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Research Article

Cervical Cancer Awareness and Screening Practices Amongst Women in Ras Al-Khaimah, UAE and Migrant Women in Sydney, Australia

التوعية بسرطان عنق الرحم وممارسات الفحص بين النساء في رأس الخيمة، الإمارات العربية المتحدة والنساء المهاجرات في سيدني، أستراليا

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Abstract

Cervical cancer is the fifth most common cancer in the United Arab Emirates (UAE; HPV informatics, 2023) and the fourteenth most common in Australia (Cancer Council 2023). Despite the introduction of vaccinations and cervical screening programs in both countries, Emirati and non-Emirati women living in Ras Al Khaimah and migrant women living in Sydney still face significant health disparities when accessing cervical cancer screening services. Currently, there is a lack of literature examining the obstacles to and facilitators of cervical screening among these groups of women. This study aimed to better understand the knowledge and awareness of cervical cancer and factors that hinder or promote access to cervical screening among these groups, which is crucial if healthcare professionals and policymakers are to deliver culturally sensitive services. This study was conducted in Ras Al Khaimah (RAK) and Sydney. The results identified several barriers to cervical cancer screening participation, including lack of knowledge, emotional, cultural, religious and psychological barriers, and organizational factors. The findings have implications for policies to address these barriers and encourage women to participate in health awareness initiatives and screening services.

الملخص

يعد سرطان عنق الرحم خامس أكثر أنواع السرطان شيوعًا في دولة الإمارات العربية المتحدة والسرطان الرابع عشر الأكثر شيوعًا بين النساء في أستراليا (سونغ وآخرون، ٢٠٢١). وعلى الرغم من إدخال التطعيمات وبرامج فحص عنق الرحم في كلا البلدين، لا تزال النساء الإماراتيات وغير الإماراتيات المقيمات في رأس الخيمة والمهاجرات المقيمات في سيدني يواجهن فوارق صحية كبيرة عند الوصول إلى خدمات فحص سرطان عنق الرحم. في الوقت الحالي، هناك نقص في الأدبيات التي تبحث العوائق والميسرات لفحص عنق الرحم بين هذه المجموعات من النساء. تهدف هذه الدراسة إلى فهم أفضل للمعرفة والوعي بسرطان عنق الرحم والعوامل التي تعيق أو تعزز الوصول إلى فحص عنق الرحم بين هذه المجموعات، وهو أمر بالغ الأهمية إذا أراد متخصصو الرعاية الصحية وواضعو السياسات تقديم خدمات حساسة ثقافيًا. أجريت هذه الدراسة في رأس الخيمة وسيدني. حددت النتائج عدة عوائق أمام المشاركة في فحص سرطان عنق الرحم، بما في ذلك نقص المعرفة، والحواجز العاطفية والثقافية والدينية والنفسية، والعوامل التنظيمية. النتائج لها آثار على السياسات الرامية إلى معالجة هذه العوائق وتشجيع النساء على المشاركة في مبادرات التوعية الصحية وخدمات الفحص.

OPEN ACCESS

Keywords: *Cervical cancer, Screening practices, Migrant Women, Awareness*

الكلمات المفتاحية: فوائد منع الحملسرطان عنق الرحم، ممارسات الفحص، النساء المهاجرات، التوعية

1. Introduction

Cervical cancer is one of the leading causes of cancer-related deaths among women worldwide (World Health Organization [WHO], 2020). In 2018, approximately 570,000 women were diagnosed with cervical cancer globally, and about 311,000 died (WHO, 2020). In 2020, the incidences of cervical cancer diagnosis and mortality were 640,000 and 342,000, respectively. Cervical cancer is the fifth most common cancer in the United Arab Emirates (UAE; HPV informatics, 2023) and the fourteenth most common in Australia (Cancer Council 2023). In 2022, UAE reported that every year 123 women are diagnosed with cervical cancer while the mortality is 59 (HPV informatics, 2023). Australia recorded an estimated 951 new cases and 256 deaths from cervical cancer in 2019. The study aimed to identify factors affecting access to cervical screening among target groups, emphasizing the importance of culturally sensitive services for healthcare professionals and policymakers. The Health Belief Model (HBM) was used as an analytical research framework due to its effectiveness in predicting various health behaviors, including cervical cancer screening (Ma et al., 2013).

Despite having well-established healthcare systems, Sydney and RAK offer valuable insights into the challenges faced by women in accessing cervical screening services. Both regions are suitable for conducting a comparative analysis of the availability and accessibility of cervical screening services. To better understand the key barriers that limit the study populations from accessing specific services, the awareness, belief, and attitudes about cervical cancer are explored.

The two regions explored have significant populations of migrant women, who often face numerous barriers when accessing healthcare services (Power et al., 2022). These barriers can be attributed to various factors, such as language barriers, lack of awareness, cultural and social beliefs, or accessibility issues. Despite having established cervical screening programs, both regions still experience disparities in cervical cancer screening rates, indicating that there are significant challenges to overcome. In the case of Ras Al-Khaimah, non-Emirati women make up >80% of the total female population, and there is a lack of literature examining the obstacles to and facilitators of cervical screening among these groups of women. Therefore, the study conducted in Ras Al-Khaimah and a similar study in Sydney aimed to better understand the factors that hinder

or promote access to cervical screening among these groups of women. The findings highlight several barriers to cervical cancer screening participation, including lack of knowledge; emotional, cultural, religious, and psychological barriers; and organizational factors.

Furthermore, previous study found that the perceived benefit and barrier constructs of the HBM have a strong influence on predicting cervical cancer screening (Ma et al., 2013). The cultural and social beliefs surrounding women's health, including cervical cancer, may vary between these two regions. For instance, in some cultures, discussing gynecological issues is considered taboo, and women may feel embarrassed or stigmatized when seeking screening services. Moreover, the role of women in society and the family unit and their attitudes toward healthcare may differ between these two regions, which could impact their willingness to participate in screening programs. Therefore, it is essential to understand these cultural differences to develop culturally sensitive services that cater to the population's specific needs. In summary, comparing women's experiences in these two regions can help policymakers and healthcare professionals develop effective strategies for improving cervical screening rates. By identifying and addressing the underlying factors that hinder access to screening services, such as cultural beliefs, language barriers, and accessibility issues, policymakers can advocate that all women should have equal access to these life-saving services.

