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An integrative review of cervical cancer screening in Western Asia Middle East Arab Countries

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Abstract

Population-based screening programmes have resulted in minimising mortality and morbidity from cervical cancer. The aim of this integrative review was to explore the factors influencing access of women from Western Asia and Middle East Arab countries to cervical cancer screening. A systematic search for studies conducted in Arab countries in those regions and published in English between January 2002 and January 2017 was undertaken. Thirteen papers were selected and subjected to quality appraisal. A three step analysis involved: summary of the evidence, analysis of both quantitative and qualitative data and integration of the results in narrative form. Few population-based cervical cancer screening programs had been implemented in the relevant countries, with low knowledge and perceptions cervical screening among Arab women, the majority of whom are Muslim. Factors affecting the uptake cervical cancer screening practices were: *absence of organized systematic programmes, low screening knowledge amongst women, health care professionals' attitude towards screening, pain and embarrassment, stigma and*

sociocultural beliefs. Policy changes are urgently needed to promote population-based screening programmes. Future research should address promotion of culturally sensitive strategies to expand the access of Arab Muslim women to cervical cancer screening.

Key words: Arab countries; cervical cancer; cervical screening; barriers to screening; Papanicolaou test; smear test; Muslim women.

Introduction

The Papanicolaou (Pap) smear is a cytological cervical screening test offered to women to detect precancerous stages of endocervical cancer, enabling around 75-90% reduction of the prevalence of cervical cancer (Sankaranarayanan et al., 2005). The aim of regular cervical screening is to detect abnormal cells in the cervix to facilitate early treatment and achieve more clinically effective treatment, with greater cost efficiency (Dunleavey, 2008). By 2030 it is predicted that cervical cancer will account for the deaths of approximately half a million women annually, with more than 95% of these deaths occurring in low and middle income countries (McGraw and Ferrante, 2014). Even though it is evident that cervical cancer screening contributes to the reduction in development of cervical cancer and the associated mortality rate, screening can also produce harms (Habbema et al., 2017). Authors of previous studies reported adverse psychological sequelae such as anxiety, depression and distress associated with abnormal cytology test results (Rahangdale, 2016). In addition, Habbema et al. (2017) studied harms resulting from cervical cancer screening in the United States and the Netherlands and demonstrated that

treatment of precancerous lesions might lead to unfavourable consequences, for example preterm delivery.

Cervical cancer screening that builds upon the use of the Pap smear examination has been implemented in developed countries, and is considered to be the main reason behind the significant reduction in rates of cervical cancer morbidity and mortality (Obeidat et al., 2012, Donnelly et al., 2013). In the United Kingdom (UK), the Department of Health's 'Government Response to the House of Commons Science and Technology Committee on National Health Screening' report stated that up to 5,000 lives were saved every year by the use of regular cervical cancer screening (Department of Health, 2015). However, in developing countries, due to the absence of national population based cervical cancer screening programmes, most cervical screening is administered opportunistically (Obeidat et al., 2012). Despite the fact that cytology screening programmes have been introduced in several developing countries, particularly in Latin America, they do not appear to have reduced the rate of cervical cancer (Zeferino and Derchain, 2006). Sankaranarayanan et al. (2001) identified technical obstacles affecting the impact of such programs, for example suboptimal cytology, poor quality control, and issues concerning the follow-up and management of the diagnosed women. In addition there are problems concerning uptake of such programmes. Women may not be aware of the benefits of cervical screening due to poor public health education, whilst socio-cultural health beliefs and gender roles have been identified as other potential barriers (Bush, 2000, Markovic et al., 2005).

It is crucial to raise the uptake of cervical cancer screening in order to control this disease through early detection and management of the premalignant alteration prior

to progressing to malignancy (Were et al., 2011). It has been suggested that middle-income developing countries where screening is inefficient should re-organize their programmes, taking into account experiences from other countries and lessons learnt from their past failures (Sankaranarayanan et al., 2001). Typically, the major barrier to cervical cancer prevention is not the cost of the screening test, which is relatively inexpensive, but the cost and complexity of providing the infrastructure required for the screening programme (Wright and Kuhn, 2012). While findings from cost effectiveness analyses will impact and inform decision making regarding health care interventions, national policies are needed to allocate resources for both cancer and screening programme control, particularly in low resource countries (Garrido-Cumbrera et al., 2010). Salman (2012) has stated that there is insufficient research on access to cervical cancer screening among Arab Muslim Women in Arab Muslim countries and, due to this, there is no consensus on how access to cervical screening services should be considered. However, screening uptake among Muslim women has been observed to be linked substantially with religion and culture alongside knowledge of the clinical features of cervical cancer (Khan and Woolhead, 2015). The cultural and religious factors pertinent to Arab Muslim Women (AMW), such as the value placed on modesty and premarital virginity, contribute to unwillingness to look for cervical health care (Salman, 2012).

For the purpose of this review and building upon the geographic framework provided by Moore (2013), we used the term 'Arab Muslim Women' (AMW) to refer to Muslim women living in predominantly Western Asia and Middle East Arab countries. These countries are: Oman, U.A.E, Bahrain, Lebanon, Kuwait, Syria, Qatar, Palestine, Iraq, Saudi Arabia, Yemen and Jordan.

This review is part of a larger study entitled 'Evidence based strategies to establish population based cervical cancer screening in Iraq', with the long term goal of improving women's health in Iraq by increasing the number of women with access to cervical screening. Unfortunately, in the past decade there has been a dramatic lack of research on the cervical cancer and cervical cancer screening in Iraq because the country has no population cervical screening programme. Although it is universally acknowledged that there are considerable barriers to establishing and maintaining cervical cancer screening programmes, particularly in developing countries (Ansink, 2007), there are additional potential barriers to setting up cervical cancer screening programme in Iraq. Decades of war, sanctions and years of Iraqi isolation and disorder has led to loss of clinical research capacity (Al Hilfi et al., 2013), demonstrated by a lack of evidence on country specific barriers to cervical cancer screening among this population. The vast majority of the population of this Arab Middle Eastern country is Muslim. Thus, this integrative review focussed on the factors that affect the access of Muslim women living in the Western Asia and Middle East Arab countries to cervical services, along with the interventions that have been implemented to increase the uptake of cervical cancer screening in those countries. The results were used to inform interventions to improve screening practices in Iraq.

Aim

The aim of the review was to identify and assess evidence based strategies to establish cervical screening programmes in the predominantly Western Asia and Middle East Arab countries.

The objectives were to:

- Explore interventions that have been implemented to increase the uptake of cervical cancer screening in Western Asia and Middle East Arab countries
- Identify factors that have had an impact on the access of Western Asia Middle East Arab Muslim women to cervical cancer screening services (hereafter referred to as cervical screening)
- Identify nursing initiatives used in the relevant countries to facilitate development of a cervical screening programme.

Methods and Design

A systematic review involves a structured process to identify, select, and synthesize all high quality research evidence relevant to a specific question (Bettany-Saltikov, 2012). We searched relevant databases (Joanna Briggs Institute and Cochrane library) and could not identify a previous relevant review of the evidence on this topic. Therefore, to answer the research question, regarding factors affecting implementation and uptake of cervical screening in Western Asia Middle East Arab countries, an integrative review based on established guidance for undertaking reviews in health care by Centre for Reviews and Dissemination (2009), was undertaken. The review focused upon the interventions already implemented to

increase cervical cancer screening uptake, considering all factors relating to intervention strategies for cervical cancer screening in Western Asia Middle East Arab countries.

