilize health and medical services with a higher frequency compared to men, at least in the domain of outpatient services,

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necessitating a particular emphasis on their characteristics and preferences.^{4–7} Furthermore, the enhancement of women's health necessitates the development of a more comprehensive knowledge base that integrates values centered on women and a political analysis based on gender.⁸

The Middle East, a region situated in North Africa and West Asia, is geographically comprised of multiple countries, including Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates, Yemen, Iran, Turkey, Gaza, Israel, and the West Bank.⁹ It is known that the population in the region is predominantly Muslim.¹⁰

Cultural and religious aspects significantly influence the use of healthcare services by Muslim women in the Middle East, presenting unique challenges.^{11–13} Several studies underscore the necessity for culturally sensitive care for Muslim patients, considering their religious and gender preferences. For instance, a study in Saudi Arabia revealed that Muslim women might postpone emergency medical care due to gender preferences and religious rules about cross-gender interactions.¹⁴ Furthermore, the insufficient understanding of Islamic culture has been recognized as a barrier to Muslim women's healthcare utilization, highlighting the importance for healthcare providers to be aware of cultural and religious factors in order to deliver effective care.¹⁵

According to several studies, modesty and privacy are essential aspects of daily life for many Muslim women.¹⁶ They constitute a cultural norm that affects their public interactions, social behavior, and dress code.¹⁷ It has been demonstrated that most Muslim women favor the presence of another individual, preferably a female chaperone, during the encounter with male providers.¹⁸

The aforementioned evidence unequivocally underscores the significance of concentrating on the preferences and attributes of women in the Middle East to facilitate the augmentation of their utilization of healthcare services. Therefore, this study endeavored to systematically compile the existing data pertaining to the factors influencing women's utilization of healthcare services in the Middle East, focusing on all the countries within the Middle East as a unified entity.

The approach of this study, as far as the authors of the study have observed, is novel in the literature, thereby contributing to the innovation and value of this study. The outcomes of this study hold potential value for healthcare policymakers, administrators, and other stakeholders at both the global and regional levels.

Research question

The research question was formulated as follows: "What are the factors influencing women's utilization of healthcare services within the Middle East?"

Methods

Our approach comprised of a systematic review and a thematic analysis conducted on 2024. Our systematic review methodology adhered to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA_2020_checklist).¹⁹ The procedure encompassed four stages: database exploration, abstract assessment, full-text screening with eligibility verification, and extraction of corpus data.

Search within databases

Our research involved an extensive search across four databases, namely PubMed, Scopus, ProQuest, and the Cochrane Database of Systematic Reviews. We categorized the search terms into four domains: Utilization, Women, Middle-East, and Healthcare. This categorization aimed to identify all studies that fulfilled the primary criteria. We then conducted a search within these domains using a specific structure and strategy, as outlined in Table 1.

Inclusion and exclusion criteria and screening of papers

We incorporated English articles published between April 2000 and February 2024, focusing on factors influencing Middle Eastern women's utilization of healthcare services. Articles were excluded if they did not address these factors, lacked a title or abstract detailing these factors, or did not provide any decision-making context regarding these factors in their title, abstract, or full text. Furthermore, the authors scrutinized the references within the articles to identify relevant studies not captured by the search strategy. Multiple authors verified the search results at each stage to ensure reliability and minimize potential bias.

For screening purposes, two authors independently reviewed all articles from the databases multiple times, adhering to the principles of bibliography harvesting. In the subsequent stage, the abstracts of the selected articles were examined. The full text of these selected articles was then thoroughly evaluated, and articles with adequate validity were chosen.

Quality assessment

Two authors evaluated the quality of the included articles using the AACODS (Accuracy, Coverage, Objectivity, Date, Significance) checklist. The latest iteration of the AACODS checklist comprised six questions.²⁰ Throughout this process, a standardized scoring system was established, where a designation of "Yes" corresponded to a score of 2, "Can't Tell" to 1, and "No" to 0. These scores ranged from 0 to 12,

Table 1. The search strategy used for conducting the systematic review.

Key concepts or terms	Utilization, Women, Middle-east, healthcare
Databases	Cochrane Library, PubMed, ProQuest, and Scopus.
Time-period	2000–2024
#1	utiliz* OR Utilis* OR Usage OR Usability OR user experience OR engagement OR Participation OR Prefer* OR Choice* OR Perspective* OR Expectation* OR Perception* OR Acceptance OR Challenge* OR Intention OR Engage* OR Adoption OR satisfaction OR adopt* OR accept* OR perspective* OR barrier* OR enabler* OR accept OR involve*
#2	woman OR female*OR women OR mother*
#3	Middle-east* OR Bahrain* OR Cypr* OR Egypt* OR Iran* OR Israel* OR West Bank OR Gaza OR Palestin* OR Leban* OR Syria* OR Iraq* OR Jordan* OR Kuwait* OR Oman* OR Qatar* OR Turk* OR United Arab Emirates OR UAE OR Emirat* OR Yemen*
#4	Healthcare OR Health
Final strategy	#1 AND #2 AND #3 AND #4

with higher scores indicating superior quality. Subsequently, the articles were categorized into one of four groups based on their scores: very low quality (0–3), low quality (4–6), medium quality (7–9), and high quality (10–12). Only studies categorized as medium or high quality were deemed suitable for inclusion in the research. In case of disagreement between the two authors, resolution was achieved through discussion and consultation with a third author. These steps were repeated twice for each study.

Data extraction and thematic analysis

In this section of the study, the process of data extraction was carried out employing a structured data extraction form containing variables including the year of publication, country, design, and summary of the studies. Subsequently, the Joffe method of thematic analysis was employed for data analysis.²¹ Utilizing this approach, the patterns of factors influencing the utilization of healthcare services by Middle-Eastern women in the healthcare industry were analyzed until a thematic code became apparent.

A mind map was designed, which facilitated the visualization of data linkages, and a thematic code was developed to encapsulate the themes. Moreover, to mitigate the potential for bias and to uphold the validity and reliability of the analysis, a pair of authors collaboratively undertook the thematic analysis process. This was achieved through mutual consultation and the repetition of the analysis on several occasions to ensure thoroughness and accuracy.