2. Literature Review

The implementation of screening programs in Australia and the United Arab Emirates (UAE) has significantly reduced cervical cancer incidence rates (Al-Shamsi, 2022). In Australia, the introduction of the National Cervical Screening Program (NCSP) in 1991 has led to an 80% decrease in both incidence and mortality rates (AIHW, 2018). Comparable data for the UAE are limited.

There is a particular gap in research on cervical cancer among Emirati and non-Emirati women in Ras Al Khaimah, UAE, as well as on migrant women residing in Sydney, Australia. In 2021, approximately one-third of Australia's population was born overseas, with a high proportion of these in the State of New South Wales (NSW), of which Sydney is the capital (WHO, 2020). In the UAE, non-Emirati women comprise >80% of the female population (UAE Ministry of Health & Prevention, 2018).

To improve the well-being of migrant women, it is crucial to understand the factors that affect their access to cervical screening. This study examined knowledge, attitudes,

and beliefs regarding screening among women in RAK and Sydney, exploring the impact of individual and system-level factors.

2.1. Individual-level factors

2.1.1. Lack of knowledge, misconceptions, and education

Several studies have identified a lack of knowledge and misconceptions about cervical cancer screening services as the most common barriers to cervical screening (Al Hammadi et al., 2017; Alwahaibi et al., 2018; Anaman Torgbor et al., 2015; Chang et al., 2015; Jassim et al., 2018; Metwali et al., 2015; Ndukwe et al., 2013; Vahabi & Lofters, 2016). For example, a recent UAE survey reported that 80% of women were unaware of precancerous cervical lesions (Al-Hammadi et al., 2017). A study in Sharjah found that more than one-third (37.2%) of the adult females in the Emirate had never had a cervical screening test (Metwali et al., 2015). Similarly, studies conducted in various Gulf countries concluded that women lacked sufficient knowledge about cervical screening(Alwahaibi et al., 2018; Jassim et al., 2018). One study, for instance, found that 64% of Bahraini women participants had never heard of a PAP smear test (Jassim et al., 2018).

Misconceptions about cervical cancer risk factors are prominent in the literature. For example, migrant African women reported that abortion, poor hygiene, and inserting fingers into the vagina were risk factors for cervical cancer (Ndukwe et al., 2013), others identified having many sexual partners, smoking, abnormal vaginal bleeding, and persistent abnormal discharge as risk factors(Anaman Torgbor et al., 2015; Chang et al., 2015). Furthermore, a study on Arab migrant women reported persistent abnormal discharge or a sexually transmitted infection (STI) as the leading cause of cervical cancer (Vahabi & Lofters, 2016).

2.1.2. Cultural factors

Cervical screening uptakes are influenced by many factors including women's fatalistic attitudes associated with the idea of "God's will" (Abdullahi et al, 2009) and cultural issue (Kwok, 2011). Further, recent studies reported that undergoing a pap smear was seen as "inappropriate sexual behavior" among Asian Muslim women (Robinson et al., 2014 Vahabi & Lofters, 2016). Similarly, Chinese migrant women living in Australia reported that sexual health-related topics, including cervical cancer, were "taboo" within their communities(Kwok et al., 2011). Studies show that some women including Arab women

fail to access screening because the lower female genital tract is considered a sacred part of the body that can only be seen by their husbands (Hammadi et al., 2017; Kwok & Lim, 2016; Khan & Woolhead, 2015).

2.1.3. Psychological factors

Many women describe feelings of embarrassment and lack of modesty during a cervical screening test (Chang et al., 2015; Kwok et al., 2015). Among Asian migrant women in Australia, screening was seen as "inconvenient" because it required exposing certain body parts (Kwok et al., 2011). Women from the Middle East and Southeast Asia also reported embarrassment as a significant barrier (Marlow et al., 2015; Vahabi & Lofters, 2016).

Fear of diagnosis, anxiety about test results, and discomfort during the test are common reasons that prevent migrant women from accessing screening services (Alam et al., 2022; Cullerton et al., 2016; Vahabi & Lofters, 2016). Practical barriers reported in several studies included difficulties obtaining time off work, childcare, and transport, as well as limited availability of pre-booked appointments and unsuitable clinic hours (Adegboyega & Hatcher, 2017; Anaman Torgbor et al., 2017; Marlow et al., 2015; Ogunsiji et al.,2013).

2.1.4. Cognitive barriers

The perception that one is at low risk of cervical cancer is widely reported by several studies (Adeboyega & Hatcher, 2017; Chang et al., 2010; Vahabi & Lofters, 2016). Women often believe that they are not susceptible to cancer and, therefore, delay attending screening. Similarly, Emirati women living in Oman reported a low perceived risk of cervical cancer due to their healthy lifestyle (Alwahaibi et al., 2018). Being single and sexually inactive was a major reason for migrant women not attending cervical screening tests because they perceived themselves to be at low risk of cervical cancer (Alam et al., 2022; Chang et al., 2010; Vahabi & Lofters, 2016). The absence of symptoms during the early stages of cervical cancer also significantly limited screening behavior amongst some migrant women (Ekechi et al., 2014; Lofters et al., 2011).

2.2. System-level factors

System-level factors include logistical and organizational aspects of healthcare provision. The most widely reported issues are the lack of female healthcare providers with good interpersonal and communication skills (Chang et al., 2010; Kwok et al., 2011; Metwali et al., 2015) and physicians' lack of sensitivity toward women's need for modesty (Chang et al., 2010; Kwok et al., 2011). Several studies state that females prefer female doctors when accessing screening services (Alam et al., 2022; Jackowska et al., 2017; Kwok et al., 2011).

Negative screening experiences with both male and female healthcare providers affect subsequent screening attendance by many women (Anaman Torgbor et al., 2017). Language barriers were also commonly reported in several studies as they affect communication with health professionals and made booking appointments difficult (Anam Torgbor et al., 2017; Marlow et al., 2015; Vahabi & ofters, 2016). Asian and Middle Eastern women would prefer to have an interpreter available when they access cervical screening services (Kwok et al., 2011; Vahabi & Lofters, 2016).

