

The nature, scope and type of exercise and physical activity undertaken by Middle Eastern women post-coronary artery disease diagnosis: a scoping review

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Abstract

Background

Lack of physical activity (PA) is linked to the high prevalence of coronary artery disease (CAD) in the Middle East. Yet, little is known about Middle Eastern women's PA post-diagnosis of CAD.

Objectives

To identify what is known about the nature, scope and type of exercise and PA undertaken by Middle Eastern women post-diagnosis of CAD.

Methods

A scoping review, following the Arksey and O'Malley framework (2005), was undertaken. Comprehensive searches were undertaken from Jan 2009 to April 2026 using six electronic databases: MEDLINE, CINAHL, Embase, PsycInfo, Scopus and SPORTDiscus, in addition to Google Scholar. A total of 7538 studies were identified. Studies were screened by title, abstract and full text for inclusion eligibility. Twelve studies were included in this review.

Results

This scoping review identified low levels of exercise and PA among Middle Eastern and Arabian women after being diagnosed with CAD. In addition, there were insufficient referrals to and low participation among Middle Eastern women diagnosed with CAD in structured multidisciplinary cardiac rehabilitation programmes.

Conclusion

There is limited research concerning the exercise and physical activity habits among Arab women in the Middle East. The evidence suggests that Middle Eastern women diagnosed with CAD are not achieving the recommended weekly levels of exercise and physical activity. There remains a lack of evidence regarding the education and support offered to these women to encourage them to undertake and/or maintain regular exercise and/or physical activity, and/or enrol onto cardiac rehabilitation programmes post CAD diagnosis.

Background

Coronary artery disease (CAD) remains the leading cause of death globally, accounting for 13% of the world's total deaths.⁽¹⁾ Contrary to the myth that cardiovascular diseases are men's diseases, it is also the leading cause of mortality among women, exceeding the mortality rate of breast cancer.⁽²⁾ Compared to men, women tend to have worse clinical outcomes.^(3, 4)

To reduce the prevalence, morbidity, and mortality rates of CAD, it is important to focus on the disease's modifiable risk factors, including lack of physical activity (PA). PA have an important role in preventing, as well as managing CAD.⁽⁵⁻⁷⁾ To be considered physically active, adults aged 18 years or older should perform at least 150-300 minutes of moderate intensity or 75-150 minutes of vigorous intensity PA per week.⁽⁸⁾ However, globally, one out of three women does not perform enough PA per week.⁽⁵⁾ PA levels fail to reach 60% in most studied Arab and Middle Eastern countries, and they are lower in women compared to men.⁽⁹⁻¹²⁾ Gender inequality in PA has been attributed to the lack of appropriate types of PA that are culturally and religiously suitable for Arab women, as well as a lack of culturally sensitive facilities that provide privacy for these women.⁽¹³⁾ Despite the high levels of physical inactivity among Arab and Middle Eastern women and the importance of PA in reducing mortality and readmission rates among individuals with CAD,⁽¹⁴⁾ there remains a lack of information regarding Arab and Middle Eastern women's PA post-CAD diagnosis. Exercise and PA are integral parts of secondary prevention of CAD and due to the paucity of reviews in this subject, a review of evidence is warranted to establish what is broadly known about the nature, scope and type of exercise and PA undertaken by Arab and Middle Eastern women post diagnosis with CAD in order to better inform clinicians and policy makers of how to promote exercise and PA among Middle eastern women who have been diagnosed with CAD, therefore this scoping review was conducted.

Methods

A scoping review was conducted following the five-stage framework developed by Arksey and O'Malley(Arksey and O'Malley, 2005)⁽¹⁵⁾ and reported according to the PRISMA extension guidelines.⁽¹⁶⁾ The framework consists of five essential stages and a sixth optional one: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, (5) collating, summarising, and reporting the results, (6) consultation exercise.⁽¹⁵⁾ No protocol was prepared or registered for this review.

Identifying the research question(s)

This scoping review was guided by the following main research question and sub-questions: answering the main question is the aim of this review, and addressing the sub-questions constitutes the review's objectives.