Results

The results of the study are presented in the following sections.

Systematic review

As depicted in Figure 1, the database search resulted in a total of 9291 references. Among these, 2052 were identified as duplicates. Following a thorough evaluation of the titles, abstracts, and full texts of these studies, a final selection of

59 studies was made for inclusion in the research. The mean year of the studies incorporated within the study was 2017, encompassing both quantitative and qualitative methodologies. The studies were conducted across diverse geographical locations, with a predominant focus on nations such as Iran and Turkey. Additional details concerning the included studies are provided in Supplemental material Appendix A (Bibliography of final studies).

Quality assessment of the included studies

The findings of the quality evaluation of the included studies revealed that the overall quality was largely high, with an average score of 11.6. As illustrated in Figure 2, all evaluations pertaining to the authority, accuracy, coverage, and significance of the studies' content received the highest ratings. However, while the assessment of bias within the studies, as indicated by Question 4 of the AACODS checklist (Q4, Objectivity), did not attain the highest possible score, it was deemed acceptable. Moreover, the question concerning the temporal relevance of the studies (Q5) yielded the lowest scores among the assessed criteria, delineating the relatively old dates of a number of the studies. While details of the data regarding the quality assessment of the included studies are presented in Supplemental material Appendix B (Quality assessment of final studies), below is the presentation of each question comprising the AACODS checklist:

- Q1: Authority: Is the author or source of the information reputable and trustworthy?
- Q2: Accuracy: Is the information reliable, truthful, and correct?
- Q3: Coverage: Does the information cover the topic comprehensively and sufficiently?
- Q4: Objectivity: Is the information presented in an unbiased and balanced way?
- Q5: Date: Is the information current and up-to-date?
- Q6: Significance: Is the information relevant, important, and valuable to the topic?

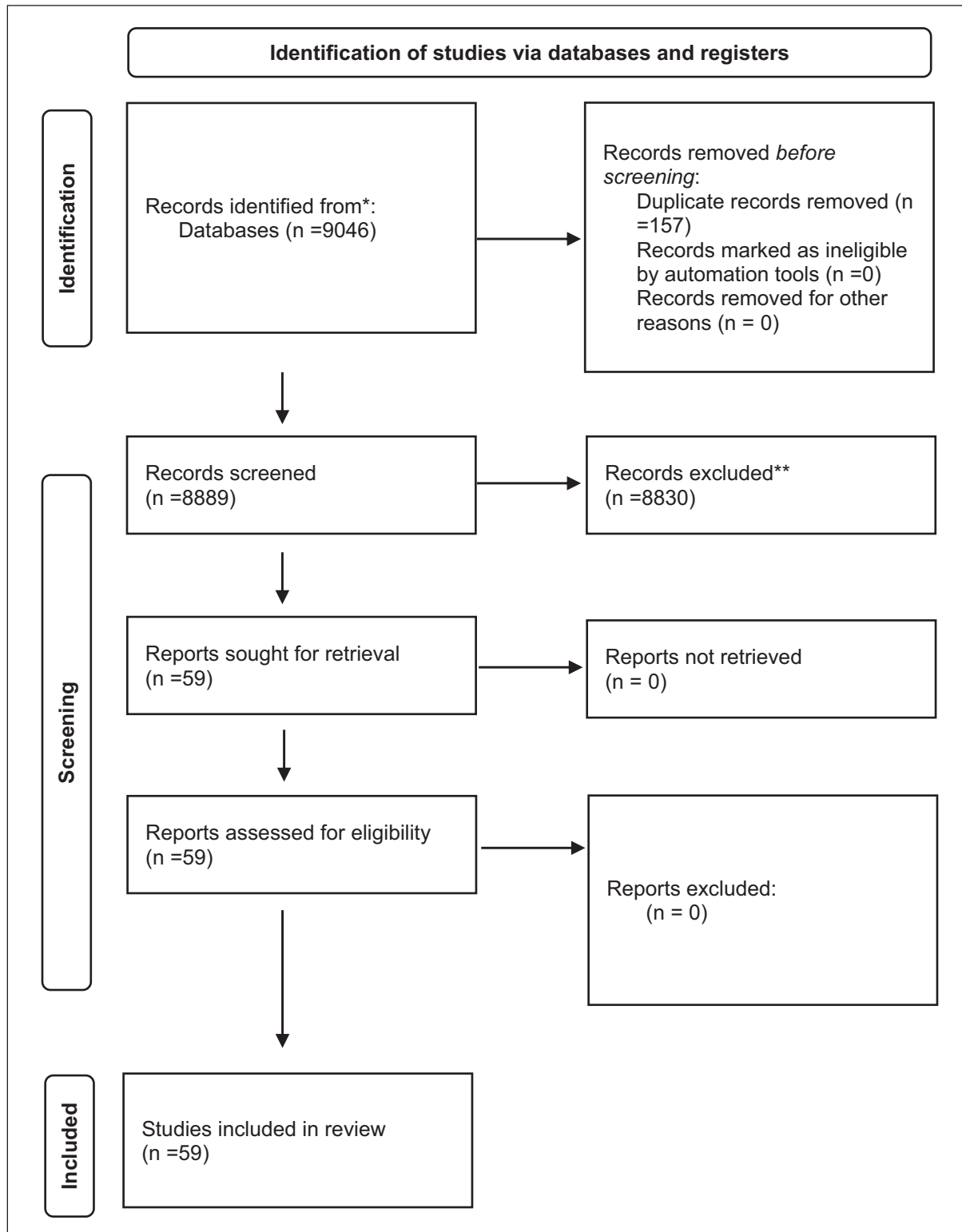


Figure 1. PRISMA diagram of the systematic review.