2.2.1. Organizational factors

Several studies report that the main organizational facilitators promoting screening attendance amongst Middle Eastern and Asian women are receiving a reminder letter from the National Screening Program and a recommendation from their doctor(Chang et al., 2010; Kwok et al., 2011; Vahabi & Lofters, 2016). Access to free screening is also a motivator for migrant women in Australia. Chinese migrants in Australia reported that they appreciated the high standard of Australia's healthcare system, which they regarded as superior to that of their home countries (Chang et al., 2010; Kwok et al., 2011).

2.3. Cervical cancer-related global strategies

Cervical cancer is one of the most treatable and curable cancers if detected early (AIHW, 2018). It is the fourth most common cancer among women globally, with >300,000 deaths in 2018 (WHO, 2018). However, there is a significant disparity in mortality from cervical cancer between countries. In 2018, nearly 90% of deaths occurred in low and middle-income countries (WHO, 2018, 2020). These excess deaths have been attributed to limited access to public health and screening services. In response, WHO

announced a global action program to eliminate cervical cancer by 2030 and called for all stakeholders to unite to achieve this goal (WHO, 2020). The three key pillars of the program and their corresponding targets are:

1. *Vaccinations*: 90% of girls are fully vaccinated with the HPV vaccine by the age of 15;
2. *Screening:* 70% of women are screened using a high-performance test by the age of 35 and again by the age of 45;
3. *Treatment*: 90% of women receive pre-cancer treatment, and 90% of those with invasive cancer are managed (WHO, 2020).

Nearly 99% of cervical cancers result from long-lasting human papillomavirus (HPV) infections in the lining of the cervix. The HPV vaccination is the most effective and efficient way to prevent cervical cancer, as 93% of diagnoses could be prevented by immunization (WHO, 2020). For the general population of women, WHO has suggested using the HPV DNA as the primary screening test, starting at 30 and repeated every 5 to 10 years.

2.4. Cervical cancer-related strategies in UAE

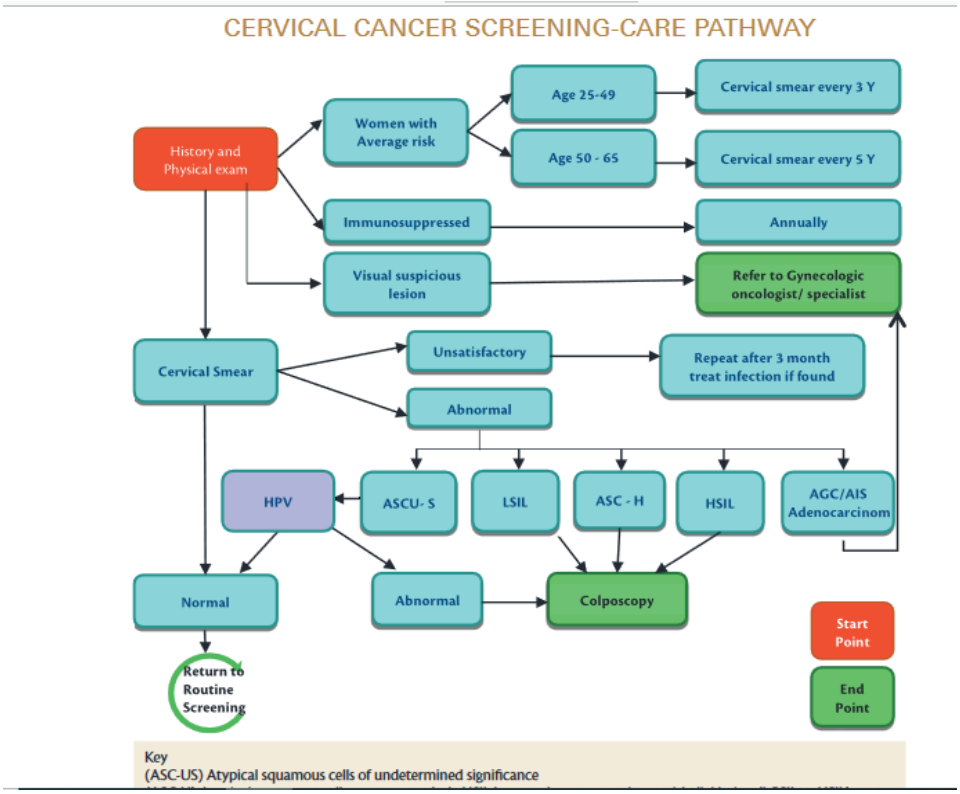
Cancer is the third most common cause of death in the UAE (Al-Shamsi, 2022). Over the past 40 years, cancer care in the UAE has changed dramatically, from a single center in Al Ain in 1981 to >30 cancer centers and clinics nationwide and at least four comprehensive cancer centers (Al-Shamsi, 2022). In 2008, the UAE initiated a free vaccination drive for young female students entering grades 11 and 12 across all regional schools. As per HAAD, the vaccination rate in Abu Dhabi has increased from 50% to 80% (HAAD), however, the vaccination rates for RAK is not available. The UAE Ministry of Health and Prevention (MOHAP) has recently begun to promote the WHO Global Strategy to Accelerate the Elimination of Cervical Cancer in collaboration with Dubai Municipality. In cooperation with health authorities, the Ministry has developed national guidelines for the early screening of high-priority cancers, including cervical cancer. This was part of MOHAP's strategy to reduce cancer-related mortality to achieve the national indicators established in the National Agenda 2021 (Abu Gheida et al., 2021). The cervical cancer screening program had the following aims:

1. To establish clinical service specifications and data reporting procedures for DOH's Cervical Cancer Screening Program in the Emirate of Abu Dhabi.

2. To establish a clinical care pathway and minimum service specifications to ensure that women screened for cervical cancer receive quality and safe care and timely referral for diagnosis and treatment (WHO, 2020). The pathways to care are shown in Figure **1**.