Data sources and searches

A systematic search for English language studies published in between January 2002-December 2017 was undertaken. Five relevant databases were searched: *CINAHL Plus*, *AMED*, *MEDLINE*, *Scopus*, and *Google Scholar*.

Keyword searches

Keyword searches centred on ('*cervical screening*' OR '*Pap*smear*') AND (*Arab* OR *Muslim* OR *Iraq* OR *Kurdistan* OR *Jordan* OR *Qatar* OR *Saudi Arabia* OR *Kuwait* OR *United Arab Emirates* OR *Lebanon* OR *Syria* OR *Palestine* OR *Oman* OR *Bahrain* OR *Yemen*) were used as the primary terms. When searching a *Google scholar*, we also added the term 'barriers'.

Inclusion and exclusion criteria

Papers were considered for inclusion if they:

1. Were based on research studies undertaken using any research method
2. Focused on cervical screening in Western Asia and Middle East Arab Muslim countries
3. Included data on barriers or factors affecting uptake of cervical screening.

Papers were excluded if they were:

1. Focusing on laboratory testing.
2. Reported data on AMW living outside the regions that were the focus of this review.

Search outcome

The study selection process is represented in a PRISMA flow-chart (Figure1). The initial search revealed 621 articles, 78 duplicates were removed. After reviews of the titles and abstracts, 526 articles were excluded (reasons for exclusion are summarized in Figure 1). Seventeen papers were assessed as potentially relevant. Two were related to general gynecological cancer services in Arab countries (Ortashi and Al Kalbani, 2013) and general cancer control in the Gulf (Al-Othman et al., 2015) and empirical research was not reported in two papers ((Sait et al., 2012, Al-Mandeeel et al., 2016), leaving 13 for inclusion in the integrative review.

Quality appraisal

A quality appraisal of the twelve selected quantitative studies was undertaken by two of the authors (SA and HS) using QualSyst, the standard quality assessment criteria for evaluating original research papers from a variety of fields (Kmet et al., 2004). Fourteen questions were used to appraise the methodological quality of each quantitative study, and 10 were applied to the qualitative study. Each question was allocated an outcome: not addressed, partially addressed or satisfactorily addressed. Any disagreement about assessment of papers was discussed until consensus was reached. Relevant remarks regarding the quality of each paper are included in Table 2, 3 respectively

Data analysis

Twelve out of the thirteen included studies utilized quantitative methods and one was based on a qualitative design. It was not appropriate to conduct a meta-analysis due to disparity in design, study populations (e.g. women attending for screening, women attending clinics not connected with screening, health professionals women from

having screening) and research focus (e.g. knowledge of screening, impact of insurance coverage, training needs of professionals), methods. For this reason we used the guidance on analysis of diverse studies to produce an integrative review (Whittemore and Knafl, 2005). Initially we made a summary of each paper and presented this in Table 1. Two researchers then independently combed each paper for relevant results or findings, using a pre-determined set of criteria related to the research objectives: these data were displayed in a matrix of codes (Whittemore and Knafl, 2005). We then compared the codes extracted from each paper across the total set of papers to synthesise the data from the whole range of studies (Whittemore and Knafl, 2005). The results were then presented in a narrative form (CDR, 2009). This analytical process is illustrated in Table 4

Results

A narrative summary of the data extracted from the individual papers is presented in Table 1. Of the 13 studies that met the inclusion criteria, two were undertaken in Iraq, four in Jordan, two in Kuwait, one in Saudi Arabia, three in the United Arab Emirates (UAE) and one in Qatar. The target populations in the majority of these studies included AMW living in these countries. However, the author of one study from Iraq (Hwaid, 2013) collected data from the female physicians and nurses who worked in a maternity/pediatric hospital, while another study from the UAE involved female physicians from the Abu Dhabi emirate and physicians offering women's

welfare clinics in Dubai, which represent 65% of the UAE population. Cross sectional methods were applied in all included studies apart from one in which authors adopted a qualitative method. Sampling techniques varied, although in nine paper researchers used a random sampling technique (Saadoon et al., 2014, Hwaid, 2013, Sait, 2009, Al Sairafi and Mohamed, 2009, Al-Meer et al., 2011, Bakheit and Haroon, 2004, Barghouti et al., 2008, Amarin et al., 2008, Maaita and Barakat, 2002) In one study randomized cluster sampling was used and there were three studies in which purposive sampling was used (Badrinath et al., 2004, Obeidat et al., 2012, Khan and Woolhead, 2015). The data for the studies were gathered from medical facilities (Hwaid, 2013, Badrinath et al., 2004, Al Sairafi and Mohamed, 2009, Sait, 2009, Obeidat et al., 2012, Al-Meer et al., 2011, Amarin et al., 2008, Barghouti et al., 2008) and educational environments (school teachers) (Saadoon et al., 2014, Bakheit and Haroon, 2004) .

The sample sizes ranged from 13 women in the qualitative study to between 187-760 participants in studies based on quantitative methods: all participants were aged 17 years or over. All but two studies included Arab women, school teachers and/or students, while two involved female physicians, nurses and midwives who worked in medical gynaecology clinics at Medical Centres (Hwaid, (2013); Badrinath *et al.* (2004)Several determinants were found to influence cervical cancer screening practices among AMW in Western Asia and Middle East Arab countries. These were labelled as *absence of organized systematic population based cervical cancer screening, lack of women's knowledge about screening, healthcare professionals' attitude towards screening, pain and embarrassment, cultural beliefs*. The findings of the thematic analysis are presented below under each theme.

Absence of organized systematic population based cervical cancer screening

Most of the included studies reported absence of a screening program and therefore attendance for cervical cancer screening was mainly opportunistic. However, opportunistic screening relies upon the knowledge of women and El-Hammasi *et al.* (2009) reported that women in general were inadequately informed. The study showed that about 42% of the women who participated in the study were told about cervical screening by their physicians, and about 22% had never heard about it.

Furthermore, most previous studies from other Arab communities indicated similar results. For example a report by Sait (2009), noted that 67.6% of the participants reported that they heard about cervical cancer screening from media or doctors, also stated it is predictable that targeted women participate in opportunistic screening during their attendance at health care facilities because no population based screening programme has been implemented in AM countries..

Meanwhile, Amarin *et al.* (2008) from Jordan found that 85.7% of women who participated in their study had never had cervical screening. Of the 109 (14.3%) who had ever had a Pap smear, all but five had been the result of opportunistic screening. In a study designed to assess factors influencing cervical screening practices among married primary school teachers in Diyala city (Iraq), Saadoon *et al.* (2014) reported that medical advice was the most important reason cited by (60.7) of participants for undergoing the test. The study found two factors were significantly associated with cervical screening practice: encouragement by the husband ($p<0.001$) and history of gynaecological examination ($p=0.008$). AL-Meer *et al.* (2011) from Qatar reported that relatives and friends (21.6%) were the main sources of information about cervical screening. In the United Arab Emirates (UAE),

Badrinath *et al.* (2008) stated that more than 90% of the physicians expressed a need for a cervical screening programme in the UAE.