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

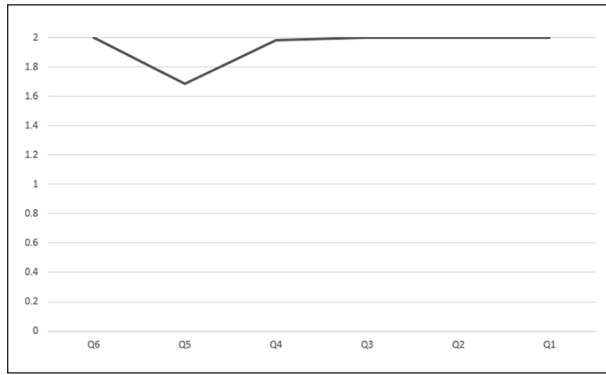


Figure 2. Results of the quality assessment of the included studies.

Thematic analysis

As presented in Table 2, the systematic review led to a thematic analysis that yielded seven principal themes. The themes included Demographic Factors, Level of Education and Awareness, Sources of Information, Risk Factors, Personal Factors, Level of Service Access and Quality, and Organizational Factors. Each of these themes is elaborated upon in the subsequent section. Figure 3 presents the distribution of each factor among the included studies.

Demographic factors

The data obtained from the included studies presented that women younger than 25 or older than 65 years were less likely to participate in healthcare services, with younger women tending to wait longer before presenting their symptoms to a physician.^{22–39} Marital status played a role, with married women being more likely to utilize healthcare services than single women.^{24,26,31,40–43} Employment status was another factor, with unemployed women being less likely to participate in healthcare services.^{22–24,26,27,32,44–47} Moreover, geographical location also had an impact, with rural women being at high risk for late presentation of symptoms and less likely to utilize healthcare services.^{23,30,41,43,44,46,47} Lastly, income was a significant factor, with women with a higher income being associated with greater knowledge of disease signs and symptoms and more likely to utilize healthcare services.^{24,32,40,44,46,48–50}

Level of education and awareness

Within the data obtained from the included studies in this paper, increasing awareness about disease was identified as a crucial factor in encouraging women's utilization of healthcare services.^{22,23,25–27,29,31,33–36,41,44,48,49,51–72} Moreover, the level of education was found to be inversely proportional to the risk of late presentation, with women having a poor level of education being at a higher risk.^{23,26,27,36–38,40,41,44–49,54,72}

Sources of information

Within the data obtained from the included studies in this paper, social media platforms were identified as a predominant source of information about diseases, and women who relied on these platforms as their primary source of information were more likely to participate in healthcare services.^{22,35,46,54} Furthermore, women who received information from healthcare providers or attended awareness programs were found to be more likely to have good knowledge about diseases and participate in healthcare services.^{22,54}

Risk factors

The data obtained from the included studies presented that women who had never smoked were more likely to present early, indicating the influence of personal health habits on healthcare utilization. Furthermore, obesity was strongly associated with late utilization of healthcare services.^{23,32} The perceived seriousness of the disease also influenced women's decision to utilize healthcare services, highlighting the role of disease severity in healthcare-seeking behavior.^{24,32,36,37,42,44,53,59,64,69,73} Lastly, the COVID-19 pandemic has had a noticeable impact on women's utilization of healthcare services, hindering the level of utilization, a factor that warrants further investigation to understand its full implications.⁷¹

Personal factors

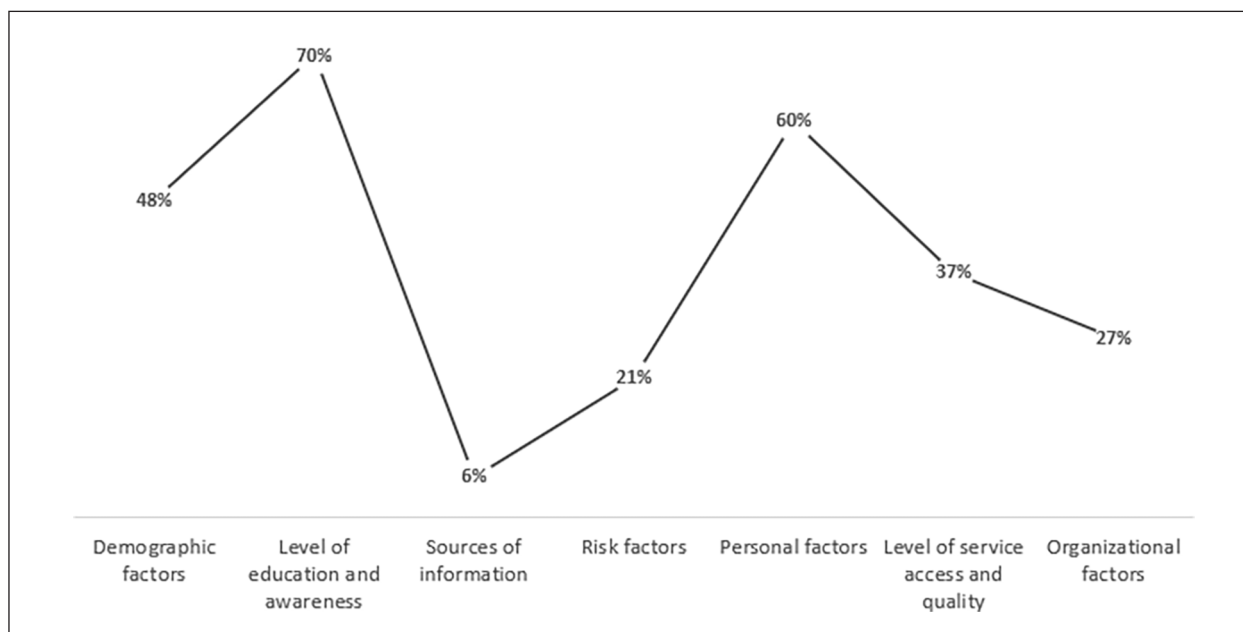
Within the data obtained from the included studies in this paper, emotional barriers, such as fear and embarrassment, were identified as significant barriers to seeking medical help.^{23,24,29,30,42,44,48,52,55–57,60,61,74} The experiences and expectations of women were found to play a role in their utilization of healthcare services.^{28,31,36,41,48,52,71,73} Cultural and religious beliefs, including those related to dressing codes and religious practices, could influence women's perception of barriers and their utilization of healthcare services.^{23,27,29,34,42,51,62,71,72,75–77,78} Moreover, the influence of the family and the level of support provided to women were found to play a key role in their utilization of health services.^{29,32,35,48,53,56,61,63,66,70,71} Lastly, ethical considerations, such as concerns about privacy in the provision of care, influenced women's preferences.^{61,79}

Level of services access and quality

Within the data obtained from the included studies in this paper, the high cost of services was identified as a strong barrier for utilization, indicating the need for affordable healthcare options.^{23,39,46,49,51,55,56,66,77} The insurance status of women, as a prominent factor affecting their financial access to healthcare services, was found to influence their utilization of those services, underscoring the importance of accessible

Table 2. Thematic analysis of the data acquired from the systematic review.

