American Journal of
Biomedical Science & Research

www.biomedgrid.com
ISSN: 2642-1747

Research Article

Cervical Cancer Risk Factor Awareness and Utilization of Screening Program Among Women in United Arab Emirates

Hegde Prashanth[1], Pande Jyothi[2], Aldy H Hanaa[3], Prashanth Paurnami[4*] and Kumari Jaya[5]

[1]*Department of Obstetrics &Gynaecology, Thumbay Hospital, Ajman, UAE*

[2]*Department of Obstetrics &Gynaecology, Thumbay Medical & Dental Hospital Sharjah UAE*

[3]*Department of Obstetrics &Gynaecology, Thumbay Hospital, Fujairah, UAE*

[4]*College of Medicine-Gulf Medical University UAE*

[5]*Research Division-Gulf Medical University UAE*

***Corresponding author:** Prashanth Hegde, Program Director-OBG residency Consultant & Clinical Associate Professor Department of Obstetrics & Gynaecology Thumbay University Hospital & Gulf-Medical University UAE.

To Cite This Article: *Hegde Prashanth, Pande Jyothi, Aldy H Hanaa, Prashanth Paurnami* and Kumari Jaya. Cervical Cancer Risk Factor Awareness and Utilization of Screening Program Among Women in United Arab Emirates. Am J Biomed Sci & Res. 2024 24(4) AJBSR. MS.ID.003223,* DOI: 10.34297/AJBSR.2024.24.003223

Received: October 21, 2024; **Published:** October 30, 2024

Abstract

Background: Cervical cancer is the principal cause of cancer deaths among women worldwide. Mortality associated with the condition is expected to increase by 25% in the next decade. Among Emirati women, cervical cancer ranked fifth among all cancers. More cases are being reported in younger women. United Arab Emirates is having higher percentage of expat female population than Emirati women. There is lack of data regarding the knowledge and attitude about cervical cancer in this mixed population.

Aim: The aim of this study was to determine the knowledge and attitude of women towards cervical cancer, risk factors and the screening program in women above the age of 19 years residing in northern emirates of the UAE.

Materials and Methods: This is a multi-center-based study conducted in selected northern emirates of the UAE. This study employed cross-sectional design involving women above the age of 19 years. The study was conducted among 401 women who attended three hospitals in Ajman, Sharjah and Fujairah. Pre- tested, content validated questionnaire was used for data collection. Descriptive and inferential analysis was performed.

Results: About 99% of participants had heard about cervical cancer. Among all, 54% felt the disease can be cured if detected early, 42% were aware of the causative factors. While inquiring about symptomatology, most of the respondents (64%) had incorrect knowledge. Subjects were queried for cervical cancer screening (Pap smear) and preventive vaccination practice. Regarding the practice of those with correct knowledge, only 31.2% had Pap smear and 23.2% had HPV vaccination.

Conclusion: The result shows that while significant chunk still remains ignorant of cervical cancer screening. More than two thirds with the right knowledge were yet to translate knowledge and attitudes into practice.

Keywords: Knowledge, Attitude Awareness, Cervical cancer, UAE

Introduction

Cervical cancer continues to be the leading female genital cancers and considered a major public health challenge globally [1]. Worldwide it is the fourth leading cancer among women. Generally, the risk of getting cancer is higher in the developed world, but cancers in the developing world are more fatal due to lack of awareness and delay in availing healthcare. Only 19% of the world population lives in the developed countries where 46% of new cancer cases

occur [2,3]. Cervical cancer is largely a disease of the developing countries [3,4] with higher care fatality rate [5]. In spite of being a preventable and curable cancer the mortality rates associated with cervical cancer are expected to increase in the next decade by 25% [6].

Sankaranarayanan R, et al. reported that in low-resource setting, a single round of HPV testing was associated with a significant reduction in the number of advanced cervical cancers and related deaths [7]. This highlights the focus on preventive strategy for cervical cancer. In United Arab Emirates cancer is the third leading cause of death following cardiovascular diseases and road traffic accidents. It accounted for 10% of total deaths in 2019 [8]. Cervical cancer is the 5th most frequent cancer among women in UAE and the third common genital malignancy with an incidence of 6.2 and cumulative risk of 0.7% [9].