Lack of women's knowledge about screening

The findings identified lack of knowledge with low cervical screening uptake among AMW in Western Asia and Middle East Arab Muslim countries. For instance, in Iraq, Saadoon *et al.* (2014) found that of 222 teachers who participated in their study, only 32.4% had satisfactory knowledge of cervical cancer and screening and only 12.6% underwent screening tests. Among those who had screening, more than two thirds (71.4%) had a smear on only one occasion, compared to 17.9% who had undergone screening twice. In another study from Iraq, Hwaid (2013) concluded that women had very limited knowledge and awareness of the cervical screening test: only 57 (28.79%) of a total of 198 women in the study knew that the purpose of the Pap smear was to detect abnormal cervical cells. Khan and Woolhead (2015) found that some beliefs of the educated women who were interviewed were inaccurate, for instance, they considered poor hygiene (mostly through use of public toilets) to be the cause of cervical cancer. Furthermore, those authors showed that most participants had been unaware of the risks of cervical cancer and existence of screening until their doctors suggested screening. AL-Meer *et al.* (2011) from Qatar stated that, of the 500 women who participated in the study, only 40% had had a Pap smear although above 85% were aware cervical cancer and 79% of the screening test.

In Jordan, only 50.9 % of the 187 female healthcare workers participants had awareness of cervical screening (Obeidat *et al.*, 2012) and Al Sairafi & Mohamed, (2009) reported similar figures in Kuwait, where only 52.3% of the 300 women

participants in their study had adequate knowledge of the test. The only significant feature that associated independently with the insufficient knowledge on cervical cancer screening was the level of education.

Health professionals' attitudes towards screening

Barriers to cervical screening involve lack of knowledge on Pap smear testing, little access to female doctors and negative attitudes of health professionals and limited access to female doctors (Obeidat et al., 2012). Female healthcare workers' awareness, practice and attitudes toward cervical cancer screening were studied by Obedat *et al.* (2012), who reported that despite of the availability of the cervical cancer screening facilities, the uptake of cervical cancer screening was poor. Of 187 female healthcare worker participants, 34 (47.2%) were not aware that screening was available. In a Kuwaiti study, Al Sairafi and Mohamed (2009) identified that the main reason women did not present for screening was because they had not been referred by their doctor. In another study conducted in the United Arab Emirates (UAE) Badrinath et al (2004) designed a self-administered questionnaire to assess the knowledge, attitude, and practice of UAE female primary care physicians regarding cervical screening. Among the ninety eight doctors who participated in the study, only 38 (40%) reported ever having performed a Pap smear, while 42 (72.4%) were willing to take on this new responsibility, five (8.6%) were not, and 11 (19%) were undecided (Badrinath et al., 2004).

Pain and embarrassment

In a study by Bakheit and Haroon (2004) exploring individual views and experiences on cervical cancer and strategies of screening in the UAE, the authors surveyed 1638 teachers (all the married female teachers in Sharjah, UAE). Of the 350

respondents from 48 schools, the majority of teachers (84%) had a good knowledge of cervical screening but they were not presenting for the Pap smear. In general, the most repeated reason behind non-attendance for cervical screening was their belief that it might be painful (representing 42% of the population), whereas embarrassment was reported as the second most common reason (Bakheit and Haroon, 2004). These results were confirmed by Khan and Woolhead (2015), who reported fear and embarrassment in those who had never been screened, Authors of another study from Jordan (Maaita and Barakat, 2002) found that 22% of the 600 women who participated in the study were embarrassed about having a cervical screening test.

Cultural beliefs

Data on stigma and beliefs were identified in a study by Maaita and Barakat (2002) who reported 30.2% of 600 participant women had felt healthy, therefore thought it was unnecessary to perform cervical screening. In the UAE, Bakheit and Haroon (2004) also found 17% of 350 participant women had not had cervical screening because they were feeling healthy. El-Hammasi et al. (2009) from Kuwait reported that 14% of 299 participants reported fear of the diagnosis of cancer as the most common perceived barrier. A study by Khan and Woolhead (2015) revealed that intentions regarding cervical screening are influenced by cultural norms such as female modesty. Furthermore, they stated that Emirati women declared their preference to be accompanied by a family member while visiting a doctor, a request based on socially acceptable cultural practices. They also demonstrated their willingness to obtain the approval of their husbands for screening.

Discussion

The aim of this review was to explore factors influencing access of AMW to cervical cancer screening in Western Asia and Middle East Arab countries. All included studies were conducted in similar settings in different Western Asia and Middle East Arab countries, although the hospitals where recruitment took place varied regarding whether or not they had established population based cervical screening program. Our review demonstrates that in Western Asia and Middle East Arab countries, the attendance of AMW for cervical cancer screening was mainly opportunistic; there were few intervention strategies being employed (Sait, 2009). Previous studies has shown that opportunistic screening results in over-screening of women at low risk, may not enable sufficient screening of women at high risk and may be characterized by a large variance in the quality of Pap testing (Bonneux et al., 2004). This is in sharp contrast to the use of organized population–based screening in many Western countries, whereby strategies to improve screening uptake in these countries include invitation letters, followed by re-call letters and follow-up, plus phone reminders as an effective intervention strategy (Everett et al., 2011). For example, current practice in the UK and a number of developed countries involves sending invitation letters from both general practitioners GPs (health care centers) and local health authorities (Everett et al., 2011).

Over three decades ago, Eardley et al. (1985), who examined the reasons behind the failure of cervical cancer prevention, established the principles for a population based screening programme. He recommended that the programme should be 'provider initiated and user-oriented' to ensure complete uptake by the targeted eligible women, with direct invitation to attend for screening. Furthermore, a careful health education approach is required, considering the matters associated with the

effectiveness and acceptability of the test and seeking to address women's fear and anxieties within the invitation (Eardley et al., 1985). Among the thirteen included studies we found evidence to suggest the awareness of cervical cancer among AMW in Western Asia and Middle East Arab countries is far behind other westernized countries represented in this review.

The international findings from developed westernized countries provide a useful background for understanding the recruitment strategies that are likely to increase the uptake of cervical smear among AMW. Most studies included in the review emphasized the need for well-designed community based health education programmes to increase AMW awareness of disease prevention and treatment. The most effective public health intervention to increase screening in any nation could be targeted intervention designed to meet the needs of different socio economic or ethnic groups (Dunn and Tan, 2010). The provision of appropriate educational literature is important in increasing informed uptake by outlining important aspects of the screening process. The UK government Department of Health has produced an information leaflet emphasizing the risks and benefits of screening. It is recommended that this is included with every invitation for screening (Everett et al., 2011).