Theme	Subtheme	Reference(s)
Demographic factors	Age	22–39
	Marital status	24,26,31,40–43
	Employment status	22–24,26,27,32,44–47
	Residence	23,30,41,43,44,46,47
	Income	24,32,40,44,46,48–50
Level of education and awareness	Awareness about disease	22,23,25–27,29,31,33–36,41,44,48,49,51–72
	Level of education	23,26,27,36–38,40,41,44–49,54,72
Sources of information	Social media	22,35,46,54
	Healthcare providers' awareness programs	22,54
Risk factors	Person's overall health	23,32
	Seriousness of the disease	24,32,36,37,42,44,53,59,64,69,73
	Impact of the COVID-19 pandemic	71
Personal factors	Emotional status	23,24,29,30,42,44,48,52,55–57,60,61,74
	Experiences and expectations	28,31,36,41,48,52,71,73
	Religious and cultural beliefs	23,27,29,34,42,51,62,71,72,75,76,77,78
	Family support	29,32,35,48,53,56,61,63,66,70,71
	Ethics	61,80
Level of service access and quality	High cost of services	23,39,46,49,51,55,56,66,77
	Insurance status	25,28,41,43,44,46,55,80
	Access to health care facilities	23,25,27,39,42,61,69
	Waiting time	23,74
	Quality of services	27,37,66,70,79
	Transportation	55
	Availability of public places specific to women	51
Organizational factors	Continuity of care	33,55,66,71,79
	Person-centeredness	52,71
	Healthcare provider encouragement	24,33,36,37,50,61,65–67,74
	Use of the private healthcare sector	24,47,75
	Psychological support team	66
	Female doctors	55

**Figure 3.** Distribution of factors among the included studies.

insurance coverage.^{25,28,41,43,44,46,55,80} Moreover, access to healthcare facilities was a significant factor influencing women's utilization of healthcare services, highlighting the need for widespread and convenient healthcare facilities.^{23,25,27,39,42,61,69} Waiting time was identified as a factor influencing women's utilization of healthcare services, suggesting the need for efficient service delivery.^{23,74} Poor quality of healthcare services was identified as a barrier to seeking medical services and ultimately service utilization, emphasizing the importance of maintaining high standards of care.^{27,37,66,70,79} Lastly, a suitable transportation system could enhance the level of utilization of healthcare services.⁵⁵

Organizational factors

Within the data obtained from the included studies in this paper, the lack of public places specific to women, which provide a gender-segregated area free from the opposite gender (as Muslim women generally refrain from unnecessary interactions with the opposite gender due to their religious concerns), was identified as a barrier to healthcare service utilization.⁵¹ The availability of organized follow-up services and a person-centered approach in healthcare facilities could enhance the level of healthcare utilization.^{33,55,66,71,79} Healthcare provider encouragement was found to be a significant predictor of service utilization.^{24,33,36,37,50,61,65–67,74} Women who used private sector healthcare providers were more likely to utilize more services.^{24,47,75} Moreover, participants believed that a psychological support team is required to educate women and their families, paving the way for their service utilization.⁶⁶ Lastly, the existence of female doctors within healthcare facilities could improve the level of utilization of healthcare services.⁵⁵

Discussion

As outlined in the results section, the findings of the study revealed various themes affecting the women's utilization of healthcare services in healthcare systems of the Middle East. These themes encompassed "Demographic Factors," "Level of Education and Awareness," "Sources of Information," "Risk Factors," "Personal Factors," "Level of Service Access and Quality," and "Organizational Factors."

It was demonstrated that "level of education and awareness" and "personal factors" garnered the highest citations among the included studies, each comprising 70% and 60%, respectively. Conversely, the remaining factors exhibited a citation share below 48%. In this section of the study, our endeavor was to examine and analyze the factors with the highest citations in the literature, while proposing strategies to enhance the level of healthcare service utilization among Middle Eastern women as outlined in the literature.

Our findings demonstrated that factors such as awareness about the disease and level of education among women can significantly enhance their utilization of healthcare services.^{22,23,25–27,29,31,33–38,40,41,44–49,51–72} In this regard, it has

been reported that the level of education and disease awareness among patients in the Middle East is moderate.^{81,82}

Studies have reported that misconceptions about specific diseases and treatments contribute to stigma within the Middle East.⁸³ Moreover, it is delineated that ineffective health education and promotion within the region result from factors such as poor communication between providers and patients.⁸⁴ In such context, Telehealth platforms, such as mobile health (mHealth) applications on smartphones and tablets, have demonstrated significant potential for enhancing disease management and promoting healthy behaviors through education and information provision within the Middle East, a prominent factor highlighted by the findings of our study.⁸⁵

As delineated in the findings of the study, Emotional barriers, like fear and embarrassment, hinder women seeking medical help, and women's experiences and cultural beliefs affect their healthcare utilization. Family support and cultural norms influence healthcare access. And ethical concerns, including privacy, shape women's healthcare preferences.^{23,24,27–32,34–36,41,42,44,48,51–53,55–57,60–63,66,70–80} Furthermore, raising awareness about diseases was deemed vital for promoting women's engagement in healthcare services. And education level inversely correlated with the risk of late presentation since women with lower education levels faced higher risks.^{22,23,25–27,29,31,33–38,40,41,44–46,48, 49, 51–72}