Effective screening can facilitate early detection, treatment thereby dramatically reducing mortality rates. The interface between those screening patients and those most needing screening is complex and women in remote rural areas face additional barriers that limit the effectiveness of cancer prevention programs. Community outreach strategies, can improve the utilization of screening program [10,11]. Utilization of services depends on the stage of change in behavior. It is seen that action and maintenance in health seeking behavior can be improved by interventions addressing these stages of behavior change [12]. Regarding Pap testing, as a screening method for cervix cancer, it is observed that awareness about the disease, encouragement from health care provider and insurance coverage are the key determinants for utilization [13,14]. A new promise for primary prevention strategy for HPV infection and cervical cancer has gained momentum following the availability of effective prophylactic HPV vaccines. However, these vaccines are mainly found to be effective only in those who are not yet exposed to the virus [15].

Cancer screening programs over the years in UAE has made significant progress but still currently there is no UAE wide national screening programs [16]. The awareness regarding causative role of HPV in cervical cancer and use of available screening methods/ HPV vaccine for prevention is still low among general public. Additionally, the barriers for utilization pose a significant challenge. The objective of this study is to assess the knowledge, attitude, practice of women in UAE regarding cervical cancer screening, prevention and barriers for utilization of screening program.

Materials and Methods

The multi-center-based study was conducted in selected northern emirates in the UAE. This study was conducted by Department of Obstetrics and Gynaecology of Thumbay Hospital Ajman, United Arab Emirates. This study employed cross-sectional design involving women above the age of 19 years. The study was conducted among three Thumbay hospitals in Ajman, Sharjah and Fujairah. For the calculation of the sample size, the proportion of females with knowledge on breast and cervical cancer was considered as 50%, significance level as 5% and marginal error as 5% (10% of the prevalence). Hence the minimum sample size required for this study was 400. A baseline assessment of awareness on various parameters related to risk factors of cervical cancer among women was assessed. Current level of knowledge and practice involved in the prevention, early diagnosis and treatment of cervical cancer was assessed. Utilization of healthcare facility by the participants for early diagnosis and treatment of cervical cancer was determined. Participant's perspective on availability, accessibility, affordability and acceptability of screening programs of cervical cancer was studied in detail.

The research tool comprises of structured close-ended and open-ended questions. List of responses for the close-ended questions was printed below each question to facilitate on the spot marking by the interviewer. For the open-ended questions space was provided to write down the replies in verbatim.

The research tool was provided with the information in the following areas:

a. Demographic parameters.

b. Questions concerning history cervical cancer, family history of cancer.

c. The subjects' awareness of cancers, attitude of study subjects towards risk factors of cervical cancers, screening programs, preventable nature of cancers, importance of early diagnosis and awareness regarding cancer screening, the risk factors for cancers, the subject's exposure to the risk factor.

d. Awareness regarding HPV vaccine.

Ethics Committee approval was taken from Ethics and Research committee of Gulf Medical University. An informed consent form was prepared and written signed consent was obtained before administering the questionnaire and the identity of all the participants was kept confidential. Approval was sought from the authorities prior to the conduct of the research. A face-to-face interview was conducted by the investigators after obtaining consent from the study subjects. Data were entered into excel spread sheet. Analysis was performed using SPSS version 22. A descriptive analysis of the baseline data was carried out first. All variables were analyzed in aggregate and by socio-demographic information. Tests were considered significant when the p value < 0.05. Univariate analysis was carried out for each factor and the odds ratio and corresponding 95% confidence intervals were presented. A multivariate analysis was done by incorporating significant variables.

Results

In total, 401 women in the northern emirates constituted the study population. Majority of respondents were of age group between 26-39 years (64.8%). Of total, 59.10% respondents were literate and majority was Asian (73.1%). Married women were more (77.6%) as compared to unmarried (16.7%) (Table 1).

On considering the reproductive history, 83.6% had their menarche at age group 11-14years.73.1% opined that the best age for marriage is > 25 years and 84.2% subjects had children, 53% preferred to have 3-5 children. Maximum respondents (51.2%) had their first child in the age group of 19-25yr. 87.2% had breast fed their child (Table 2).

Table 1: Distribution of participants with respect to their Socio demographic characteristics (N=401).