What is known about the nature, scope and type of exercise & PA undertaken by Arab and Middle Eastern women post CAD diagnosis?

- (i) What are the prevalence rates of exercise and PA undertaken by the target population?
- (ii) What is the level of participation in hospital-based cardiac rehabilitation (CR) programmes or alternative community and home-based CR programmes post CAD diagnosis among Middle Eastern women?
- (iii) What are the barriers and facilitators to the uptake of and adherence to exercise and PA among the target population?

Identifying relevant literature

Search strategy

Searches were undertaken using six electronic databases: MEDLINE, CINAHL, Embase, PsycInfo, Scopus and SPORTDiscus for records published from 2009 to 22 April 2026, as well as the first 200 hits from Google Scholar. The databases chosen include studies from the fields of medicine, nursing, psychology and sports medicine. The start point of the search duration was chosen because the earliest Middle Eastern paper on CR cited by Cochrane's review was Roth et al.^(17,18) The search was limited to studies written in English. Reference lists of included papers were also searched.

Search Terms

The main research question was broken down into three essential elements following the PCC framework:⁽¹⁶⁾ Population: Middle Eastern women, Context: being diagnosed with CAD, and Concept: Physical Activity. A relevant Cochrane systematic review conducted on a wider population was used to identify synonyms for CAD and PA.⁽¹⁹⁾ The Google search engine was used to identify search terms related to the Middle East. The search strategy of MEDLINE is included in the supplementary material.

Study selection and eligibility criteria

Included sources from the published research were primary research, qualitative and clinical audits that investigated exercise and PA in Middle Eastern women post-CAD diagnosis published in English between January 2009 and 22 April 2026. Reviews, conference proceedings and non-research literature were excluded (Table 1).

Charting the data

This stage involved extracting key information from the selected studies and presenting it in a table. A data extraction sheet was developed by ZS using the JBI manual guidance⁽¹⁶⁾ and improved through discussion with co-authors (MH and GM) and advisor (PM). The following information was extracted: Author/s names, year of publication, aim of the study, study design, population characteristics, sampling technique, data collection and analysis methods, and summary of the findings. More details on the extracted information can be found in the supplementary material.

Results

Collating, summarising and reporting the literature

From the six databases, a total of 7335 papers were found. In addition, the first 200 results were retrieved from Google Scholar search as suggested by Bramer et al. and added to the list of the pool of studies to be screened.⁽²⁰⁾ Additionally, three studies were identified from the reference list of the selected articles and added to the body of retrieved studies. First, MEDLINE results were screened to ensure that the search terms were appropriate. The remaining papers were then screened by title, abstract and full text for their eligibility to be included in the review (Table 1). A total of 219 full-text studies were retrieved and examined for eligibility. Twelve studies met the inclusion and exclusion criteria and were therefore included in this review (Fig. 1). The quality of the studies was critically appraised using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD) tool.⁽²¹⁾ All studies scored more than 50%, ranging from 54.8 to 97.6%, reflecting moderate to high-quality research. Details of the critical appraisal of the included studies are provided in the supplementary material.

Table 1
Inclusion and Exclusion Criteria for Study Selection:

Factor	Inclusion criteria	Exclusion criteria
Purpose	Studies focusing on the physical activity and exercise habits of Middle Eastern women who have been diagnosed with CAD.	Studies focus on diet, medications, and other aspects of the prevention and management of CAD or other CVDs.
Study	Primary research: Randomised and non-randomised controlled trials, observational studies, and qualitative studies published in peer-reviewed journal papers, and grey literature, e.g., research reports from academic units and theses. Clinical audits: Although audits are not considered research, scoping review guidelines encourage including any literature relevant to the purpose of the review, to broadly identify what is known about the research inquiry.	Reviews Non-research literature other than clinical audits. Policy papers or opinion pieces
Text	Full-text	Posters and conference abstracts
Participants	Women	Men and children
Age	18 years of age and above	Less than 18 years of age
Country of origin	The 19 Middle Eastern and North African (MENA) countries: (Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, and Yemen) + Turkey, as it is sometimes included in MENA's definition. ⁽²²⁾	Other countries
Language	English	Other languages
Time-limit	Studies published in 2009 or later	Studies published before 2009

Eight out of the twelve studies addressed the prevalence of PA undertaken by adult Middle Eastern women post-diagnosis of CAD, and/or the scope and type of PA performed, in addition to the barriers and facilitators of adopting an active lifestyle,^(23–30) two studies focused on the participation of Middle Eastern women in CR programmes post-diagnosis of CAD,^(31, 32) while the remaining two studies investigated both unstructured PA and CR,^(33, 34) (Table 2).