Figure 1

Cervical cancer screening pathways. Source: Department of Health (2022)



Following the success of this initiative, the vaccination program was extended to females aged 18–26 years. Taking cervical cancer prevention one step further, the DOH implemented a screening program for cervical cancer in the same year: HPV vaccination was recommended for females aged 15–26 years and screening with a pap test for women aged 25–65 years, regardless of their HPV vaccination status. As a result of various well-structured programs for cervical cancer prevention, the rate of carcinoma in situ of cervix uteri in the UAE has declined by over 50% (from 81 cases in 2015 to 38 cases in 2017).

Evidence shows that early cancer detection increases the chance of successful treatment and positive outcomes (Cullerton et al., 2016). In the UAE, data for 2017 show a lower rate of population coverage for early cancer screening among the target age groups (<70%) than the targets set nationally or by the WHO. Of the target population –

sexually active females, symptom-free aged 25–65 years – only 7% had the screening compared to the targeted 33% (Al-Shamsi, 2022).

2.5. Cervical cancer-related strategies in Australia

The Australian NCSP has played a crucial role in reducing the incidence of cervical cancer in the country. The NCSP was established in 1991 to coordinate and monitor cervical screening activities nationwide. The program has detected precancerous abnormalities and early-stage cervical cancer, leading to timely interventions and improved outcomes for women. It recommends that women aged between 25 and 74 years undergo a primary HPV test every five years instead of a Pap smear every two years, as previously recommended. This change was implemented after extensive research showed that HPV testing is more effective at detecting high-risk strains of HPV that can lead to cervical cancer (Smith & Canfell, 2016).

Since the introduction of the NCSP, cervical cancer incidence has decreased by 50%, and mortality has dropped by 60% (AIHW, 2018.) Overall, about 57% of women attend screenings, although the figure is lower for Aboriginal and Torres Strait Islander women; most of them reside in rural areas and have lower socioeconomic status (AIHW, 2019). The prevalence of high-grade lesions in females has also fallen since the introduction of the National HPV Vaccination Program in 2007, and the risk of cervical cancer has been further reduced by an additional 70%(AIHW, 2018).

3. Methodology

The study adopted a quantitative cross-sectional research method. The focus of the study was on cervical cancer knowledge, awareness, and screening practices and barriers to screening practices faced by women aged 35 and above living in Ras Al Khaimah and migrant women living in Sydney. Data of the study were collected from two sites – Ras Al Khaimah, UAE (RAK Study) and Sydney, Australia (Sydney study).

3.1. Participants of the study and recruitment

Participants of the study are women aged ≥35 years with no history of cervical cancer, living in Ras Al Khaimah/Sydney for more than one year. Women aged <35 years and who have had cervical cancer were excluded from the study.

Participants for the Sydney and RAK studies were recruited using convenience and snowball sampling. Due to COVID-19, face-to-face data collection could not be undertaken and therefore an online survey and interviews were used for data collection. For the RAK study, the online survey was found not to be feasible due to the limited access to the online survey by the participants. Therefore eight interviewers and a research assistant were recruited to conduct the interviews. Both the interviewers and research assistants were given online training for conducting interviews and data collection by the chief investigators from Sydney and RAK. However, for the Sydney study, online survey was used for data collection.

3.2. Sample and survey instrument

The ideal sample sizes for the RAK study (N = 265) and the Sydney study (N = 203) were calculated with a 95% confidence interval and significance of 0.05 using the Australian Bureau of Statistics sample calculator (ABS, 2021). Participants were recruited using two non-probabilistic sampling strategies – convenience and snowball sampling. The total number of eligible women who participated in the RAK study was 311 and in the Sydney study was 201 with a response rates of >100% for RAK and 99% for Sydney study.

Data were collected using a survey tool (questionnaire) comprising the following domains:

1. Socio-demographic characteristics and acculturation;
2. Knowledge and awareness of cervical cancer, HPV, and the Cervical Screening Test (CST);
3. Attitudes toward cervical cancer and HPV vaccination;
4. Barriers and facilitators to participate in cervical cancer screening; and
5. Screening behaviors and general health practices.

The survey instrument was developed and validated by a previous research with a sample size of 203 women aged between 25 and 74 years from Bangladesh, China, and India living in Sydney, Australia (Qian et al., 2020). Univariate and bivariate statistical analyses of the survey data were conducted using the SPSS software.

3.3. Ethical consideration

All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Sydney's Human Research Ethics Committee (2021/065) and the RAK Medical Health Sciences University-RAK, United Arab Emirates (UAE) (RAKMHSU-RE0672020/21-F-N) and Ministry of Health and Prevention, UAE (MOHAP/REC/2021/28-2021-F-N).

3.4. Informed consent

Informed consent was obtained from all individual participants included in the study.

4. Results

As shown in Table 1, most RAK participants (66%) were aged 34–44 years and had a university education (77%). Over half (55%) identified as Muslim and about one-third (35%) as Christian. Almost two-thirds (69%) had lived in RAK for over 10 years. The majority were non-Emirati (72%). Participants in the Sydney study were also predominately in the younger age group (35–44 years). Most of the participants were married (82.8%). Over one-third had no formal education (36%), while around one-quarter (25.1%) had a high school level of education. Almost half of the participants were long-term migrants who had been residents in Sydney for over 10 years, and the majority (81%) identified as Muslim.

4.1. Knowledge of cervical cancer

4.1.1. Knowledge of symptoms

Participants were asked about their knowledge of the symptoms of cervical cancer. Most women in each group could identify "bleeding between periods", "irregular menstruation", "vaginal discharge," and "bleeding after intercourse" as cervical cancer symptoms (see Table 2). This demonstrated that the study participants had accurate knowledge of cervical cancer symptoms.

Table 1

Sociodemographic characteristics of participants.