Our findings concerning the emotional barriers impacting the utilization of healthcare services by Middle Eastern women align with numerous other studies.^{15,86–88} Research indicates that shyness, modesty, and embarrassment may hinder some Muslim women from seeking medical attention, particularly for sensitive issues such as breast cancer screening. Specifically, studies reveal that Arab Muslim immigrant and refugee women may hesitate to disclose certain health matters or reveal parts of their bodies due to cultural beliefs about modesty. This reluctance can impede access to preventive care like breast cancer screening.^{86,87}

Some Muslim women adhere to fatalistic beliefs regarding cancer, diminishing their inclination to seek medical assistance. Additionally, although Islam encourages women to prioritize their health, certain cultural and religious norms may engender shame and taboos surrounding discussions about sensitive health topics, especially with male healthcare providers. Consequently, Muslim women may prefer female providers and feel more at ease when accompanied by a family member during medical appointments.^{15,88}

Our research findings concerning the influence of family support, ethical considerations, and levels of education and awareness on the utilization of healthcare services by Middle Eastern women align with previous global literature.^{89–91} These factors are recognized principles of patient-centered care, a concept advocating for the inclusion of patients' preferences, demands, and values in the delivery of healthcare services.⁹²

According to several studies, Telehealth improves healthcare accessibility for patients who might avoid seeking treatment

due to shyness or social anxiety. Remote care provision helps overcome challenges such as transportation issues, privacy concerns, and stigma, which can deter some patients from visiting a traditional doctor's office. These findings are particularly relevant to understanding the emotional barriers faced by women in the Middle East.^{93–95}

Telehealth tools play a crucial role in mitigating the impact of diseases associated with poverty and improving access to health services, clinical diagnosis, and treatment adherence.^{85,93} However, despite the advantages of telehealth and mHealth, several ethical concerns arise during the adoption of these technologies. In this regard, ensuring some prerequisites including individual autonomy, dignity, patient safety, and appropriate technology use is presented to be crucial.⁹⁶

Various factors have been reported to contribute to increased patient adoption of telehealth tools among the population in the Middle East. These factors include cultural and religious considerations, such as privacy concerns and interactions between genders, which can often be addressed through active involvement of patients' families.^{94,97,98} Additionally, language differences have been delineated to potentially pose a barrier if the service provider does not speak the same language as the patients.⁹⁸

Limitations and implications

The limitation of this study was the omission of research published in local languages in domestic scholarly journals within Middle Eastern countries. This exclusion was due to the constrained scope and volume of this paper, which could pose implications for future researchers. Moreover, we attempted to consider all women within Middle Eastern countries as a unified entity, despite the seemingly evident heterogeneity of the population. This approach can be considered a limitation of our research. Nevertheless, this paper advocated for the adoption of telehealth services, particularly mHealth, to bolster women's participation within Middle Eastern healthcare systems and potentially the immigrant Middle Eastern women residing around the globe. This implication holds potential benefits for stakeholders in Middle Eastern nations, nations with a large number of Middle Eastern immigrants and analogous contexts, including healthcare policy-makers, administrators, and researchers.

Conclusions

This study identified several themes pertaining to the factors influencing women's utilization of healthcare services in the Middle East. Notably, factors corresponding to "level of education and awareness," such as disease awareness campaigns and the educational attainment of patients, alongside "personal factors," encompassing emotional barriers such as fear and embarrassment, as well as cultural norms, emerged as prominent factors influencing on women's utilization of healthcare services in Middle Eastern healthcare, as documented in the literature. Moreover, adoption of telehealth services, particularly

mHealth, was suggested to bolster women's participation and utilization of healthcare services within Middle Eastern healthcare systems and potentially the healthcare systems with a large number of Middle Eastern female immigrants around the globe. Further research is needed to explore this assertion with greater precision.

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Author contributions

M.K. theorized the project, conducted the review and data analysis, wrote the text of the manuscript and coordinated in the quality assessment of the papers. S.M.M. wrote the methods section and cooperated in conducting writing of the manuscript. M.A.S. conducted the quality assessment of the included studies, wrote the bibliography, and coordinated in writing of the manuscript. All of the authors contributed in the screening process of the papers.

Availability of data and materials

The research data can be accessed by contacting the author of the paper.

Consent for publication

None.

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Informed consent

None.

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Supplemental material

Supplemental material for this article is available online.

References

1. Gupta GR, Oomman N, Grown C, et al. Gender equality and gender norms: framing the opportunities for health. *Lancet* 2019; 393: 2550–2562.