The findings from three studies located in the UAE (Badrinath et al., 2004), Jordan (Obeidat et al., 2012) and Iraq (Hwaid, 2013) have brought to light some important findings related to healthcare professionals' awareness and attitudes toward cervical screening. The above findings raised several concerns about the awareness of cervical cancer screening and its prevention among health care professionals. It

demonstrated limited awareness on cervical screening by use of Pap smears in addition to their negative attitudes towards such screening. In the absence of a systematic screening programme, the burden is on the healthcare staff to offer women opportunistic screening. The review confirms that it is desirable to train midwives and nurses to carry out screening tests for cervical screening (Sherigar et al., 2010). Providing essential information through well-organized health promotion activities and communication advocated by nursing professionals is considered to be essential in motivating awareness and reducing barriers for women to utilise cervical screening (Guvenc et al., 2013). Another example of this is illustrated through the developing role of general practice nurses in the delivery of cervical screening in the UK and Australia. In the UK, authorized training in cervical screening techniques is provided through Marie Curie Cancer Care, family planning courses and through postgraduate study (Holmes et al., 2014). The UK National Health Service Cervical Screening Programme requires each primary care center to have a designated individual who is responsible for implementing the national guidelines (Holmes et al., 2014). The cervical cervical screening programme guidance refers to the crucial role of both doctors and nurses when discussing the smear test (National Health System, 2004). Again, Holmes et al. (2014) stated that in the UK 72%- 82% of Pap smears were carried out by practice nurses.

However, the transferability of western nursing strategies to Arab Muslim countries is challenging. The cultural acceptability of routine population wide cervical cancer screening for AM women in Iraq has yet to be determined. As a first step, our review confirmed that there are significant socio-cultural barriers to cervical screening organisation and uptake in Arab countries. Personal embarrassment and modesty seems to be a powerful barrier. Modesty and shyness are social characteristics

expected of AMW with respect to physically visualizing personal or private information about the female body. Shyness about the body is reported and may prevent the necessary professional discussion about cervical cancer as a private or sensitive health issue. Marital relationships and family planning are considered very private issues and are less likely to be discussed with other people, especially men, including husbands (Salman, 2012). This issue must be addressed and more research is needed to establish what strategies are culturally acceptable to AMW in Western Asia and Middle East countries

Finally the challenge noted by authors of most included studies was women's fear of cancer and their low participation in cervical cancer screening, which, it was suggested, could be effectively addressed with culturally appropriate interventions focused upon raising awareness of the disease. Many Arab people understand cancer as a fatal disease and consider it to be a death judgment. AMW often avoid the word "cancer" and more likely identify the disease by few words such as "that malignant disease (Guimond and Salman, 2013). This supports the early sociological literature on cancer which suggests that disease is a 'taboo' worldwide for as long as little is known about the cause of illness and in contexts where it is perceived to be incurable (Sontag and Broun, 1977). As global awareness of disease prevention and the prospects of cure improve, the disease is less stigmatized. Nonetheless, it would appear that most AMW in the studies reviewed considered cervical cancer as a fatal disease and they did not anticipate any recovery even when detected early (Salman, 2012). Indeed, the cervical cancer statistics in Western Asia and Middle East AM countries suggest stark health inequalities. Screening is unavailable in Arab countries generally, while socio-cultural stigma relating to the disease is relevant;

some literature suggests AMW consider a cervical cancer diagnosis to be a punishment from God for previous wrongdoing or as a test of their faith and patience that they have to accept (Matin and LeBaron, 2004). In most cases it should be noted that the underlying beliefs and perceptions of health among AMW are greatly influenced by their culture and religion. Because of the importance of virginity, unmarried women are not expected to seek out gynecological health care (Matin and LeBaron, 2004). When beliefs such as destiny and fear of cancer are mixed with cancer fatalism, they can act as significant barriers to preventative health seeking practices among AMW in the Middle East (Donnelly et al., 2013).

In this integrative review, we synthesised the finding of studies on cervical cancer prevention programmes, which we thought would be a fundamental for guidance on introducing such a programme in Iraq. However, most included studies were descriptive and focused on knowledge, attitudes and practices of Muslim women regarding cervical cancer and screening, with little attention to barriers related to provider perspectives or healthcare service delivery in the included countries. Moreover, the studies presented here have been characterised by noticeable disparities in the description of the methods. For instance, in a study by El-Hammami et al. (2009) the study design was clearly identified and analytic methods were distinctly described, whereas Badrinath et al. (2004) did not elucidate the design well, demographic information were not reported and outcome measures were not well defined. Furthermore, authors of all but one study adopted a quantitative approach. Obviously, qualitative evidence can allow contextual understanding of an event because of the exploratory nature of the research (Abadir et al., 2014). Furthermore, qualitative studies on women's health issues have been used effectively with

demonstrable impact on public health evidence-based practices (Khan and Woolhead, 2015).

Strengths and limitations

Articles were restricted to those conducted in Western Asia and Middle East Arab countries and published in the period from January 2002-January 2017. A factor that could have biased the paper selection was that the search was restricted only to English language papers, which excluded any primary research reported in other languages. Also, all of the included papers were conducted in different Arab countries with varied cultural beliefs and health care systems; this may have influenced factors related to AMW access to cervical screening. However, it is a strength of the review that our findings have not been restricted to one cultural context. A further limitation of this review is the methodological quality of two of the papers, where the overall scores were 50% (Maaita and Barakat, 2002) and 45% (Badrinath et al., 2004) respectively. However, Whitemore and Knafl (Whitemore and Knafl, 2005) suggest that comparing scores of diverse studies may not be appropriate, and in a field where the evidence is scarce, we decided to include these papers. The findings of those papers should however be viewed with some caution. Our integrative review revealed that twelve of the thirteen quantitative studies included were cross-sectional surveys with data analysis using descriptive statistics. However, while quantitative approaches are useful, the design may not enable attention to be focussed on participants' perspectives within their own environmental contexts.

Conclusion

Promoting cervical cancer screening uptake among AMW is an important issue to be considered by public health policy makers. Our systematic review highlighted significant health inequalities for AMW in that no population based cervical cancer screening programmes have been implemented in most of the Western Asia and Middle East Arab countries. The implications for practice include the need for:

1. Nursing strategies to influence policy with regard to establishment of equitable cervical screening programmes for AMW
2. Education of healthcare professionals working in Arab countries to ensure they understand the purpose of cervical screening and the potential to reduce morbidity and mortality from cervical cancer using such screening
3. Introduction of culturally-appropriate approaches to provide cervical screening for AMW
4. Education of AMW regarding the potential benefits of cervical screening.

It should be noted that limited studies are available on cervical cancer screening among Muslim women: this indicates a need for further research. The current evidence suggests that an organised screening programme may be more effective than an opportunistic approach. Future research should focus on developing culturally sensitive innovation in cervical screening strategies; to promote global population based-screening and to increase evidence-based cervical screening uptake among AMW in Arab Countries.