The studies included eleven primary research studies and one clinical audit. Of the primary research studies, eight were quantitative, and included two cohort studies,^(23, 33) two longitudinal,^(26, 27) three cross-sectional,^(28, 30, 32) and one non-randomised controlled trial.⁽³¹⁾ The remaining three studies were qualitative.^(24, 25, 29) Details of the characteristics of the included studies can be found in the supplementary material.

Marked heterogeneity in ethnicity within the study population was seen due to the existence of many ethnic groups in the Middle East.⁽³⁵⁾ Whilst the majority of the inhabitants of Middle Eastern countries were Arabs, only four studies were conducted in regions with a majority of Arab inhabitants, particularly Jordan, Qatar, and Saudi Arabia,^(24, 28, 29, 34) while the remaining studies were conducted on non-Arab populations or in areas where Arabs are a minority. Due to the limited number of studies that met the inclusion criteria, and the heterogeneity across these studies in relation to the research design, data collection tools and ethnicity of the population, a textual narrative synthesis (guided by the review questions) was considered more applicable. Such a synthesis allows for grouping the studies into more homogenous groups, while making an explicit account of the diversity of the studies and the nonuniformity of the ethnicity of the participants.⁽³⁶⁾

Table 2
Variables examined in the included studies

Author/year	Rate of exercise or PA	Type of exercise or PA	Duration of exercise or PA	Intensity of exercise or PA	Referral to CR	Participation in CR	Completion of CR	CR mode of delivery	Facilitators to participation in exercise and PA or CR	Barriers to participation in exercise and PA or CR
Acar et al. (2017) ⁽²³⁾	✓	✓	✓							✓
Zhao et al. (2017) ⁽³⁴⁾	✓					✓				
Nalini (2014) ⁽³²⁾					✓	✓	✓	✓		✓
Sadeh et al. (2021) ⁽³³⁾	✓		✓			✓				
Gerber et al. (2011) ⁽²⁶⁾	✓									
Gerber et al. (2011) ⁽²⁷⁾										✓
Dankner et al. (2015) ⁽³¹⁾						✓				✓
Donnelly et al. (2012) ⁽²⁴⁾									✓	✓
Farahani et al. (2008) ⁽²⁵⁾										✓
AlSaleh and Baniyasir (2022) ⁽²⁸⁾	✓									✓
Tunisi et al. (2023) ⁽²⁹⁾										✓
Vahedi et al. (2023) ⁽³⁰⁾										✓

Prevalence of PA among Middle Eastern women post-diagnosis of CAD

The PA participation rate ranged from 13% to 91% across the papers. In four out of five studies, the reported prevalence was less than 50%. However, Zhao et al.,⁽³⁴⁾ an international clinical audit found that 91% of the Saudi women representing the Middle East in the study reported performing adequate PA, defined by the author as moderate or vigorous PA for at least 30 minutes, three times or more a week, although after adjustment for age, the results showed that women were less likely to be physically active than men in the Middle East (p 0.003).⁽³⁴⁾ Notably, since all studies relied on self-reporting exercise and PA, which might be subject to social desirability,⁽³⁷⁾ social desirability bias alone is unlikely to account for the difference in results. Overall, most reviewed studies suggest a low prevalence of PA among Middle Eastern women who have been diagnosed with CAD.

Sadeh et al.,⁽³³⁾ investigated both engagement in exercise and PA and participation in CR. This study found that at baseline, 22.2% of women who did not participate in CR, and 45.5% of those who did, were physically active.⁽³³⁾ While the baseline rate of participation in PA in women who opted not to enrol in CR is relatively close to the rates identified in other studies, the rate is much higher among those who joined the CR programme. This suggests that those who are physically active prior to referral are more likely to participate in CR programmes.