Variables	Sydney N (%)	RAK N (%)
Religion		
Islam	162 (81.0)	148 (55.8)
Christian	30 (14.8)	92 (34.7)
Other	7 (4.2)	25 (9.4)
Employment status		
Unemployed	131 (64.5)	230 (86.8)
Full time	42 (20.7)	35 (13.2)
Part-time/casual	22 (10.8)	
Student	5 (2.5)	
Education level		
No formal education	73 (36.0)	36 (9.1) 55 (13.9)
High school	51 (25.1)	295 (74.3)
Diploma	35 (17.2)	5 (1.3)
University Degree	41 (20.2)	
Other	1 (0.5)	
Relationship status		
Married	168 (82.8)	311 (78.3)
Divorced/Separated	18 (8.9)	9 (2.3)
Single	15 (7.4)	77 (19.4)
Language spoken at home		
Arabic	50 (24.6)	119 (30.0)
English	107 (52.7)	82 (20.7)
Other	44 (21.7)	196 (49.3)
Parity		
No children	28 (13.8)	163 (41.1)
1–2 children	82 (40.4)	78 (19.6)
≥3 children	91 (44.8)	156 (39.3)

Table 2

Knowledge of symptoms of cervical cancer by study sites.

Knowledge about cervical cancer	Sydney study (n = 203)			RAK study (n = 265)		
Symptoms of cervical cancer	**Yes**	**No**	**Unsure**	**Yes**	**No**	**Unsure**
Painful menstruation	34 (16.7)	67 (33)	99 (48.8)	157 (59.2)	43 (16.2)	65 (24.5)
Bleeding between periods	104 (51.2)	15 (7.4)	79 (38.9)	222 (83.8)	9 (3.4)	34 (12.8)
Irregular menstruation	145 (71.5)	15 (7.4)	79 (38.9)	163 (61.5)	50 (18.9)	52 (19.6)
Vaginal discharge	146 (71.9)	9 (4.4)	45 (22.2)	194 (73.2)	33 (12.5)	38 (14.3)
Itching in genital area	76 (37.4)	16 (7.9)	107 (52.7)	146 (55.1)	64 (24.2)	55 (20.8)
Bleeding after intercourse	141 (69.5)	5 (2.5)	53 (26.6)	186 (70.2)	35 (13.2)	44 (16.6)
There may be no symptoms	89 (43.8)	15 (7.4)	96 (47.3)	141 (53.2)	91 (34.3)	33 (12.5)

Table 3

Knowledge of treatment by study site.

	Sydney study (n = 203)			RAK study (n = 265)		
CC treatment	**Yes**	**No**	**Unsure**	**Yes**	**No**	**Unsure**
Prescription drugs	21 (10.3)	107 52.7)	69 (34.0)	170 (64.2)	36 (13.6)	59 (22.3)
Chemotherapy	116 (57.1)	25 (12.3)	59 (29.1)	233 (87.9)	5(1.9)	27 (10.2)
Surgery	160 (78.8)	2 (1.0)	37 (18.2)	229 (86.4)	9 (3.4)	27 (10.2)
Radiotherapy	78 (38.4)	27 (13.3)	93 (45.8)	227 (85.7)	7 (2.6)	31 (11.7)
Hormone therapy	23 (11.3)	54 (26.6)	117 (57.6)	157 (59.2)	41 (15.5)	67 (25.3)
No treatment	4 (2.0)	168 82.8)	27 (13.3)	53 (20.0)	164(61.9)	48 (18.1)

4.1.2. Knowledge of treatment

In relation to cervical cancer treatment, women in RAK had better knowledge than migrant women in Sydney. A great majority of RAK women identified chemotherapy (87.9%), surgery (86.4%), and radiotherapy (85.7%) as the treatment for cervical cancer. In comparison, migrant women in Sydney identified surgery (78.8%), followed by chemotherapy (57.1%), as the treatment of the disease. More than half (57.6%) of the migrant women in Sydney were “unsure” about hormone therapy compared to one-quarter of RAK women (25.3%) (see Table 3).

4.1.3. Association between background characteristics and cervical cancer

As shown in Table 4, RAK women between the ages of 46 and 55, as well as those with three or more children, had a significantly higher level of awareness of cervical cancer in comparison to the rest of the study population ($P =< 0.001$). In the Sydney study, younger women, specifically those aged 35–45, were more aware of cervical cancer than older women. More women with 1–2 children had heard about cervical cancer than participants with more than three children or no children. The statistical analysis did not reveal any significant association between parity and cervical cancer awareness in the Sydney study.

The findings presented in Table 5 show that women who had been living in RAK for more than 10 years ($P =< 0/.001$) and those who spoke other languages ($P = 0.001$) were more likely to have heard of cervical cancer compared to those who had been living in RAK for <10 years, and who spoke either Arabic or English. The Chi-square test results show that the association between the variables was statistically significant.

Table 4

Association between sociodemographic characteristics and "Have you ever heard of cervical cancer?".

Variables	Have you ever heard of cervical cancer?			
	RAK study N = 265		Sydney study (N = 203)	
Age (yr)	*Yes N (%)*	*No N (%)*	*Yes N (%)*	*No N (%)*
35–45	141 (21.5)	34 (12.8)	89 (43.8)	3 (1.5)
46–55	72 (37.7)	0	54 (26.6)	4 (2.0)
≥56	18 (6.8)	0	49 (24.1)	3 (1.5)
	X = 20.059, df = 2, P =< 0.001		*X = 2.929 df = 4, P =< 0.001*	
Parity	*Yes N (%)*	*No N (%)*	*Yes N (%)*	*No N (%)*
1–2 children	51 (19.2)	5 (1.8)	58 (73.4)	21 (26.6)
≥3 children	75 (28.3)	8 (3.0)	75 (47.5)	15 (36.6)
No children	70 (37.7)	21 (37.7)	24 (15.2)	4 (9.8)
	X = 58.274, df = 7, P =< 0.001		X = 4.319, *df* = 3, *P* =< 0.229	

Table 5

Association between variables representing Acculturation and "Have you ever heard of cervical cancer?"