References

- ABADIR, A. M., LANG, A., KLEIN, T. & ABENHAIM, H. A. 2014. Influence of qualitative research on women's health screening guidelines. *American journal of obstetrics and gynecology*, 210, 44. e1-44. e6.
- AL-MANDEEL, H. M., SAGR, E., SAIT, K., LATIFAH, H. M., AL-OBAID, A., AL-BADAWI, I. A., ALKUSHI, A. O., SALEM, H., MASSOUDI, N. S., SCHUNEMANN, H., MUSTAFA, R. A. & BRIGNARDELLO-PETERSEN, R. 2016. Clinical Practice Guidelines on the Screening and Treatment of Precancerous Lesions for Cervical Cancer Prevention in Saudi Arabia. Medknow Publications & Media Pvt. Ltd.
- AL-MEER, F., ASEEL, M., AL-KHALAF, J., AL-KUWARI, M. & ISMAIL, M. 2011. Knowledge, attitude and practices regarding cervical cancer and screening among women visiting primary health care in Qatar. *EMHJ*, 17, 855-61.
- AL-OTHTMAN, S., HAOUDI, A., ALHOMOUD, S., ALKHENIZAN, A., KHOJA, T. & AL-ZAHRANI, A. 2015. Tackling cancer control in the Gulf Cooperation Council Countries. *The Lancet Oncology*, 16, e246-e257.
- AL HILFI, T. K., LAFTA, R. & BURNHAM, G. 2013. Health services in Iraq. *The Lancet*, 381, 939-948.
- AL SAIRAFI, M. & MOHAMED, F. A. 2009. Knowledge, attitudes, and practice related to cervical cancer screening among Kuwaiti women. *Med Princ Pract*, 18.
- AMARIN, Z. O., BADRIA, L. F. & OBEIDAT, B. R. 2008. Attitudes and beliefs about cervical smear testing in ever-married Jordanian women. *Eastern Mediterranean Health Journal*, 14, 389-397.
- ANSINK, A. C. 2007. Cervical cancer in developing countries: how can we reduce the burden? Awareness raising, screening, treatment and palliation. *Tropical Doctor*, 37, 67-70.
- BADRINATH, P., GHAZAL-ASWAD, S., OSMAN, N., DEEMAS, E. & MCILVENNY, S. 2004. A study of knowledge, attitude, and practice of cervical screening among female primary care physicians in the United Arab Emirates. *Health Care for Women International*, 25, 663-670.
- BAKHEIT, N. & HAROON, A. M. B. 2004. THE KNOWLEDGE, ATTITUDE AND PRACTICE OF PAP SMEAR AMONG LOCAL SCHOOL TEACHERS IN THE SHARJAH DISTRICT. *Middle East Journal of Family Medicine*, 4.
- BARGHOUTI, F. F., TAKRURI, A. H. & FROELICHER, E. S. 2008. Awareness and behavior about Pap smear testing in family medicine practice. *Saudi Medical Journal*, 29, 1036-1040.
- BETTANY-SALTIKOV, J. 2012. *How to do a systematic literature review in nursing a step-by-step guide*, Maidenhead : Open University Press.
- BONNEUX, L., RAFFLE, A. E., QUINN, M., MURPHY, M. F. G., NEALE, R., SMITH, P. A., HERBERT, A., PETO, J., GILHAM, C. & FLETCHER, O. 2004. Harms and benefits of screening to prevent cervical cancer...Peto J, Gilham C, Fletcher O et al. The cervical cancer epidemic that screening has prevented in the UK. *Lancet* 2004;364:249-56. *Lancet*, 364 North American Edition, 1483-1486.
- BUSH, J. 2000. "It's just part of being a woman": cervical screening, the body and femininity. *Social Science & Medicine*, 50, 429-444.
- CDR 2009. *Systematic review: CRD's guidance for undertaking reviews in health care.*, York: University of York.
- DEPARTMENT OF HEALTH. 2015 *Government Response to the House of Commons Science and Technology Committee Report on National Health Screening*
- [Online]. Available: <https://www.gov.uk/government/publications/national-health-screening-government-response> [Accessed].
- DONNELLY, T. T., AL KHATER, A.-H., AL-BADER, S. B., AL KUWARI, M. G., AL-MEER, N., MALIK, M., SINGH, R., CHAUDHRY, S. & FUNG, T. 2013. Beliefs and attitudes

- about breast cancer and screening practices among Arab women living in Qatar: a cross-sectional study. *BMC women's health*, 13, 49.
- DUNLEAVEY, R. 2008. *Cervical Cancer A Guide for Nurses*, Chicester : Wiley.
- DUNN, R. A. & TAN, A. K. 2010. Cervical cancer screening in Malaysia: Are targeted interventions necessary? *Social Science & Medicine*, 71, 1089-1093.
- EARDLEY, A., ELKIND, A. K., SPENCER, B., HOBBS, P., PENDLETON, L. L. & HARAN, D. 1985. Attendance for cervical screening—whose problem? *Social Science & Medicine*, 20, 955-962.
- EL-HAMMASI, K., SAMIR, O., KETTANEH, S., AL-FADLI, A. & THALIB, L. 2009. Use of and attitudes and knowledge about pap smears among women in Kuwait. *Journal Of Women's Health (2002)*, 18, 1825-1832.
- EVERETT, T., BRYANT, A., GRIFFIN MICHELLE, F., MARTIN-HIRSCH PIERRE, P. L., FORBES CAROL, A. & JEPSON RUTH, G. 2011. Interventions targeted at women to encourage the uptake of cervical screening. *Cochrane Database of Systematic Reviews* [Online]. Available: <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD002834.pub2/abstract>
- <http://onlinelibrary.wiley.com/store/10.1002/14651858.CD002834.pub2/asset/CD002834.pdf?v=1&t=i7rf5po1&s=35af7faee69b89a955841dcb5fb5b585085cc5de>.
- GARRIDO-CUMBRERA, M., BORRELL, C. & PALÈNCIA, L. 2010. Social class inequalities in the utilization of health care and preventive services in Spain, a country with a national health system. *Int J Health Serv*, 40.
- GUIMOND, M. E. & SALMAN, K. 2013. Modesty matters: cultural sensitivity and cervical cancer prevention in Muslim women in the United States. *Nursing for women's health*, 17, 210-217.
- GUVENC, G., AKYUZ, A. & YENEN, M. C. 2013. Effectiveness of nursing interventions to increase pap smear test screening. *Research in Nursing & Health*, 36, 146-157.
- HABBEMA, D., WEINMANN, S., ARBYN, M., KAMINENI, A., WILLIAMS, A. E., I, M. C. M. D. K., VAN KEMENADE, F., FIELD, T. S., VAN ROSMALEN, J. & BROWN, M. L. 2017. Harms of cervical cancer screening in the United States and the Netherlands. *Int J Cancer*, 140, 1215-1222.
- HOLMES, C., MILLS, J. & CHAMBERLAIN-SALAUN, J. 2014. Practice nurses and cervical screening: A two-country review. *International Journal of Nursing Practice*, 20, 53-59.
- HWAID, A. H. 2013. Knowledge and Awareness of Papillomavirus and Cervical Cancer among College Students and Health Care Workers Women in Diyala, Iraq. *American Journal of Public Health Research*, 1, 221-225.
- KHAN, S. & WOOLHEAD, G. 2015. Perspectives on cervical cancer screening among educated Muslim women in Dubai (the UAE): a qualitative study. *BMC Women's Health*, 15, 1-13.
- KMET, L. M., LEE, R. C. & COOK, L. S. 2004. Standard quality assessment criteria for evaluating primary research papers from a variety of fields. Alberta Heritage Foundation for Medical Research Edmonton.
- MAAITA, M. & BARAKAT, M. 2002. Jordanian women's attitudes towards cervical screening and cervical cancer.
- MARKOVIC, M., KESIC, V., TOPIC, L. & MATEJIC, B. 2005. Barriers to cervical cancer screening: a qualitative study with women in Serbia. *Social science & medicine*, 61, 2528-2535.
- MATIN, M. & LEBARON, S. 2004. Attitudes toward cervical cancer screening among Muslim women: a pilot study. *Women & Health*, 39, 63-77.
- MCGRAW, S. L. & FERRANTE, J. M. 2014. Update on prevention and screening of cervical cancer. *World journal of clinical oncology*, 5, 744.
- MOORE, M. A. 2013. Overview of cancer registration research in the Asian Pacific from 2008-2013. *Asian Pacific Journal of Cancer Prevention*, 14, 4461-4484.
- NATIONAL HEALTH SYSTEM 2004 Cervical Screening Programme NHSCSP: Cervical screening; a pocket guide.