Regarding the duration, type and extent of PA undertaken by women diagnosed with CAD in the Middle East, only two studies discussed the duration of PA performed by Middle Eastern women diagnosed with CAD. One reported that participants of both genders exercised for a median of an hour per day/two days per week (120 min.), and therefore did not achieve the recommended total of 150 min/week.^(5, 23) Whilst the other provided more details on the length of PA sessions undertaken, and stratified their results by participation in CR.⁽³³⁾ Among non-CR participant women, only 22.3% performed any PA during the week, while the percentage reached to 45.5% among the female CR participants, demonstrating that the CR group is generally more physically active than their non-participant counterparts.⁽³³⁾ Similarly, only one study reported the type of PA performed by participants.⁽²³⁾ Walking was found to be the most common type of PA undertaken.⁽²³⁾ No more information was provided about the intensity of the walking activity.

Participation in and utilisation of hospital-based or alternative CR programmes among Middle Eastern women diagnosed with CAD

Only four studies discussed the involvement of Middle Eastern women in CR.^(31–34) Nalini⁽³²⁾ and Sadeh et al.⁽³³⁾ reported that less than 18% of women participated in CR when compared to men. Similarly, Dankner et al.⁽³¹⁾ reported that participants in CR are more likely to be men, while Zhao et al.⁽³⁴⁾ reported no sex difference in CR participation, stating that both sexes were not adequately participating in CR. Globally, women are also less likely to be referred to CR.⁽³⁸⁾ Only Nalini⁽³²⁾ discussed CR referral rates and demonstrated that less than half of the women in the sample were referred to CR. When referred, one-third of the women enrolled onto the programme (36.3%), and just under a third (32.3%) completed the programme. Reasons for the low referral rates to CR were not fully explored. However, when the participants were classified according to the distance of their place of residence from the CR centre, the referral rates of women living some distance from the CR centre were significantly lower than those of men who also lived at a distance from the centre ($p = 0.04$).⁽³²⁾ This suggests that healthcare providers were more reluctant to refer women to CR when they lived some distance from the CR centre, and possibly perceived transportation difficulty among women more than men. When implementing systemic referral, referral and participation rates significantly increased.⁽³²⁾ This suggests that systemic referral of eligible patients positively enhances CR participation rates.

Regarding the CR mode of delivery, only one study reported the availability of alternative CR modes⁽³²⁾. A hybrid programme consisting of eight hospital sessions, one session per week, (instead of the minimum 36 sessions recommended in hospital-based programmes, three sessions per week),^(39, 40) was offered to participants who could not join the hospital-based programme. In hybrid programme, the participants had access to the rehabilitation team via telephone calls and were encouraged to perform daily aerobic exercises, especially walking.⁽³²⁾ In total, 24.8% of CR participants opted for the hybrid programme, and 81.1% of those lived away from the CR centre.⁽³²⁾ The significant difference in choosing the hybrid programme over the hospital-based programme between those living at a distance from the CR centre versus others who live nearby ($P < 0.001$) indicates that the provision of more hybrid CR programmes may yield better participation and completion rates among Middle Eastern women who live far away from the CR centres and may experience difficulty reaching the centre three times per week.

Identified barriers and facilitators to the uptake of and adherence to PA post-diagnosis of CAD