2. Manandhar M, Hawkes S, Buse K, et al. Gender, health and the 2030 agenda for sustainable development. *Bull World Health Organ* 2018; 96: 644–653.
3. Davies SE, Harman S, Manjoo R, et al. Why it must be a feminist global health agenda. *Lancet* 2019; 393: 601–603.
4. Bertakis KD, Azari R, Helms LJ, et al. Gender differences in the utilization of health care services. *J Fam Pract* 2000; 49: 147–152.
5. Vaidya V, Partha G and Karmakar M. Gender differences in utilization of preventive care services in the United States. *J Womens Health (Larchmt)* 2012; 21: 140–145.
6. Redondo-Sendino A, Guallar-Castillón P, Banegas JR, et al. Gender differences in the utilization of health-care services among the older adult population of Spain. *BMC Public Health* 2006; 6: 155.
7. Owens GM. Gender differences in health care expenditures, resource utilization, and quality of care. *J Manag Care Pharm* 2008; 14: 2–6.
8. Ruzek S and Hill J. Promoting women's health: redefining the knowledge base and strategies for change. *Health Promot* 1986; 1: 301–309.
9. Omran AR and Roudi F. The Middle East population puzzle. *Popul Bull* 1993; 48: 1–40.
10. Carlson TA. When did the Middle East become Muslim? Trends in the study of Islam's "age of conversions". *History Compass* 2018; 16: e12494.
11. Elbarazi I, Devlin NJ, Katsaiti MS, et al. The effect of religion on the perception of health states among adults in the United Arab Emirates: a qualitative study. *BMJ Open* 2017; 7: e016969.
12. Webair HH. Patient-centered care in the Middle East. In: Laher I (ed.) *Handbook of healthcare in the Arab world*. Cham: Springer International Publishing, 2020, pp. 1–17.
13. Alkhaibari RA, Smith-Merry J, Forsyth R, et al. Patient-centered care in the Middle East and North African region: a systematic literature review. *BMC Health Serv Res* 2023; 23: 135.
14. Alqufly AE, Alharbi BM, Alhatlany KK, et al. Muslim female gender preference in delaying the medical care at emergency department in Qassim Region, Saudi Arabia. *J Family Med Prim Care* 2019; 8: 1658–1663.
15. Saherwala Z, Bashir S and Gainer D. Providing culturally competent mental health care for Muslim women. *Innov Clin Neurosci* 2021; 18: 33–39.
16. Hasnain M, Connell KJ, Menon U, et al. Patient-centered care for Muslim women: provider and patient perspectives. *J Womens Health (Larchmt)* 2011; 20: 73–83.
17. El-Sayed AM and Galea S. The health of Arab-Americans living in the United States: a systematic review of the literature. *BMC Public Health* 2009; 9: 272.
18. Simpson JL and Carter K. Muslim women's experiences with health care providers in a rural area of the United States. *J Transcult Nurs* 2008; 19: 16–23.
19. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Int J Surg* 2021; 88: 105906.
20. Tyndall J. *AACODS (Authority, Accuracy, Coverage, Objectivity, Date, Significance) checklist*. Flinders, Australia: Flinders University, 2010.
21. Joffe H. Thematic analysis. In: David H and Andrew RT (eds) *Qualitative research methods in mental health and psychotherapy: a guide for students and practitioners*. Hoboken, New Jersey (NJ): Wiley-Blackwell, 2011, pp. 209–223.
22. Abbas MO and Baig M. Knowledge and practice concerning breast cancer risk factors and screening among females in UAE. *Asian Pac J Cancer Prev* 2023; 24: 479–487.
23. Abdulkareem AA, Ghalib HA and Rashaan MI. Factors causing delayed presentations of breast cancer among female patients in Sulaimani Governorate, Kurdistan region, Iraq. *BMC Womens Health* 2023; 23: 612.
24. Al-Amro SQ, Gharaibeh MK and Oweis AI. Factors associated with cervical cancer screening uptake: implications for the health of women in Jordan. *Infect Dis Obstet Gynecol* 2020; 2020: 9690473.
25. Al-Oseely S, Abdul Manaf R and Ismail S. Factors affecting cervical cancer screening among Yemeni immigrant women in Klang Valley, Malaysia: a cross sectional study. *PLoS One* 2023; 18: e0290152.
26. Bohsas H, Alibrahim H, Swed S, et al. Assessing Syrian women's knowledge of breast cancer risk factors, warning signs, and barriers to preventive measures: a cross-sectional study. *Cancer Treat Res Commun* 2023; 36: 100717.
27. Dadras O, Dadras F, Taghizade Z, et al. Barriers and associated factors for adequate antenatal care among Afghan women in Iran; findings from a community-based survey. *BMC Pregnancy Childbirth* 2020; 20: 427.
28. Esna-Ashari F, Saffari N, Parsapour H, et al. Factors associated with breast cancer mammographic screening behavior among Iranian women. *Asian Pac J Cancer Prev* 2022; 23: 4073–4078.
29. Gumus AB, Cam O and Malak AT. Socio-demographic factors and the practice of breast self examination and mammography by Turkish women. *Asian Pac J Cancer Prev* 2010; 11: 57–60.
30. Hajializadeh K, Ahadi H, Jomehri F, et al. Psychosocial predictors of barriers to cervical cancer screening among Iranian women: the role of attachment style and social demographic factors. *J Prev Med Hyg* 2013; 54: 218–222.
31. Karabulutlu O. Evaluation of the pap smear test status of Turkish women and related factors. *Asian Pac J Cancer Prev* 2013; 14: 981–986.
32. Kardan-Souraki M, Moosazadeh M, Khani S, et al. Factors related to breast cancer screening in women in the northern part of Iran: a cross-sectional study. *Open Access Maced J Med Sci* 2019; 7: 637–642.
33. Naccour J and El-Helou E. Factors influencing the decision-making process for breast surgery in women likely to face breast cancer: a cross-sectional study. *Ann Med Surg (Lond)* 2023; 85: 1648–1654.
34. Othman AK, Kiviniemi MT, Wu YW, et al. Influence of demographic factors, knowledge, and beliefs on Jordanian women's intention to undergo mammography screening. *J Nurs Scholarsh* 2012; 44: 19–26.
35. Petro-Nustas WI. Factors associated with mammography utilization among Jordanian women. *J Transcult Nurs* 2001; 12: 284–291.
36. Petro-Nustus W and Mikhail BI. Factors associated with breast self-examination among Jordanian women. *Public Health Nurs* 2002; 19: 263–271.