- OBEIDAT, B. R., AMARIN, Z. O. & ALZAGHAL, L. 2012. Awareness, practice and attitude to cervical Papanicolaou smear among female health care workers in Jordan. *European Journal of Cancer Care*, 21, 372-376.
- ORTASHI, O. & AL KALBANI, M. 2013. Gynecological Cancer Services in Arab Countries: Present Scenario, Problems and Suggested Solutions. *Asian Pacific Journal of Cancer Prevention*, 14, 2147-2150.
- RAHANGDALE, L. 2016. The potential harms of over screening. *BJOG: An International Journal of Obstetrics & Gynaecology*, 123, 39-39.
- SAADOON, O. Z., AMIN, R. M. & JADOO, S. A. A. 2014. FACTORS INFLUENCING PAP SMEAR PRACTICE AMONG PRIMARY SCHOOL TEACHERS IN DIYALA CITY, IRAQ. *Malaysian Journal of public Health Medicine* 14(1), 19-28.
- SAIT, K., BENTLEY, J., ANFINAN, N. & POWER, P. 2012. Cervical cancer prevention in Saudi Arabia: it is time to call for action. *Open Women's Health J*, 6, 1-5.
- SAIT, K. H. 2009. Attitudes, knowledge, and practices in relation to cervical cancer and its screening among women in Saudi Arabia. *Saudi medical journal*, 30, 1208-1212.
- SALMAN, K. F. 2012. Health Beliefs and Practices Related to Cancer Screening Among Arab Muslim Women in an Urban Community. *Health Care for Women International*, 33, 45-74.
- SANKARANARAYANAN, R., BUDUKH, A. M. & RAJKUMAR, R. 2001. Effective screening programmes for cervical cancer in low-and middle-income developing countries. *Bulletin of the World Health Organization*, 79, 954-962.
- SANKARANARAYANAN, R., GAFFIKIN, L., JACOB, M., SELLORS, J. & ROBLES, S. 2005. A critical assessment of screening methods for cervical neoplasia. *International Journal of Gynecology & Obstetrics*, 89, Supplement 2, S4-S12.
- SHERIGAR, B., DALAL, A., DURDI, G., PUJAR, Y. & DHUMALE, H. 2010. Cervical cancer screening by visual inspection with acetic acid-interobserver variability between nurse and physician. *Asian Pac J Cancer Prev*, 11, 619-22.
- SONTAG, S. & BROUN, H. H. 1977. *Illness as metaphor*, Center for Cassette Studies.
- WERE, E., NYABERI, Z. & BUZIBA, N. 2011. Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. *Afr Health Sci*, 11.
- WHITTEMORE, R. & KNAFL, K. 2005. The integrative review: updated methodology. *Journal of Advanced Nursing*, 52, 546-553.
- WRIGHT, T. C., JR. & KUHN, L. 2012. Alternative approaches to cervical cancer screening for developing countries. *Best Practice & Research. Clinical Obstetrics & Gynaecology*, 26, 197-208.
- ZEFERINO, L. C. & DERCHAIN, S. F. 2006. Cervical cancer in the developing world. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 20, 339-354.

Table 1. Characteristics of included studies

Author(s), year and country	Sample	Method	Purpose of the study	Method of analysis	Main findings	Kmet et al. score (2004) and quality issues
AL-Meer <i>et al.</i> (2011) Qatar	500 women at five randomly selected primary health care centers in Qatar	A cross-sectional interview based study.	To determine the knowledge, attitudes and practice of Qatari women regarding cervical screening.	Data were analyzed by using SPSS, mean score for knowledge was calculated comparing demographic characteristic by bonferroni test for multiple comparisons.	Inadequate knowledge and practice of cervical screening among women under 30 years old and those with low educational level.	Score=16/20=80% Method of sample selection and source of information were appropriate and well described, but the design and the analytic methods were not justified.
Al Sairafi&Mohamed (2009) Kuwait	300 married Kuwaiti women randomly selected from those who visited clinics in five health regions: Capital, Hawalli, Farwania, Jabra and Ahmadi, irrespective of	A cross sectional study. A structured questionnaire was administered during face to face interviews with women who visited	To assess knowledge, attitudes and practice regarding cervical cancer screening among Kuwaiti women	The Chi-squared test was used to assess the association between two qualitative variables and multiple logistic regression analysis was used to estimate the risk of	1-Only (52.3%) of women had adequate knowledge about the test 2- A well designed health education program on cervical cancer and benefits of screening would increase the awareness among Kuwaiti women	Score=15/20=75% The study design was not clearly identified, the data collection methods were not completely described, and some of the conclusions are unsupported by the data.

	reasons for the visit.	the clinics.		different factors.		
Amarin <i>et al.</i> (2008) Jordan	A survey of 760 women attending general obstetrics and gynaecology clinics in Irbid, Jordan.	A questionnaire based cross-sectional study.	To investigate attitudes and beliefs that affect a woman's decision to undergo cervical smear tests.	Data were analyzed using descriptive statistics (mean, standard deviation)	Around 95% of women in the sample had never had a cervical screening test. Major barriers to screening included inadequate knowledge.	Score=17/20=85% Study objectives sufficiently described, but the input variables not clearly identified.
Badrinath <i>et al.</i> (2004) United Arab Emirates	All female physicians from Abu Dhabi emirate and physicians offering women's welfare clinics in Dubai and two other smaller emirates were involved in the study.	A cross-sectional survey using a self-administered questionnaire was distributed among the female physicians.	1-To assess the knowledge, attitudes and practice of (UAE) female primary care physicians regarding cervical screening 2-To identify the physicians' training needs.	Data were analyzed using Chi-squared tests.	Only 40% of female primary care physicians had ever performed a Pap smear and the staff were not yet ready to implement a cervical cancer screening program.	Score=9/20=45% The design was not completely described. Demographic information was not reported and outcome measures were not well defined.
Bakheit <i>et al.</i> (2004) United Arab Emirates	350 female married school teachers in Shajah City participated in the study	A cross-sectional descriptive and analytic study based on questionnaire distribution.	i) To determine the level of knowledge and attitude of the target population and preparedness to undergo cervical screening ii) To identify factors influence women's participation in the	Data were analyzed using frequency distributions, cross tabulations, Chi-squared tests.	1-Teachers had good knowledge about cervical screening but were not commonly practicing it because of their belief that it might be painful or embarrassing. 2-There were no statistical relationships between age, husbands' education,	Score=15/20=75% The selection methods were not completely described. The description of the interview content was incomplete.