Facilitators of engaging in PA were reported in one qualitative study investigating women's experience in adopting a healthier lifestyle.⁽²⁴⁾ The sample comprised Qatari citizens and residents of Middle Eastern origin. Participants reported that having a social support system of family and friends and healthcare providers' encouragement made a difference in their engagement in PA. They also stressed the positive role of environmental resources, as the Qatari government provided gymnasiums and parks free of charge or at affordable fees.⁽²⁴⁾ Other factors that favourably influenced women to be active include valuing individual responsibility for their health, desire to look good and feel healthy, being knowledgeable about the risk factors of heart diseases, the positive influence of Islam, and the changing sociodemographic and economic conditions in Qatar, which have led to freedom to go to parks and gymnasiums without needing the company of a male guardian.⁽²⁴⁾ A similar study by Tunsi et al.⁽²⁹⁾ explored the barriers and facilitators to lifestyle change after cardiac events among patients in Saudi Arabia.⁽²⁹⁾ This study included both men and women. Therefore, only data that was attributed to women, from quotes where the participants identified themselves as women or discussed female-specific social experiences, were considered in the synthesis of this review. The extracted data mainly discussed barriers to engaging in PA.⁽²⁹⁾ The female participants perceived sociocultural norms to negatively affect their ability to be physically active, as one spoke about needing her husband's permission to go to the gym, and the other discussed the difficulty of being physically active while wearing an Abaya (long and loose Muslim women's attire), which forces her to opt for private indoor activities despite her preference for walking outdoors.⁽²⁹⁾ This echoes Donnelly et al.'s⁽²⁴⁾ findings and suggests culture can have a negative impact on the exercise and PA habits of women. Traditional values and practices that restrict women's mobility in Qatari society still exist in certain families and apply especially among the older generations; thus, spousal support was identified as essential to being physically active.⁽²⁴⁾ The participants also reported that family and household responsibilities make it difficult to be physically active, as they perceived PA to be less of a priority, and often neglect it for the sake of taking care of the family.^(24, 25, 32) Similarly, the female participants in Alsaleh and Baniyasir's study⁽²⁸⁾ reported not having enough time as a barrier to PA more than their male counterparts, which could also be attributed to domestic responsibilities.⁽²⁸⁾ On the other hand, some women believed the availability of housemaids in many houses caused the housewives to be less active.⁽²⁴⁾ Other discussed barriers include the hot weather and underlying health conditions.^(24, 28)

Two studies explored the reasons for not participating in CR^(31, 32). Lack of knowledge was the most stated reason in one study, which was significantly less stated in the group that had received educational intervention regarding CR, and especially by women in the group.⁽³¹⁾ This suggests women benefit well from the given education. Also, poor accessibility to the CR centre was reported by both studies as a reason for not participating or completing the programme.^(31, 32) Other factors that hindered CR completion include physical disabilities, non-cardiovascular diseases, lack of motivation, dissatisfaction with the programme, and job-related problems.⁽³¹⁾

In addition, three studies performed regression analysis to identify predictors of PA and demonstrated that being a female is a predictor of physical inactivity or decreased levels of PA.^(23, 27, 30) In Vahedi et al.'s study⁽³⁰⁾ gender was significantly associated with physical activity in univariate analysis, with men exhibiting higher levels of PA.⁽³⁰⁾ However, in multivariate logistic regression, the difference became statistically insignificant ($p = 0.55$).⁽³⁰⁾ Other reported predictors include pre-myocardial infarction leisure time PA level (LTPA),^(23, 27) which highlights the importance of proper education, support and follow-up for Middle Eastern women diagnosed with CAD, as physical inactivity was found to be prevalent in Middle Eastern women population.^(9–11)

Discussion

This scoping review was undertaken to identify what is known about the nature, scope and type of PA undertaken by Middle Eastern women after being diagnosed with CAD. The review specifically investigates the prevalence, type, and extent of PA undertaken by the target population post CAD diagnosis, engagement and participation in either hospital-based or alternative CR programmes, and barriers and facilitators to being physically active post CAD diagnosis. This is important given the benefit of exercise and PA as essential elements of the secondary prevention of CAD, and the prevalence of physical inactivity in healthy Middle Eastern women.^(14, 41, 42)

This scoping review has identified several issues related to achieving a physically active status after being diagnosed with CAD. There is a low prevalence of exercise and PA among Middle Eastern and especially Arabian women after being diagnosed with CAD. In addition, the review suggests that those who engage in exercise and PA on their own may not achieve the required intensity or duration, as some participants only practised walking for 120 minutes per week. Lastly, when investigating women's PA as a part of a structured multidisciplinary programme, there were insufficient referrals to and low participation rates among Middle Eastern women diagnosed with CAD in CR programmes.