37. Soskolne V, Marie S and Manor O. Beliefs, recommendations and intentions are important explanatory factors of mammography screening behavior among Muslim Arab women in Israel. *Health Educ Res* 2007; 22: 665–676.
38. Abdollai M, Ayar A, Khorashadizadeh M, et al. Acceptance of COVID-19 vaccine and related factors in Iran: a cross-sectional study. *J Caring Sci* 2023; 12: 79–83.
39. Barati M, Jormand H, Khazaei S, et al. Factors affecting subsequent dose of COVID-19 vaccine uptake based on BASNEF model among older adults. *BMC Infect Dis* 2024; 24: 18.
40. Donnelly TT, Al Khater AH, Al Kuwari MG, et al. Do socio-economic factors influence breast cancer screening practices among Arab women in Qatar? *BMJ Open* 2015; 5: e005596.
41. Ersin F and Polat P. Examination of factors affecting women's barrier perception to participate in breast cancer screenings in a region affiliated with a family health center in Turkey. *Turk J Med Sci* 2016; 46: 1393–1400.
42. Topal F, Van Roosbroeck S, Van Hal G, et al. Factors contributing to the low participation rate of Turkish women to a breast cancer screening program in Antwerp, Belgium. *Eur J Gynaecol Oncol* 2015; 36: 520–523.
43. Daoud N, Alfayumi-Zeadna S and Jabareen YT. Barriers to health care services among Palestinian women denied family unification in Israel. *Int J Health Serv* 2018; 48: 776–797.
44. Salama B. Factors affecting mammography screening utilization among educated women in Al Beheira governorate, Egypt. *Indian J Community Med* 2020; 45: 522–525.
45. Nasrallah DA, Ez-Elarab HS, Sultan EA, et al. Predictive factors for nutritional behavior among pregnant women attending antenatal care clinic in 6(th) of October City. *J Prev Med Hyg* 2020; 61: E186–E193.
46. Zandkarimi E, Moghimbeigi A and Mahjub H. Assessing the factors affecting cesarean section selection in Iranian women using multilevel count models with excess zeros. *Iran J Public Health* 2021; 50: 816–824.
47. Elshami M, Abukmail H, Al-Slaibi I, et al. Awareness of human papillomavirus and acceptability of the vaccine among women in Palestine: is it time for policy adjustment? *BMC Womens Health* 2022; 22: 352.
48. Al-Azri MH, Al-Saidi M, Al-Mutairi E, et al. Knowledge of risk factors, symptoms and barriers to seeking medical help for cervical cancer among Omani women attending Sultan Qaboos University Hospital. *Sultan Qaboos Univ Med J* 2020; 20: e301–e309.
49. Azh N, Hosseinzadeh K, Javadi A, et al. Factors predicting mothers' intention toward human papilloma virus vaccination of adolescents: a cross-sectional study among Iranian families. *Iran J Nurs Midwifery Res* 2021; 26: 495–499.
50. Sezerol MA and Davun S. COVID-19 vaccine hesitancy and related factors among unvaccinated pregnant women during the pandemic period in Turkey. *Vaccines (Basel)* 2023; 11: 20230105.
51. Aghaei F, Heidarnia A, Allahverdipour H, et al. Knowledge, attitude, performance, and determinant factors of Vitamin D deficiency prevention behaviours among Iranian pregnant women. *Arch Public Health* 2021; 79: 224.
52. Bagheri A, Masoudi Alavi N and Abbaszadeh F. Iranian obstetricians' views about the factors that influence pregnant women's choice of delivery method: a qualitative study. *Women Birth* 2013; 26: e45–e49.
53. Baghianimoghadam MH, Zolghadar R, Moghadam BB, et al. Related factors to choose normal vaginal delivery by mothers based on Health Belief Model. *J Educ Health Promot* 2012; 1: 17.
54. Donnelly TT, Khater AH, Al-Bader SB, et al. Factors that influence awareness of breast cancer screening among Arab women in Qatar: results from a cross sectional survey. *Asian Pac J Cancer Prev* 2014; 15: 10157–10164.
55. Ersin F and Bahar Z. Barriers and facilitating factors perceived in Turkish women's behaviors towards early cervical cancer detection: a qualitative approach. *Asian Pac J Cancer Prev* 2013; 14: 4977–4982.
56. Fathnezhad-Kazemi A and Hajian S. Factors influencing the adoption of health promoting behaviors in overweight pregnant women: a qualitative study. *BMC Pregnancy Childbirth* 2019; 19: 43.
57. Fouladi N, Ali-Mohammadi H, Pourfarzi F, et al. Exploratory study of factors affecting continuity of cancer care: Iranian Women's perceptions. *Asian Pac J Cancer Prev* 2014; 15: 133–137.
58. Gunay E and Beser A. Sociodemographic characteristics of women who engage in early breast cancer diagnostic behaviors: the case of Turkish women working in a textile factory. *AAOHN J* 2011; 59: 421–428.
59. Khorsand F, Barati M, Bashirian S, et al. Factors affecting prevention behaviors against covid-19 infection among iranian pregnant women: application of protection motivation theory. *Curr Health Sci J* 2022; 48: 386–392.
60. Lamyian M, Hydarnia A, Ahmadi F, et al. Barriers to and factors facilitating breast cancer screening among Iranian women: a qualitative study. *East Mediterr Health J* 2007; 13: 1160–1169.
61. Luleci D and Kilic B. Factors affecting women's participation in breast cancer screening in Turkey. *Asian Pac J Cancer Prev* 2022; 23: 1627–1634.
62. Momeni R, Hosseini Z, Aghamolaei T, et al. Determinants factors to Pap smear screening among married women in a city of South Iran: applying the BASNEF model. *BMC Womens Health* 2020; 20: 237.
63. Nojomi M, Namiranian N, Myers RE, et al. Factors associated with breast cancer screening decision stage among women in Tehran, Iran. *Int J Prev Med* 2014; 5: 196–202.
64. Noman S, Shahar HK, Rahman HA, et al. Factor structure and internal reliability of breast cancer screening Champion's Health Belief Model Scale in Yemeni women in Malaysia: a cross-sectional study. *BMC Womens Health* 2021; 21: 437.
65. Noroozi A and Tahmasebi R. Factors influencing breast cancer screening behavior among Iranian women. *Asian Pac J Cancer Prev* 2011; 12: 1239–1244.
66. Oskouie F, Kashefi F, Rafii F, et al. Facilitating factors of self-care among HIV-positive young women in Iran: a qualitative study. *Int J Adolesc Med Health* 2018; 32: 20180205.
67. Pulatoğlu Ç and Turan G. Women's knowledge and beliefs towards vaccination for influenza during pregnancy in Turkey and underlying factors of misinformation: a single-centre cross-sectional study. *Cent Eur J Public Health* 2020; 28: 124–129.
68. Refaei M, Dehghan Nayeri N, Khakbazan Z, et al. Exploring effective contextual factors for regular cervical cancer screening