Variables	RAK study N = 265		Sydney study (N = 203)	
Year lived	**Yes N (%)**	**No N (%)**	**Yes N (%)**	**No N (%)**
1–5	43 (16.2)	9 (3.4)	51 (26.6)	4 (44.4)
6–10	9 (3.4)	9 (3.4)	36 (18.8)	3 (33.3)
>10	178 (67.1)	16 (6.0)	**105 (54.7)**	2 (22.2)
	□ = 27.224, df = 3, P =< 0.001		*□ = 206.685, df = 3, P =< 0.001*	
Language				
Arabic	87 (32.8)	15 (5.7)	98 (48.3)	9 (4.4)
English	26 (9.8)	10 (3.8)	50 (24.6)	0
Other	128 (48.3)	9 (3.4)	44 (21.7)	0
	X = 17.825, df = 3, *P* < 0.001		*X = 211.360, df = 3, P =< 0.001*	
Religion				
Islam	129 (48.7)	19 (7.2)	129 (48.7)	19 (7.2)
Christian	82 (30.9)	10 (3.8)	82 (30.9)	10 (3.8)
Other	20 (7.5)	5 (1.9)	20 (7.5)	5 (1.9)
	X = 101.217, df = 3, P =< 0.481		*X = 101.217, df = 3, P =< 0.001*	

Results from the Sydney study show that women living in Sydney for >10 years (*P* =< 0.001) and those who spoke Arabic and were Muslim were significantly more likely to have heard about cervical cancer compared to the rest of the study population (0.<001).

4.2. Barriers to screening participation

Participants were asked about the barriers to participating in cervical screening tests (CST). The descriptive results revealed that more than one-third of the RAK women identified lack of time (40%), uncertainty about how to access the test (36.6%), concerns about potential health issues (35.1%), and discomfort with a male doctor (31.7%) as reasons for not participating in CST. Migrant women in Sydney identified a more comprehensive range of factors preventing their participation in CST, including lack of time (86%), uncertainty about how to access the test (86.7%), feeling embarrassed (86.7%), perceiving themselves as too old (88.7%), concerns about potential health issues (81.8%), and a lack of knowledge about CST (78.8%). Overall, other variables including “doctor hasn’t mentioned it,” “worried if there is something wrong,” and “male doctor” were the major barriers identified by participants in both studies (See Table 6 in Appendix).

4.3. Barriers to screening by ethnic group

The RAK study classified participants into two categories: Emirati and non-Emirati. In the Sydney study, migrants were categorized as Middle Eastern or South Asian.

Both the Sydney and RAK studies identified common barriers to screening. In the Sydney study, South Asian migrants reported ”no time” as a barrier, while non-Emirati women faced the same challenge in the RAK study. Additionally, Middle Eastern migrants and Emirati women in both studies identified ”painful” and ”lack of information from the doctor” as barriers. Another barrier identified by both South Asian migrants and non-Emirati women was the perception of being unable to control cervical cancer (see Table 7) in Appendix.

5. Discussion

This section summarizes and discusses the essential findings and makes recommendations for policy and programs. As mentioned earlier, the HBM postulates an individual’s decision to engage or not in certain health behaviors. However, these decisions are influenced by several factors, such as their perception of susceptibility to the condition, the severity of the condition, the benefits of engaging in the behavior and their perceived barriers to engaging in the behavior (Guvenc G. Akyuz A. Ikel, 2011). In the specific context of cervical cancer screening, the HBM suggests that women are more likely to undergo screening if they perceive themselves to be at risk of developing cervical

Table 6

Barriers to screening by ethnic groups in RAK and Sydney study.

Barriers	Sydney study (n = 203)			RAK study (n = 265)		
	Ethnicity	**Mean**	**SD**	**Ethnicity**	**Mean**	**SD**
No time	Middle Eastern	1.471	0.53875	Emirati	1.57	0.634
	South Asian	1.795	0.04091	Non-Emirati	1.92	0.778
Don't know how to access	Middle Eastern	1.8571	0.41897	Emirati	1.75	0.640
	South Asian	1.8250	0.38481	Non-Emirati	1.79	0.695
No signs and symptoms	Middle Eastern	1.218	0.44424	Emirati	1.66	0.579
	South Asian	1.4750	0.59861	Non-Emirati	1.66	0.743
Painful	Middle Eastern	1.3200	0.57135	Emirati	2.10	0.712
	South Asian	1.1750	0.44650	Non-Emirati	2.32	0.609
Embarrassing	Middle Eastern	1.1039	0.30612	Emirati	1.61	0.592
	South Asian	1.1000	0.30382	Non-Emirati	1.94	0.666
Partner doesn't allow	Middle Eastern	1.9740	0.19631	Emirati	1.89	0.619
	South Asian	1.9750	0.27619	Non-Emirati	2.20	0.413
Doctor hasn't informed me	Middle Eastern	1.2876	0.59242	Emirati	1.76	0.645
	South Asian	1.1250	0.65162	Non-Emirati	1.72	0.726
Cannot control cervical cancer	Middle Eastern	1.6346	0.49626	Emirati	1.91	0.623
	South Asian	1.9750	0.27619	Non-Emirati	2.13	0.357
Male doctor	Middle Eastern	1.3718	0.51076	Emirati	1.40	0.575
	South Asian	1.1220	0.33129	Non-Emirati	1.95	0.485
Cervical cancer has a bad name in my culture	Middle Eastern	1.5033	0.68237	Emirati	1.75	0.622
	South Asian	2.2500	0.58835	Non-Emirati	2.13	0.357
No knowledge about cervical cancer	Middle Eastern	1.5033	0.59741	Emirati	1.68	0.553
	South Asian	1.5000	0.50637	Non-Emirati	2.10	0.601

cancer, believe that cervical cancer is a severe condition, and understand the benefits of undergoing screening (Ma et al, 2013). Findings of our study suggest that the reasons for not participating in CST are "lack of time", "uncertainty about how to access the test", "feeling embarrassed", "perceiving not susceptible", "doctor hasn't mentioned it", "worried if there is something wrong". These findings coincide with the earlier studies (Alam et al., 2022; Marlow et al. 2015; Vahabi and Lofter, 2016).

5.1. Knowledge and participation

Participants in RAK had a higher level of knowledge, particularly of symptoms and treatment of cervical cancer. This might be because most study participants work in healthcare organizations, including hospitals and health centers. This finding is inconsistent with previous studies, which have identified that a lack of knowledge about screening or not knowing that they are due for screening as the most common reasons for not receiving timely screening (Ekechi et al., 2014; Marlow et al., 2015; Ogunsiji et al., 2013). Findings from the Sydney study suggest that participants from both ethnic migrant groups had limited knowledge about cervical cancer risk factors and symptoms. However, there were no significant differences between Arab (Middle Eastern) and non-Arab (South East Asian) migrant women's knowledge of cervical cancer, including symptoms. Results from the Sydney study support the findings of earlier studies conducted in various Gulf countries (Alwahaibi et al., 2018; Jasim et al., 2018) and a study on Somali women in Camden (Abdullahi et al., 2009) concluded that women lacked sufficient knowledge about cervical screening.