The evidence suggests a lack of exercise and PA among Middle Eastern women diagnosed with CAD. Despite the variation of PA levels between different ethnicities, a low PA level among women diagnosed with CAD is generally consistent with the findings of other populations.^(43–45) An observational study conducted to measure the change in PA post a myocardial infarction among post-menopausal women showed that 49% of the predominantly white sample either maintained a low level of PA or decreased their PA level compared to before the cardiac event.⁽⁴³⁾ In addition, Faggiano et al.⁽⁴⁴⁾ studied secondary prevention measures of CAD in Italy and reported that almost half of the women in their sample did not engage in any PA.⁽⁴⁴⁾ A South Korean study investigated the intensity and domain of PA among CAD and non-CAD individuals and found that 6.4% of women diagnosed with CAD in their sample engaged in enough leisure-time PA to achieve the recommended PA levels, and 27.7% attained the recommended PA levels through leisure-time PA and transportation.⁽⁴⁵⁾

Existing literature show that physical inactivity is at a high level among healthy Middle Eastern women, being greater than 50% in many Middle Eastern countries.^(9, 11, 12, 42) The findings from this scoping review suggest that low engagement with PA persists among Middle Eastern women post CAD diagnosis. This was not a surprising finding, as the level of PA before a cardiac event affects engagement with exercise and PA post CAD event, and was found to be the strongest predictor of leisure-time PA after myocardial infarction.⁽⁴⁶⁾ However, despite a previous physical inactivity being a predictor of low exercise and PA level after a cardiac event, this does not make physical inactivity post-CAD diagnosis inevitable, as evidence showed the possibility of improving PA level after being diagnosed with CAD. Stewart et al.⁽⁴⁷⁾ reported that 34% of their mixed-race sample increased their PA levels since their diagnosis.⁽⁴⁷⁾ This indicates that physically inactive individuals can be encouraged to become more physically active after being diagnosed with CAD. However, the odds-ratio analysis showed that women had higher odds of decreasing their PA level after being diagnosed with CAD compared to men.⁽⁴⁷⁾ This is even more reason to investigate the factors affecting exercise and PA among women specifically, and design culturally suitable behavioural change interventions to promote the uptake and maintenance of PA among Middle Eastern women diagnosed with CAD.

This scoping review also mapped the CR research in this specific area and found Middle Eastern women's utilisation of the CR service to be suboptimal. This echoes universal studies indicating women are less likely to be referred or enrol in CR programmes than their male counterparts.^(48, 49) However, there is limited information on the utilisation of CR programmes in Arab countries by women and men alike. Although most of the inhabitants of the Middle Eastern countries are of Arab ethnicity, only four out of the twelve included studies in this review were conducted in countries with an Arab majority, and only one provided information on CR utilisation.⁽³⁴⁾ The other three studies that discussed CR utilisation were conducted in areas where all or most citizens are non-Arabs.^(31–33) Despite the geographical proximity and/or shared religion, other ethnicities living in the Middle East may not be representative of Arabs due to differences in culture and attitude toward illness. Reges et al.⁽⁵⁰⁾ found that more Arab patients were physically inactive six months after the index event than Jewish patients and had significantly lower perceived benefits of exercise ($p < 0.01$). The authors also found ethnicity to be a predictor of exercise habits at hospitalisation, and perceived benefits of regular exercise were predictors for participation in CR.⁽⁵⁰⁾ This infers that the majority of Arabs diagnosed with CAD in the sample were physically inactive, did not believe exercise would benefit them and therefore were unlikely to join CR.⁽⁵⁰⁾ These findings indicate that results from non-Arab studies cannot be generalised to the Middle Eastern population of the Arabian majority, as different ethnicities differ in their general PA habits before being diagnosed with CAD and might have varying levels of perception of the benefits of exercise, both of which are likely to affect their engagement in PA and exercise after being diagnosed with CAD.