- in Iranian women: a qualitative study. *Asian Pac J Cancer Prev* 2018; 19: 533–539.
69. Secginli S and Nahcivan NO. Factors associated with breast cancer screening behaviours in a sample of Turkish women: a questionnaire survey. *Int J Nurs Stud* 2006; 43: 161–171.
 70. Zamani-Alavijeh F, Araban M, Hassanzadeh A, et al. Contributing factors of pregnant women's beliefs towards mode of delivery: a cross-sectional study from Iran. *Matern Health Neonatol Perinatol* 2018; 4: 9.
 71. Al Hadi A, Dawson J, Paliwoda M, et al. Women's views on factors that influence utilisation of postnatal follow-up in Oman: a descriptive, qualitative study. *Sultan Qaboos Univ Med J* 2023; 23: 360–369.
 72. Aydın M, Kulakaç N and Uzun Şahin C. COVID-19 vaccine acceptance, trust in vaccine, anxiety levels, and related factors in Turkish Society. *Disaster Med Public Health Prep* 2023; 17: e476.
 73. Kırca N, Tuzcu A and Gözüm S. Breast cancer screening behaviors of first degree relatives of women receiving breast cancer treatment and the affecting factors. *Eur J Breast Health* 2018; 14: 23–28.
 74. Toker E, Turan Z, Omaç Sönmez M, et al. Why have the numbers of cesareans increased globally? The factors that affect women's decisions about cesarean delivery in Turkey. *J Matern Fetal Neonatal Med* 2020; 33: 3529–3537.
 75. Matsumoto MM, Dajani R and Matthews KRW. Public-private divide: cultural and social factors in women's attitudes toward cord blood banking in Jordan. *Transfusion* 2018; 58: 1958–1963.
 76. Nahum S and Kushnir T. The relationship between socio-demographic factors, preventive health behaviors and acceptance of COVID-19 vaccine among Israeli pregnant women during the coronavirus pandemic. *Int J Environ Res Public Health* 2023; 20: 6526.
 77. Pourfarzi F, Fouladi N, Amani F, et al. Factors affecting preferences of Iranian women for breast cancer screening based on marketing mix components. *Asian Pac J Cancer Prev* 2016; 17: 3939–3943.
 78. Saadi H, Jafari S and Karimi S. Factors affecting the intention of Iranian rural women to use medicinal herbs. *BMC Complement Med Ther* 2023; 23: 170.
 79. Shirzad M, Shakibazadeh E, Betran AP, et al. Women's perspectives on health facility and system levels factors influencing mode of delivery in Tehran: a qualitative study. *Reprod Health* 2019; 16: 15.
 80. Shirzadi S, Nadrian H, Asghari Jafarabadi M, et al. Determinants of mammography adoption among Iranian women: what are the differences in the cognitive factors by the stages of test adoption? *Health Care Women Int* 2017; 38: 956–970.
 81. Al-Khowaiter SS, Al-Maawi AM, Al-Obaidy MS, et al. Patients awareness of their medical conditions in multi-specialty outpatient clinics in Saudi Arabia. *Saudi Med J* 2008; 29: 1797–1801.
 82. Paul P, Mahfoud ZR, Malik RA, et al. Knowledge, awareness, and attitude of healthcare stakeholders on Alzheimer's disease and dementia in Qatar. *Int J Environ Res Public Health* 2023; 20: 4535.
 83. Rayan A and Fawaz M. Cultural misconceptions and public stigma against mental illness among Lebanese university students. *Perspect Psychiatr Care* 2018; 54: 258–265.
 84. Chaabane S, Chaabna K, Doraiswamy S, et al. Barriers and facilitators associated with physical activity in the Middle East and North Africa region: a systematic overview. *Int J Environ Res Public Health* 2021; 18: 1647.
 85. El-Jardali F, Bou-Karroum L, Jabbour M, et al. Digital health in fragile states in the Middle East and North Africa (MENA) region: a scoping review of the literature. *PLoS One* 2023; 18: e0285226.
 86. Racine L and Isik Andsoy I. Barriers and facilitators influencing Arab Muslim immigrant and refugee women's breast cancer screening: a narrative review. *J Transcult Nurs* 2022; 33: 542–549.
 87. Alomair N, Alageel S, Davies N, et al. Factors influencing sexual and reproductive health of Muslim women: a systematic review. *Reproductive Health* 2020; 17: 33.
 88. alHarbi H, Farrand P and Laidlaw K. Understanding the beliefs and attitudes towards mental health problems held by Muslim communities and acceptability of Cognitive Behavioral Therapy as a treatment: systematic review and thematic synthesis. *Discov Ment Health* 2023; 3: 26.
 89. Kokorelias KM, Gignac MAM, Naglie G, et al. Towards a universal model of family centered care: a scoping review. *BMC Health Serv Res* 2019; 19: 564.
 90. Varkey B. Principles of clinical ethics and their application to practice. *Med Princ Pract* 2021; 30: 17–28.
 91. Christalle E, Zill JM, Frerichs W, et al. Assessment of patient information needs: a systematic review of measures. *PLoS One* 2019; 14: e0209165.
 92. Gluyas H. Patient-centred care: improving healthcare outcomes. *Nurs Stand* 2015; 30: 50–57.
 93. Khosravi M and Azar G. A systematic review of reviews on the advantages of mHealth utilization in mental health services: a viable option for large populations in low-resource settings. *Cambridge Prisms: Global Mental Health* 2024; 11: e43.
 94. Penn N and Laron M. Use and barriers to the use of telehealth services in the Arab population in Israel: a cross sectional survey. *Isr J Health Policy Res* 2023; 12: 21.
 95. Kizilkaya MC, Kilic S, Dagistanli S, et al. Effectiveness of a telehealth patient education intervention for breast cancer awareness and screening uptake among Afghan refugee women: a cross-sectional survey and feasibility study. *EClinicalMedicine* 2023; 62: 102094.
 96. Gamon A. Ethics of digital health in Islamic perspective. *J Sci Technol* 2023; 28: 1–11.
 97. Baradwan S and Al-Hanawi M. Perceived knowledge, attitudes, and barriers toward the adoption of telemedicine services in the Kingdom of Saudi Arabia: cross-sectional study. *JMIR Form Res* 2023; 7: e46446.
 98. Alodhayani AA, Hassounah MM, Qadri FR, et al. Culture-specific observations in a Saudi Arabian digital home health care program: focus group discussions with patients and their caregivers. *J Med Internet Res* 2021; 23: e26002.