In relation to knowledge of the symptoms of cervical cancer, a great majority of RAK women were aware of and able to identify all seven key signs of cervical cancer. In contrast, almost 50% of the Sydney participants were unaware of three of these seven main symptoms. However, they correctly identified the four most common symptoms: bleeding between periods, irregular menstruation, vaginal discharge, and bleeding after intercourse. The four most common symptoms identified by RAK women were, in descending order of frequency, bleeding between periods, vaginal discharge, bleeding after intercourse, and irregular menstruation. Our findings indicate a significant disparity in knowledge and awareness about cervical cancer and its prevention between migrant women in Australia and Women in RAK highlighting the importance of culturally sensitive education campaigns targeting migrant communities to increase their understanding of the disease and encourage regular screenings.

5.2. Education and employment

RAK women were more likely to be aware of cervical cancer's signs, symptoms, and treatment than migrant women in Sydney. This could be because most RAK participants have higher education and employment levels than the Sydney participants. Employment can influence cervical screening rates among women since the financial stability derived from work enables them to afford medical expenses associated with screening.

Education is pivotal in empowering individuals with knowledge about their health and the importance of regular screening. In addition, most of the RAK participants worked in the health field. Specifically, earlier studies have found that women with lower levels of education are less likely to participate in screening due to a lack of knowledge and understanding about the importance of such screenings (Power et al., 2022). This lack of awareness and experience can lead to fear, anxiety, and mistrust of the healthcare system, resulting in lower participation rates. However, because the RAK study recruited mostly non-Emirati women, it is not possible to generalize the findings to the cervical screening behavior of Emirati women. This is one of the limitations of this study.

5.3. Barriers to cervical screening

Sydney women reported that the main reasons for not participating in cervical cancer screening were "not knowing how to access screening tests", "embarrassment", and "being worried that something was wrong." In contrast, RAK women identified "doctor hasn't mentioned it", "don't know how to access CST," and "not having symptoms" as the key barriers. These findings concur with the earlier studies (Kwok, 2011). To address these barriers, governments and healthcare providers must implement culturally sensitive outreach programs that provide information about cervical cancer screening in multiple languages. Additionally, offering free or low-cost screening services can help overcome financial barriers faced by the study population. Governments and healthcare providers must proactively address these challenges and ensure equitable access to life-saving screening for all women regardless of their migration status.

6. Recommendations

The results have generated several recommendations, some of which apply to both study populations, while others are relevant to the specific context. The use of theoretical frameworks such as the HBM allows for a better understanding of the factors that influence cervical cancer screening practices among women in Ras Al-Khaimah, UAE and migrant women in Sydney, Australia. By identifying these factors, policymakers and healthcare professionals can develop targeted interventions that address the perceived barriers to screening and promote the benefits of cervical cancer screening. A number of strategies are needed to improve women's knowledge and participation in the screening practices in both settings.

First, increasing awareness and knowledge of cervical screening among the population will empower women to prioritize their health and encourage attendance at screenings. To address the disparities identified in the study, it is crucial to implement targeted screening programs that specifically cater to the needs of the target population. Educational programs should provide information about the importance of cervical cancer screening, the recommended screening guidelines and intervals, and address any misconceptions or fears that may prevent Emirati and non-Emirati women from seeking screening. These programs should also highlight the availability and accessibility of screening services in their local communities, including information on clinics or other healthcare facilities that provide low or no-cost cervical cancer screenings. Overall, an increase in health education and health literacy is crucial. By providing information about the importance of regular screening and addressing common misconceptions identified by the participants, these programs can empower women to seek appropriate care.

Second, tailored screening initiatives can help overcome language and cultural barriers that may deter migrant women from participating in cervical screening services. Migrant women often face several barriers when accessing screening services; therefore, targeted interventions should be developed to address the specific needs of this group. Language and cultural obstacles can prevent women from participating in these programs despite the availability of advanced medical technology and screening initiatives. Cultural beliefs and stigmas surrounding cervical cancer, particularly the association of the disease with promiscuity or immoral behavior, pose significant challenges to tailored screening programs. As a result, many women fear being judged or negatively labelled by their communities, which prevents them from seeking regular screenings. To address these challenges, it is vital to tackle cultural beliefs and stigmas associated with cervical cancer through education, awareness campaigns, and community engagement.

Multilingual materials, such as brochures and posters, and culturally sensitive approaches can create a safe and welcoming environment for all women living in Ras Al Khaimah. Moreover, an increase in the availability of language services to help non-native speakers access screening services and healthcare facilities will also be beneficial.

Moreover, cervical cancer screening programs should be accessible and affordable for Non-Emirati women in RAK and migrant women in Sydney. This includes providing transportation assistance or mobile clinics that reach underserved areas where migrants reside. Additionally, collaborating with community organizations and leaders can help build trust within these communities and encourage participation in screenings. This can be done through community outreach events, workshops, and information sessions

that provide culturally sensitive information and resources. These events can also offer opportunities for migrant women to ask questions, share their concerns, and receive support from healthcare professionals or community members who have undergone cervical cancer screening themselves.

Third, gynecology cancer research in the UAE is minimal. More specifically, there are no specialized units for gynecology oncology in the UAE (Al-Shamsi, 2022), and the number of trained gynecologic oncology surgeons is limited. This suggests a need for more regulations regarding general surgeons managing gynecologic oncology cases, which have been shown to result in suboptimal clinical and oncological outcomes. To improve patient outcomes, it is recommended to establish dedicated gynecologic oncology units and make referrals to these units across the UAE mandatory. Furthermore, governments should prioritize funding for research on effective strategies to increase uptake of screening among Emirati and non-Emirati women. There is a need to initiate gynecology-specific working groups to facilitate research in this area, focusing on prevention, early diagnosis, and screening specific to the UAE population. Policymakers can develop evidence-based interventions that yield positive outcomes by investing in studies examining the particular challenges these women face when accessing healthcare services.