Several studies from the Middle East and Arab world have recently discussed the current state of CR, the challenges these programmes face and have provided recommendations for the advancement of these services.^(51–53) However, no information regarding referral, enrolment, adherence or completion rates was found in the research literature. Two studies conducted to evaluate the effectiveness of a single CR programme in Qatar and the United Arab Emirates were published.^(54, 55) Faisal et al.⁽⁵⁴⁾ provided useful information on the number of sessions attended by the participants and the programme completion rate. However, 89.9% of the referred patients were men, and women's referral, adherence and completion rates were not reported.⁽⁵⁴⁾ Contrary to this, Thrush reported that 436 post-operative women of different cardiac diagnoses were found eligible for CR, and 92 women (21.1%) completed the CR programme, with no information provided on how many women were referred to or enrolled in the programme.⁽⁵⁵⁾ CR services in the Middle East are still limited.^(56, 57) There is a vital need for more CR centres and more research on the utilisation of the existing programmes.

Strengths and limitations

To our knowledge, this is the first review to investigate the PA undertaken by Middle Eastern women post CAD diagnosis. Strengths of this scoping review include a systematic search of several electronic databases with a breadth of search terms, as well as hand-searching of relevant articles' reference lists,

which increased the likelihood of capturing all relevant publications. The screening was conducted by ZS under the guidance of senior colleagues (MH and PM) to ensure methodological rigour. The review was also reported following the PRISMA-ESR reporting guidelines to increase transparency in reporting the methodology and results of scoping reviews.⁽⁵⁸⁾ Also, despite a quality appraisal not being mandatory in scoping reviews,⁽⁵⁸⁾ a critical appraisal was conducted using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD) tool.⁽²¹⁾ All included studies were of moderate to high quality.

However, this review is not without limitations. First, due to a lack of translation funding, only studies published in English were included, which may have led to omitting some relevant studies. However, literature shows no evidence of systematic bias resulting from excluding non-English studies.⁽⁵⁹⁾ In addition, although scoping reviews should be as comprehensive as possible, due to limited time and resources, grey literature was not searched, and therefore, relevant studies may have been missed. Lastly, this review focused on CAD and excluded other cardiovascular conditions, such as heart failure, which can benefit from CR as well. However, CR is relatively in its early stages in the Middle East, and clinicians are likely to focus on diagnoses associated with more promising results.

Implications for future research

Under-representation of women in Middle Eastern research was observed while conducting this review. Several studies were excluded from this review because they had more men in their sample and lacked gender-based analysis. Globally, despite having a slightly lower mortality of CAD compared to men, women often have a poorer prognosis and worse clinical outcomes^(3, 4, 60). Therefore, it is imperative to have more research focusing on women's physical activity habits after being diagnosed with CAD in the Middle Eastern region, and their utilisation of CR services, to ameliorate their cardiac health and avoid further complications. Also, future studies are needed to explore the attitudes, beliefs, barriers, and facilitators to the uptake of and adherence to exercise and physical activity among Arab and Middle Eastern women diagnosed with CAD. Subsequently, the findings of these studies can provide a basis for designing culturally costumed behavioural change interventions to promote the uptake and maintenance of PA among Middle Eastern women diagnosed with CAD.

Conclusion

Few studies were identified that investigated the physical activity part of the lifestyle modifications needed post-CAD diagnosis among Middle Eastern women. The available literature investigating the exercise and PA habits of Middle Eastern women diagnosed with CAD and their participation in CR programmes is scarce. Nonetheless, the synthesis of the studies included in this review showed a lack of PA among Middle Eastern women diagnosed with CAD and a low participation rate in CR, with little to no information about the type, intensity, duration, and frequency of the PA in which women engaged. In addition, there is a lack of evidence related to the education and support offered to Middle Eastern women diagnosed with CAD to encourage them to become physically active. Therefore, it is imperative to have more research focusing on Middle Eastern women's PA habits after being diagnosed with CAD, and their utilisation of CR services, to ameliorate their cardiac health and avoid further complications.

Abbreviations

CAD: Coronary artery disease

PA: Physical Activity

Declarations

Clinical trial number: not applicable

Ethics approval and consent to participate:

Not applicable.

Consent for publication:

Not applicable.

Availability of data and materials:

All data generated or analysed during this study are included in this published article and its supplementary information files.

Competing interests:

The authors declare that they have no competing interests

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Authors' contributions:

ZS performed the literature search, data extraction, analysis and wrote the original manuscript draft. GM and MH conceptualised the study, supervised the research, assisted with data extraction and analysis and critically revised the manuscript. All authors read and approved the final manuscript.