			screening program.		marriage duration and the women's knowledge and attitude to cervical screening.	
Barghouti <i>et al.</i> (2008) Jordan	674 female patients aged 17 years and above and attending family medicine clinics at Jordan University Hospital	A cross – sectional study, questionnaire based.	1-To describe and estimate the effect of 5 socio-demographic variable and insurance status on awareness of pap smear 2-To estimate the influence of sociodemographic characteristics, health insurance and knowledge score on having a pap smear test .	Cross tabulations and Chi-squared tests were used to describe the sample and multivariate logistic regressions were performed to estimate the factors that influence awareness of screening.	1-40.3% reported having had a Pap smear, while 45%of them had a Pap smear specifically within the previous 3 years. 2-Women were less likely to be aware of cervical screening if they were older than 35 years	Score=17/20=85% Study characteristics sufficiently described and appropriate sample size, but means of assessment not clearly reported
EI-Hammasi <i>et al.</i> (2009) Kuwait	Cluster sampling of 299 women attending polyclinics in Kuwait.	A descriptive cross-sectional study using multistage cluster sampling.	1-To estimate the lifetime prevalence of Pap smear uptake among women in Kuwait 2-To assess women's knowledge and attitudes towards screening.	Data were analysed using descriptive statistics (Percentage, Frequency) and Chi-squared tests to assess the association between variables.	The lifetime prevalence for cervical screening was 37%. Of those who had cervical screening, 44% of participants had a smear once only during their lifetime.	Score=18/20=90% Study design appropriate and clearly identified, analytic methods distinctly described, but input variables not clearly described

Hwaid (2013) Iraq	Sample of 198 women aged between (17-60) years divided in to 2 groups students and female physicians and nurses who worked in a Maternity and Children Teaching Hospital	A cross sectional study using questionnaire adopted from previous studies.	To evaluate knowledge and awareness about human papillomavirus (HPV) and cervical cancer among women	Data were analyzed using Chi-squared tests.	Inadequate levels of knowledge and awareness about (HPV), cervical cancer, and Pap smear tests.	Score=15/20=75% The selection strategy was not completely described, with poorly defined inclusion criteria. There was no information regarding estimate of variance.
Maaaita & Barakat <i>et al.</i> (2002) Jordan	600 women attending gynaecology clinics at King Hussein Medical Centre, Amman, Jordan.	Cross-sectional descriptive study.	1-To assess Jordanian women's knowledge of the cervical cancer screening 2-To assess the factors that influenced Jordanian women's decisions to have screening.	Data were analysed using frequencies and percentages.	75% of women had never had cervical screening and 77% of women were not aware of causes of cervical cancer.	Score=10/20=50% The study design is not explicit. The target population is mentioned but sampling strategy is unclear. The description of the interview content is incomplete. Analysis methods not well described.
Obedat <i>et al.</i> (2012) Jordan	187 female health care workers: 53 physicians, 92 nurses/midwives, 42 others.	A cross-sectional study.	To investigate Jordanian female health care workers' awareness, practice and attitude toward cervical cancer	Data were analysed using descriptive statistics and logistic regression analysis.	1-47.2% of participants were not aware that cervical screening was available 2- The health care professionals had had negative attitude	Score=18/20=90% Appropriate study design and the objectives clearly identified, but exposure measures not distinctly described

			screening.		towards screening.	
Saadoon <i>et al.</i> (2014) Iraq	Sample of 222 teachers aged (20-63) years residing in Diyala city.	A cross sectional study –self-administered survey using multistage sampling technique.	To assess the factors influencing Pap smear practice among married primary teachers in Diyala city.	Data were analyzed using descriptive statistics (such as the frequency and percentage distribution) and Chi-squared tests.	The study showed very low rate (12.6 %) of cervical screening practice among participants. The study found that only the husbands' encouragement influenced women's decision to undergo screening.	Score=18/20=90% Study characteristics and analytic methods clearly identified, but means of assessment not distinctly reported
Sait (2009) Saudi Arabia	600 randomly selected women from different groups in Jeddah, Saudia Arabia.	A cross-sectional study involving the distribution of 600 questionnaires to randomly selected women.	To assess the knowledge, attitude, and practices related to cervical cancer screening and it is underlying etiology and preventive measures among women living in the Kingdom of Saudia Arabia.	Data were analyzed by using Chi-squared tests.	Only 16.8% of selected women had undergone cervical screening and the main reason for not having a Pap smear was lack of awareness.	Score=16/20=80% Appropriate sample size and study design but the input variable not well described. Exposure measures not well identified
Khan <i>et al.</i> (2015) United Arab Emirate	13 women through the use of purposive and snowball sampling techniques.	Qualitative study using in-depth semi-structured interviews.	1-To explore Muslim women's perspectives toward cervical screening in Dubai 2- To promote cervical cancer	Thematic analysis was applied with comparative analysis between and within the groups.	Several factors related to cultural, religious, sexual behaviour were found to effect educated Muslim women's perspectives on cervical cancer screening	Score 16/20 = 80% The sample not a maximum variation sample, therefore saturation may not have been reached. The

			screening uptake.		The current opportunistic approach to screening is ineffective.	researchers could have been more reflexive regarding their impact on the study.
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Table 2- Quality scoring (quantitative studies)

A	<i>Saadoon et al. (2012)</i>	<i>Hwaid (2013)</i>	<i>Sait (2009)</i>	<i>Badrinath et al. (2004)</i>	<i>Maaita& Barakat (2002)</i>	<i>Al-Sairafi &Mohamed (2007)</i>	<i>Obadat et al. (2012)</i>	<i>AL-Meer et al. (2009)</i>	<i>Amarin et al. (2006)</i>	<i>El-Hammas i et al. (2008)</i>	<i>Barghouti et al. (2008)</i>	<i>Bakheit et al. (2004)</i>
1. <i>Question/objective clearly described?</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. <i>Study design evident and appropriate</i>	Yes	Yes	Yes	Partial	Partial	Partial	Yes	Partial	Yes	Yes	Yes	Yes
3. <i>Method of subject /comparison group selection or source of information /input variables described and appropriate</i>	Yes	Partial	Partial	Partial	Partial	Yes	Yes	Yes	Partial	Partial	Yes	Partial
4. <i>Subject (and comparison group, if applicable) characteristics sufficiently described?</i>	Yes	Partial	Yes	Partial	Partial	Yes	Partial	Yes	Yes	Yes	Yes	Partial
5. <i>If interventional and random allocation was possible, was it described</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6. <i>If interventional and blinding of investigators was possible, was it reported?</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7. <i>If international and blinding of subjects was possible, was it reported?</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8. <i>Outcome and (if applicable) exposure measure(s) well defined and robust to measurement /misclassification bias? Means of assessment reported?</i>	Partial	Yes	Partial	No	Partial	Partial	Partial	Yes	Partial	Partial	Partial	Partial
9. <i>Sample size appropriate</i>	Partial	Partial	Yes	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes
10. <i>Analytic method described/ justified and appropriate?</i>	Yes	Yes	Yes	Yes	No	Yes	Yes	Partial	Partial	Yes	Yes	Yes
11. <i>Some estimate of variance is reported for the main result?</i>	Yes	No	No	No	No	Yes	Yes	Partial	Yes	Yes	Yes	No