Socio-demographic Characteristics	Groups	No.	%
Age group in years	19 - 25 years	62	15.5
	26-39 years	260	64.8
	>= 40 years	79	19.7
Ethnicity	Asian	280	73.1
	Arabs	70	18.3
	African	24	6.3
	Others	9	2.3
Education	Higher secondary and less	36	15.2
	Degree	179	75.5
	Higher education	22	9.3
Marital Status	Unmarried	62	16.7
	Married	288	77.6
	Separated/Divorced/Widow	21	5.7
Smoking Habit	Current smoker	8	2.4
	Ex-smoker	22	6.6
	Non smoker	302	91

Table 2: Distribution of participants according to their reproductive history (N=401).

Reproductive History and Child Health	Groups	No.	%
Age at Menarche	<11 yrs	8	2.6
	11-14 yrs	255	83.6
	>14 yrs	42	13.8
Opinion regarding best age of marriage for girls	<18 yrs	3	0.8
	18-25 yrs	316	81.4
	>25yrs	69	17.8
Opinion regarding best age of marriage for boys	<21 years	6	1.6
	21-25 years	96	25.3
	>25 years	277	73.1
Preferred No. of Children	<=2	163	43.8
	5-Mar	197	53
	>5	12	3.2
Do have children	Yes	251	84.2
	No	47	15.8
No. of Children	<=2	182	74.3
	>2	63	25.7
Age at first Pregnancy	<=18 yrs	8	4
	19-25 yrs	103	51.2
	26-30 yrs	76	37.8
	>30 yrs	14	7
No. of Pregnancies	<=2	138	71.5
	5-Mar	51	26.4
	>5	4	2.1
Interval between Pregnancies	<=1 yr	10	10.1
	1-2 yrs	30	30.3
	2-3 yrs	26	26.3
	>3 yrs	33	33.3

Did you breast feed	Yes	190	87.2
	No	28	12.8
How long breastfed	<= 1 yr	93	58.9
	1-2 yrs	54	34.2
	2-3 yrs	11	7

25% of participants had family history of malignancy out of which 68% had 2nd degree relatives. 44% had breast cancer and 7% gynaecological cancer (Table 3).

Table 3: Distribution of participants according to their family history (N=401).

Family History and Relation	Groups	No.	%
Family history	Yes	91	24.7
	No	277	75.3
Relation	1st degree relation	26	32.1
	2nd degree Relation	55	67.9
Site of cancer	Breast Cancer	36	43.9
	Cancers - Gynecological	5	6.1
	others	41	50

Regarding cervical cancer and screening programs, the questionnaire includes 18 questions from knowledge part and 3 from practice part. The participants who had correct knowledge and practice, a score of 1 was given and a score of 0 was assigned to the participants who had incorrect knowledge and practice. A variable "knowledge score on cervical cancer" will be available when scores of each knowledge questions for each sample are added and it range from a minimum score of 0 to maximum score of 13. In the obtained knowledge score, score of 0 is considered as "no knowledge", a score from 1-9 as "below average score" and score >9 as "above average score". In the knowledge part, some sub-topics are not applicable for participants to answer if they don't have knowledge about its main topic. Such "not applicable cases" are also taken with a zero score. In the scoring system, the missing information was also considered with a 0 score since they would have chosen any of the option if they had knowledge about it. With respect to cervical cancer, majority of the participants had below average knowledge (Table 4).

Table 4: Distribution of participants with respect to their Socio demographic characteristics (N=401).

Knowledge on Cervical Cancer		No knowledge (score =0)		Below Average (Score 1-9)		Above Average (Score >9)	
Socio-demographic characteristics	Groups	No.	%	No.	%	No.	%
Age	19 - 25 years	--	--	57	91.9	5	8.1
	26-39 years	3	1.2	239	91.9	18	6.9
	>= 40 years	2	2.5	69	87.3	8	10.1
Ethnicity	Asian	3	1.1	255	91.1	22	7.9
	Arabs	1	1.4	65	92.9	4	5.7
	African	--	--	23	95.8	1	4.2
	Others	--	--	7	77.8	2	22.2
Education	Higher secondary and less	--	--	34	94.4	2	5.6
	Degree	1	0.6	158	88.3	20	11.2
	Higher education	1	4.5	19	86.4	2	9.1
Marital Status	Unmarried	1	1.6	49	79	12	19.4
	Married	4	1.4	269	93.4	15	5.2
	Separated/Divorced/Widow	--	--	18	85.7	3	14.3
No. of Pregnancy	≤2	1	0.7	129	93.5	8	5.8
	5-Mar	--	--	47	92.2	4	7.8
	>5	--	--	4	100	--	--