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Figures

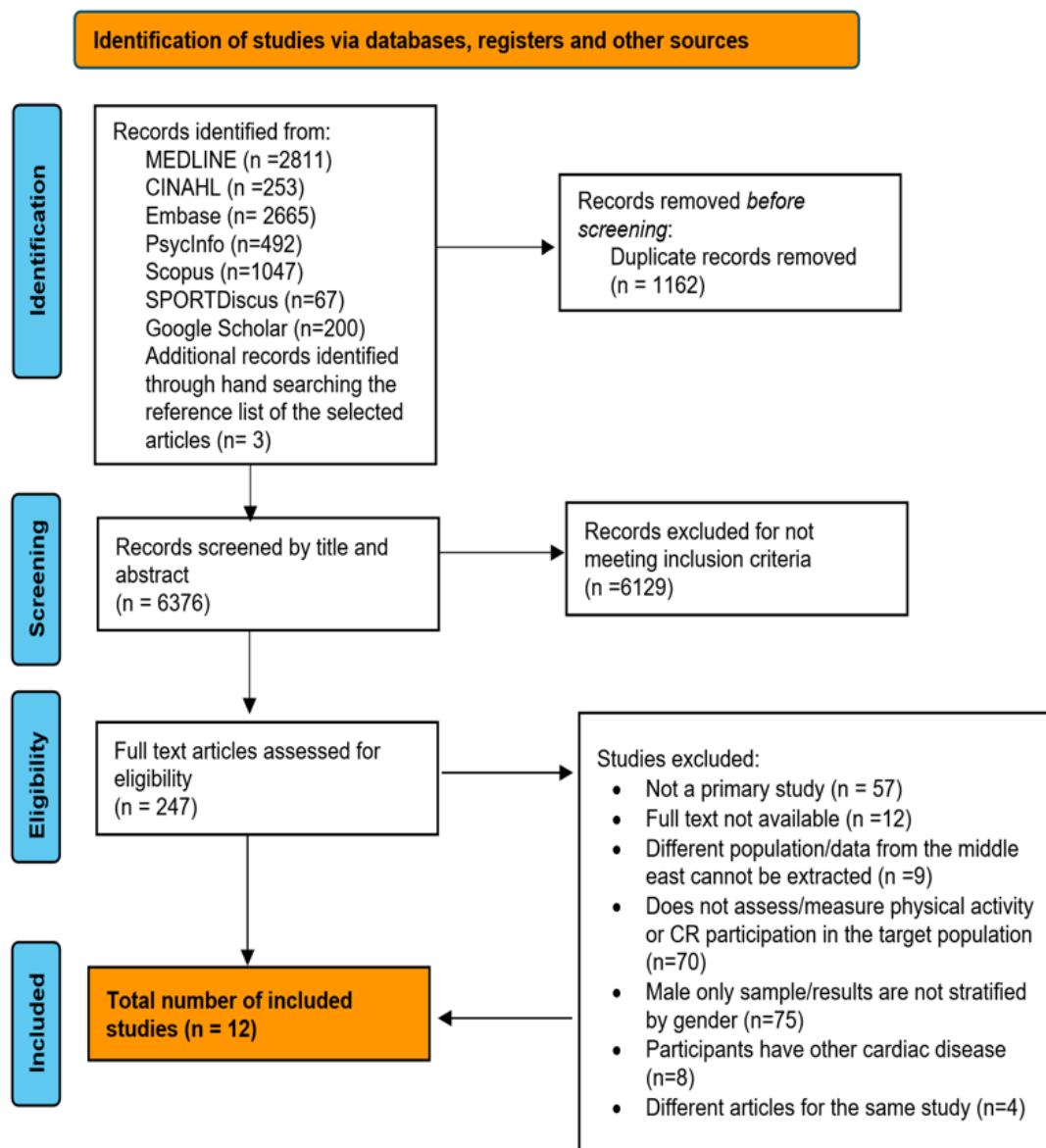


Figure 1

The PRISMA-ScR flow chart for the selection of studies.

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