In summary, implementing cervical cancer screening programs tailored to meet the needs of Emirati and non-Emirati women is essential for reducing disparities in healthcare access in Ras Al Khaimah. Community-based programs can be implemented to raise awareness and promote cervical cancer screening. These programs can include partnerships with community organizations, mosques, and women's groups to reach the target population. Incorporating tailored approaches for different age groups can enhance the impact of these programs by dispelling misconceptions about cervical cancer and encouraging early detection. Through increased awareness, culturally sensitive approaches, improved accessibility, and research funding will help ensure that all women have equal opportunities for early detection and prevention of cervical cancer regardless of their migration status.

Theoretical frameworks, such as the HBM, can be used to design culturally sensitive interventions tailored to the target populations' unique needs and beliefs. This approach can help increase the uptake of cervical cancer screening and reduce health disparities among the populations studied. Overall, the use of the HBM allowed us to provide a theoretical framework for understanding the factors that influence women's decisions to participate in cervical cancer screening programs. By addressing these factors through

targeted interventions, we can help to improve screening rates and reduce the burden of cervical cancer among women.

7. Conclusion

The incidence rates of cervical cancer have been reduced with the introduction of national policy and prevention strategies in Australia and the UAE. However, cervical cancer rates are still high in many countries, including the UAE, where it is the third most common cancer among women. Implementing effective screening policies is essential to reduce the burden of this disease on women's health.

In recent years, Ras Al Khaimah has made commendable progress in its cervical screening policies. The government has taken proactive measures to raise awareness about the importance of regular screenings among women. Public campaigns have been launched to educate women about the benefits of early detection and encourage them to undergo routine screening. Moreover, healthcare facilities have been equipped with advanced technology for accurate and efficient screening. Medical professionals are trained to perform these screenings and provide appropriate follow-up care if necessary.

However, despite these efforts, challenges still need to be addressed. One such challenge is the lack of accessibility to healthcare services in remote areas or underserved communities. The government must ensure that all women, regardless of location or socioeconomic status, have access to cervical screening. To address this challenge, mobile clinics can be deployed to reach rural areas with limited healthcare facilities. Additionally, partnerships with non-governmental organizations can help bridge the gap by providing free or subsidized screenings for low-income women.

Finally, while Ras Al Khaimah and Sydney have made significant strides in their cervical screening policies, there are still opportunities to further increase screening attendance. By addressing challenges related to accessibility and conducting regular public awareness campaigns, we can further reduce the burden of cervical cancer on women's health in Ras Al Khaimah and Sydney.

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Competing Interests

The authors declare that they have no conflict of interest.

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Ms. Nuray Ozturk is a PhD student at the University of Sydney who is dedicated to conducting research on cervical cancer screening and awareness. Her current research project involves a cross-comparative study on migrant women residing in Sydney, Australia, and Emirati and non-Emirati women residing in Ras Al Khaimah, UAE. Prior to her PhD, she graduated with a Bachelor of Health Science (Honours) majoring in Anatomy and Histology, where she achieved first-class honours in her undergraduate studies. She has also presented her research findings at several prestigious conferences, showcasing her expertise in the field of cervical cancer and health science. With her passion for research and education, Ms. Nuray Ozturk is committed to making a positive impact on the medical world, particularly in the domain of women's health.

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Appendix

Table 7

Barriers to screening participation by study participants.

Factors that prevent women from participating	Overall CST RAK study N (%) 265 (100%)	Overall CST Sydney study N (%) 203 (100%)
No time		
- Yes	106 (40)	131 (64.5)
- No	106 (40)	6 (3.0)
- Unsure	53 (20)	63 (31.0)
Don't know how to access CST		
- Yes	97 (36.6)	176 (86.7)
- No	131 (49.4)	5 (2.5)
- Unsure	37 (14.0)	18 (8.9)
No knowledge about CST		
- Yes	56 (21.1)	160 (78.8)
- No	164 (61.9)	3 (1.5)
- Unsure	45 (17.0)	37 (18.2)
No signs and symptoms		
- Yes	32 (12.1)	147 (72.4)
- No	136 (51.3)	48 (23.6)
- Unsure	97 (36.6)	5 (2.5)
Painful		
- Yes	85 (32.1)	144 (70.9)
- No	142 (53.6)	39 (19.2)
- Unsure	38 (14.3)	16 (7.9)
Embarrassing		
- Yes	85 (32.1)	175 (86.2)
- No	142 (53.6)	22 (10.8)
- Unsure	38 (14.3)	1 (0.5)
Partner doesn't want me to participate		
- Yes		
- No	24 (9.1)	7 (3.4)
Unsure	193 (72.8)	188 (92.6)
	48 (18.1)	4 (2.0)
Too old		
- Yes	24 (9.1)	15 (7.4)
- No	202 (76.2)	180 88.7)
- Unsure	39 (14.7)	4 (2.0)
Doctor hasn't mentioned it		
- Yes	103 (38.9)	156 (76.8)
- No	121 (45.7)	28 (13.8)
Unsure	41 (15.5)	14 (6.9)

Table 6

Continued.

Factors that prevent women from participating	Overall CST RAK study N (%) 265 (100%)	Overall CST Sydney study N (%) 203 (100%)
Worried if there is something wrong		166 (81.8)
- Yes	93 (35.1)	32 (15.8)
- No	149 (56.20)	1 (0.5)
Unsure	23 (8.7)	
I am not married therefore it is not necessary		
- Yes		
- No	33 (12.5)	33 (16.3)
Unsure	193 (72.8)	164 (80.8)
	39 (14.7)	2 (1.0)
Cannot control cervical cancer		
- Yes	23 (8.7)	65 (32.0)
- No	204 (77.0)	131 (64.5)
Unsure	38 (14.3)	3 (1.5)
Male doctor		
- Yes	84 (31.7)	138 (68.0)
- No	161 (60.8)	60 (29.6)
Unsure	20 (7.5)	2 (1.0)
Bad name in culture		
- Yes	33 (12.5)	30 (14.8)
- No	199 (75.1)	108 (53.2)
Unsure	33 (12.5)	61 (30.0)