Family History	Yes	1	1.1	80	87.9	10	11
	No	3	1.1	253	91.3	21	7.6

Respondents were probed for their level of knowledge and awareness on screening programs about cervical cancer. 99% of the respondents had heard about cervical cancer, 36% had correct knowledge, 42% knew the cause and 54% were aware of disease cure if detected early. Respondent were queried about the risk factors for cervical cancer and 57% & 40% had correct knowledge about family history &viral infection-HPV, Multiple sexual partners respectively. However, the knowledge about other risk factors like smoking, multiparity, sex at early age and use of birth control pill were poor. 48% had knowledge on availability of vaccine and only 15% knew the right age for vaccination. 53% knew the reason for Pap smear screening (Table 5).

Table 5: Participant's knowledge on cervical cancer and screening programs (N=401).

Knowledge	'Knowledge on Cervical Cancer'	Correct Knowledge	
		No.	%
Knowledge on cervical cancer	What is cervix cancer (cancer of mouth of womb	143	35.7
	Cervical cancer is a cause of death (False)	47	11.7
	Cause of cervical cancer (viral infection of vagina)	167	41.6
	Age of getting cervical cancer (>70)	15	3.7
	Chance of cure for cervical cancer (good chance if early detected)	216	53.9
	Having many children (Yes)	54	13.5
	Family history (Yes)	228	56.9
Knowledge on Risk factors	Smoking (No)	265	66.1
	Having many sexual partners (Yes)	159	39.7
	Use of birth control technique (No)	332	82.8
	viral infection by HPV (yes)	160	39.9
	Sex at early age (yes)	60	15
Knowledge on vaccination	Availability of vaccine for cervical cancer (Yes)	194	48.4
	Ideal time to get vaccinated (before being sexually active)	61	15.2
	Why pap smear screening (to check for cancer/early changes)	213	53.1
Knowledge on Pap smear screening test	How often pap smear test to be done (at least every 3 years from age 20)	134	33.4
	Accuracy of pap smear test (50-70%)	69	17.2
	Pap smear test detects pre-cancerous cells (True)	195	48.6

Regarding those with correct knowledge of getting HPV vaccination only 23.2% of the participants got vaccinated. But 76.8% did not get vaccinated in spite of knowledge and awareness of HPV vaccine. Regarding those with correct knowledge regarding recommendation of Pap smear test only31.3% of the participants practiced it correctly (Table 6).

Table 6: Comparison between knowledge and practice on HPV and Pap smear test.

Comparison between Knowledge and Practice on HPV and Pap Smear Test	Correct Practice					Total
	Yes			No		
	No.		%	No.	%	
Correct knowledge of getting HPV vaccine (Yes)	Yes	45	23.2	149	76.8	194
	No	18	8.7	189	91.3	207
Correct knowledge regarding recommendation of pap smear test (at least every 3 years)	Yes	42	31.3	92	68.7	134
	No	75	28.1	192	71.9	267

Study results showed that 62.8% women who experienced Pap smear were satisfied with the test. 43.5% opined that Pap smear test gave them a sense of control. 57.5% felt regular Pap smear is valuable to them (Table 7).

Among the participants who had PAP -smear test in the past, majority of them (73.7%) are planning to have the same in future. Among the inexperienced, 68.7% also want to get Pap smear in future. Those who had PAP-smear test, 48.1% wanted to receive the result face to face.72.1% preferred women to perform the test for them (Table 8).

Table 7: Attitude on benefits of Pap-smear test among Participants' who had Pap-smear test.

Attitude on benefits of Pap-Smear Test among who Practiced	Groups	No.	%
Will you be Satisfied after having pap Smear Test	Yes	86	62.8
	No	20	14.6
	Not sure	31	22.6
Regular pap Smear Tests give you sense of Control	Yes	60	43.5
	No	36	26.1
	Not sure	42	30.4
Regular Pap Smear Test is Valuable	Yes	77	57.5
	No	27	20.1
	Don't know	30	22.4

Table 8: Participant's attitude towards future plans on "Pap smear test" based on their prac-tice/experience.