12. <i>Controlled for confounding?</i>	N/A	No	No	N/A	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A
13. <i>Results reported in sufficient detail/</i>	Yes	Yes	Yes	Partial	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14. <i>Conclusions supported by the result?</i>	Yes	Yes	Yes	Partial	Partial	Partial	Yes	Partial	Yes	Yes	No	Yes
Score	18/20	15/20	16/20	9/20	10/20	15/20	18/20	16/20	17/20	18/20	17/20	15/20
Percentages	90%	75%	80%	45%	50%	75%	90%	80%	85%	90%	85%	75%

Figure 1- PRISMA Flowchart of study selection

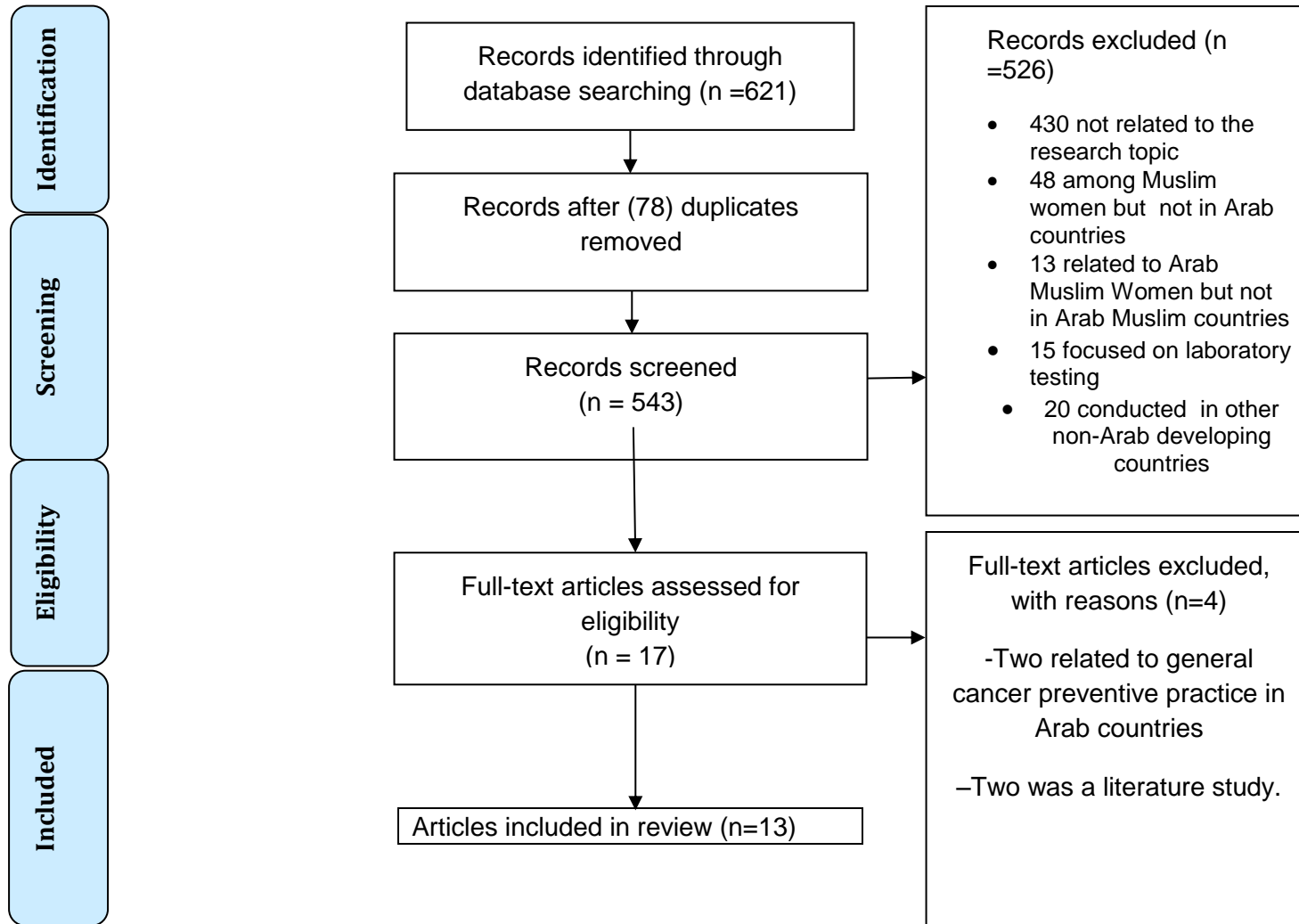


Table 4: Table demonstrating development of themes from original data

What are the data indicating?	Studies addressing these issues (source)	Which objectives do these data relate to?	What is the relationship between what the data are indicating and the objectives (Themes arising from thematic analysis)
<p>Poor knowledge of availability and purpose of screening</p> <p>Majority of women in studies had not had cervical screening</p> <p>Women in general were inadequately informed</p> <p>Participants who were aware of cervical screening had obtained their information from the media or doctors</p> <p>No population based screening programme has been implemented in AM countries</p> <p>Opportunistic screening</p> <p>Medical advice was the most important reason cited</p>	<p>Amarin et al. (2008) El-Hammasi et al. (2009), Hwaid (2013) Khan & Woolhead (2015) Maaita & Barakat (2013) Saadoon et al. (2013) Sait (2009)</p>	<p>1- Factors that have had an impact on the access of Western Asia Middle East Arab Muslim women to cervical cancer screening services</p>	<p><i>Access to cervical cancer screening</i></p>
<p>Belief that screening not indicated if feeling healthy</p> <p>Women more than 35 years less likely to know about screening</p> <p>Limited knowledge and awareness of the cervical screening test</p> <p>Some of educated women were unaware of the risks of cervical cancer and existence of screening</p> <p>The level of education</p>	<p>Bakheit & Haroon (2004) Maaita & Barakat (2013) Barghouti et al. (2008) Khan & Woolhead, (2015), Hwaid (2013), Saadoon et al. (2014) (Obeidat et al., 2012) AL-Meer <i>et al.</i> (2011)</p>	<p>As above</p>	<p><i>Women's knowledge about screening</i></p>

was the only significant factor independently associated with inadequate knowledge and attitude towards cervical screening			
Concern about pain or embarrassment	Bakheit et al. (2004) Khan & Woolhead, (2015) Maaaita & Barakat (2013) Saadoon et al. (2013)	As above	<i>Socio-cultural issues</i>
No influence of husband's age or profession on woman's attitude			
Husband's influence on whether a woman has smear test			
Intentions regarding cervical screening are influenced by cultural norms such as female modesty			
Fear of the diagnosis of cancer as the most common perceived barrier			
Provider's negative attitudes and limited access to female doctors	(Obeidat et al., 2012), Al Sairafi & Mohamed (2009), Badrinath et al (2004)	As above	<i>Health professionals' impact on screening</i>
The main reason for not having screening was that it was not suggested by the doctor			
Few physicians not willing to take the responsibility of the screening programme			
No interventions have been reported		2- Interventions that have been implemented to increase the uptake of cervical cancer screening in Western Asia and Middle East Arab	

		countries	
No initiatives have been reported		3- Identify nursing initiatives used in the relevant countries to facilitate development of a cervical screening programme	