Attitude on Pap-smear test	Groups	Ever had Pap-smear test			
		Yes		No	
		No.	%	No.	%
Planning to have Pap-smear test in future	Yes	98	73.7	138	68.7
	No	35	26.3	63	31.3
Preference in receiving result of Pap-smear test	Face to face	64	48.1	122	56.7
	Report by post /email	21	15.8	10	4.7
	Both 1 & 2	32	24.1	40	18.6
	It doesn't matter	16	12	43	20
Prefer man/woman to conduct pap-smear test	Woman	101	72.1	183	79.9
	Man	7	5	4	1.7
	It doesn't matter	32	22.9	42	18.3
Place to do Pap-smear test	Doctors' clinic	81	59.6	130	58
	Nurses' clinic	18	13.2	13	5.8
	Organized screening site	17	12.5	36	16.1
	it doesn't matter	20	14.7	45	20.1
If found cancer changes, do further follow-up	Yes	108	78.3	203	91.4
	No	30	21.7	19	8.6

Among participants there is no significant variation in their belief on chance of having Pre-cancerous lesions &in their attitude on getting vaccinated against HPV in both groups (Tables 9,10).

Table 9: Distribution of attitude on cervical cancer susceptibility/severity and their practice.

Attitude on Cervical Cancer Susceptibility & Severity	Groups	Ever had Pap-Smear Test			
		Yes		No	
		No.	%	No.	%
Belief on chance of pre-cancer lesions	Yes	37	42.5	50	57.5
	No	33	39.8	50	60.2
	Don't know	66	31.1	146	68.9
Self- judgment regarding risk of developing cervical cancer	Big risk	21	47.7	23	52.3
	Small risk	30	39.5	46	60.5
	Don't know	83	31.8	178	68.2

Study results about the barriers for cervical cancer screening (Pap smear) showed that 42.6% felt having Pap smear is a painful experience. 29.6% opined difficulty to extract time from work for having Pap smear test. 32.5% were afraid of detecting cervical cancer and 31.7% felt uneasy talking about cancer (Table 11).

Table 10: Attitude on getting vaccinated against cervical cancer and its practice.

Attitude on getting vaccinated	Ever had Vaccinated against Cervical Cancer			
	Yes		No	
	No.	%	No.	%
Yes (Positive)	41	17.3	196	82.7
No (Negative)	7	18.9	30	81.1
Don't know	11	10.3	96	89.7

Table 11: Association between barriers in performing "Pap smear test" and its practice.

Barriers		Groups	Ever had Pap-smear test				p Value
			Yes		No		
			No.	%	No.	%	
	Painful to have Pap smear	Yes	23	42.6	31	57.4	≤0.001
		No	87	60.4	57	39.6	
		Don't know	26	14.1	158	85.9	
Emotional Barriers	Checking is embarrassing?	Agree	34	30.9	76	69.1	--
		Disagree	98	40.8	142	59.2	
		Don't know	1	20	4	80	
Barriers related to Time	Difficult to take time off from work to go for pap smear check	Agree	29	29.6	69	70.4	≤0.01
		Disagree	76	45.5	91	54.5	
		Not Applicable (not working)	31	29	76	71	
	Difficult to get to the Pap smear clinic	Agree	24	27	65	73	--
		Disagree	111	41.3	158	58.7	
		Don't know	--	--	3	100	
	Being busy with other things	Agree	53	34	103	66	--
		Disagree	81	40.7	118	59.3	
		Don't know	--	--	2	100	
	Pap smear is unnecessary if there is no signs and symptoms	Agree	27	32.5	56	67.5	NS
		Disagree	109	38.8	172	61.2	
	Pap smear is unnecessary to go only for that	Agree	35	46.1	41	53.9	NS
		Disagree	101	36.2	178	63.8	
Economical Barriers	Pap smear screening is too expensive	Agree	53	32.7	109	67.3	--
		Disagree	84	45.2	102	54.8	
		Don't know	--	--	2	100	
	HPV vaccine is too expensive	Agree	67	33.8	131	66.2	--
		Disagree	60	46.9	68	53.1	
		Don't know	--	--	3	100	
Barriers related to Anxiety	Afraid of detecting cervical cancer	Agree	52	32.5	108	67.5	≤0.05
		Disagree	88	43.8	113	56.2	
	Uneasy about talking of cancer	Agree	45	31.7	97	68.3	≤0.05
		Disagree	87	42.2	119	57.8	
	Worried if there were pre-cancerous lesions	Agree	92	37.7	152	62.3	NS
		Disagree	42	37.8	69	62.2	

Discussion

Cancer Cervix

In our study low level of knowledge about cancer cervix was observed with only one third of study participants having the correct knowledge. Participants with Asian ethnicity and higher educational background had better knowledge. Similarly higher level of knowledge was observed by *Alem Getaneh, et al.* (2021) [17] in their study among university female students. Contrary to the above *Syed, et al.* (2022) [18] observed considerable low level of knowledge among health professions students.

Awareness on Prevention

Cancer cervix prevention awareness was higher with half of participants knowing about cervical cancer screening. Though they did not know what cervical cancer screening entailed or screening methods, they still believed that it is important since like for other cancers will help in early detection and treatment. *Kim HW, et al. (2015)* [19] observed inadequate level of awareness and preparedness among mother of adolescent daughters with respect to prevention of cervical cancer in their daughters.

Practice& Attitude

Utilization of cervical cancer screening services among women however was low. Around one third (31.3%) practiced Pap smear and one fourth (23.2%) got vaccinated against HPV. Similar were the observations in a Nigerian study [20]. However, participants were enthusiastic to have Pap smear in future with more than two thirds of them opting for the same. This shows a positive attitude among women about Pap smear screening.

Among the participants who showed positive attitude towards HPV vaccination only 17.3% got vaccinated. This again shows wide gap in utilization of prevention program.

Barriers for Utilization of Cancer Prevention

Lack of awareness or improper knowledge about cervical cancer screening (as witnessed in around two third of study population) is the greatest individual level barrier for utilization of cervical screening program. Among Pap smear screened participants 42.6% felt uncomfortable having Pap smear. This could probably be attributable to ineffective counseling prior to procedure or woman's anxiety. About a third among working women felt the time constraint as a barrier for future screening. Fear of getting a positive report, uneasy to talk about cancers are the other individual factors acting as barriers for utilization of screening.

Petersen Z, et al. (2022) [21] in a systematic review observed similar individual barriers impacting utilization. Additionally, his study also elicited other barrier like cultural, religious, structural, societal and health system barriers to screening. These possibly identified barriers were unsupportive partners/family members, screening cost, misconceptions in the community, defective policies/programs impacting cancer prevention program.

Conclusion

Majority of study population had poor knowledge about cervical cancer screening and preventive modalities for the same. These observations highlight lack of awareness and information on cervical cancer and screening in the community. Creating awareness and translating the knowledge into practice among women in UAE is the key to success as screening programs which were implemented in developed countries had proved to be effective in reducing the incidence of the cancer and associated mortality. Uniform nationwide cervical cancer prevention programs coupled with community advocacy, information dissemination, addressing the individual, cultural, social barriers for utilization and supportive healthcare delivery system, are the need of the hour for speedy implementation of program to achieve the desired goal.

Recommendations

Increasing the women's awareness is an important first step towards cancer screening and prevention in UAE. This can be promoted by informing the women on their susceptibility to cervical cancer and encouraging a belief that active and regular screening can detect these cancers at early (pre-cancerous) stage, thereby enabling the early treatment and attaining a lower incidence and mortality. The national health care system should facilitate the development of effective strategies (well defined national cancer screening program) which are needed to ensure that women get screened/vaccinated at the appropriate age and regular intervals and creating an effective environment for utilization of screening services by overcoming the barriers identified.

Limitations

This study had some limitations which may have influenced the result of the study. Being a multicentric study there could have been a variation in the method of interviewing the participants which may have influenced the results. Secondly, women may have responded in a positive manner to the questions to present themselves in a socially desirable way. Similarly, responses are all self-reported and may not reflect true events.

Conflict Of Interest

No conflict of interest of what so ever (financial or otherwise) related to conduct of this study.

Acknowledgment

None.

References

1. Ali F, Kuelker R, Wassie B (2012) Understanding cervical cancerin the context of developing countries. Ann Trop Med Public Health 5(1): 3-15.
2. (2023) http://www.cancer.org/downloads/AA/CancerAtlas11.pdf.
3. (2023) http://www. cancer.org/downloads/AA/Cancer Atlas12.pdf.
4. (2023) http://www.fightcervicalcancer.org.uk/cervical-cancer/benefits.aspx.
5. Abudukadeer A, Azam S, Mutailipu AZ, Liu Qun, Guo Guilin, et al. (2015) Knowledge and attitude of Uyghur women in Xinjiang province of China related to the prevention and early detection of cervical cancer. World J Surg Oncol 13: 110.
6. El Banna N, Al Eyd G, Saeed RS (2014) High risk human papilloma virus infection among women with Pap smear tests negative for intraepithelial lesions or malignancy. Int J of Med Pub Health 4: 102-106.

7. Sankaranarayanan R, Nene MB, Shastri SS, Kasturi Jayant, Richard Muwonge, et al. (2009) HPV screening for cervical cancer in rural India. NEJM 360(14): 1385-1394.

8. UAE Ministry of Health and prevention https://mohap.gov.ae/assets/download/f3eb10c9/CANCER%20INCIDENCE%20IN%20UNITED%20ARAB%20EMIRATES%20ANNUAL%20REPORT%20OF%20THE%20UAE%20-%202019.pdf.aspx.

9. (2021) WHO cervical cancer country profile. https://www.who.int/publications/m/item/cervical-cancer-country-profiles.

10. Markman (2008) Development of an effective breast and cervix cancer screening strategy in Mumbai: an impressive effort. Oncology 73(3-4): 143-144.

11. Christe DM, Mohanambal M, Ramamurthy V, Snehaa NB (2008) A study of cervical cancer screening for prevention of carcinoma cervix. J Indian Med Assoc 106(12): 779-780.

12. Prochaska JO, Velicer WF (1997) The transtheoretical model of health behavior change. Am J Health Promotion 12(1): 38-48.

13. Campbell MK, Tessaro I, DeVellis B, S Benedict, K Kelsey, et al. (2000) Tailoring and targeting a worksite health promotion program to address multiple health behaviors among blue-collar women. Am J Health Promotion 14(5): 306-313.

14. Kelaher M, Gillespie AG, Allotey P, L Manderson, H Potts, et al. (1999) The trans theoretical model and cervical screening: its application among culturally diverse communities in Queensland, Australia. Ethn Health 4(4): 259-276.

15. Schiller JT, Castellsagu X, Villa LL, Hildesheim A (2008) An update of prophylactic human papillomavirus L1 virus-like particle vaccine clinical trial results. Vaccine 26(Suppl 10): K53-K61.

16. Humaid O, Al Shamsi (2022) The state of cancer in United Arab Emirates. Clin Pract 12(6): 955-985.

17. Alem Getaneh, Birhanemeskel Tegene, Teshome Belachew (2021) Knowledge, attitude and practices on cervical cancer screening among undergraduate female students in University of Gondar, Northwest Ethiopia: an institution based cross sectional study. BMC Public Heath 21(1): 775.

18. Syed Sammer Aga, Nusrath Yasmeen, Muhammed Anwar Khan (2022) Cervical Cancer and Its Screening: Assessing the Knowledge, Awareness, and Perception among Health and Allied Students. Edu Res I 2022(9): 1-17.

19. Kim HW, Kim DH (2015) Awareness of cervical cancer prevention among mothers of adolescent daughters in Korea: qualitative research. BMJ Open 5(5): e006915.

20. Chizoma Millicent Ndikom, Bola Abosede Ofi (2012) Awareness, perception and factors affecting utilization of cervical cancer screening services among women in Ibadan, Nigeria: A qualitative study. Reproductive Health 9: 11.

21. Petersen Z, Jaca A, Ginindza TG, Maseko G, Takatshana S, et al. (2022) Barriers to uptake of cervical cancer screening services in low-and-middle-income countries: a systematic review. BMC Women's Health 22(1): 486.