

Premenopausal Women's Awareness and Barriers Regarding Cervical Cancer and its Screening

Maram Mohamed Aziz1; Hoda Abd-Elazim Mohamed 2; Abdelbaset F Mohammed3; Mona Ahmed AbdEl-hamed4

1. Bsc. in Nursing, Faculty of Nursing- Minia University
2. Professor of Women Health and Obstetrics Nursing- Faculty of Nursing –Minia University
3. Professor of Obstetrics and Gynecology- Faculty of medicine –Minia University
4. Lecturer of Women Health and Obstetrics Nursing- Faculty of Nursing –Minia University

Abstract

Background: Cervical cancer is the most common malignant tumor in women around the world. It is the most prevalent cancer in women in Egypt, accounting for 18.9 percent of total cases of cancer. Screening is one of the most effective tools for early diagnosis, prevention and treatment. **The aim of this study was to** determine the level of premenopausal women's awareness and barriers regarding cervical cancer and its screening. **Research Design:** A descriptive cross sectional study. **Subject:** Convenience Sample (235) of premenopausal women attended inpatient department and outpatient clinic for obstetrics and gynecological diseases at Minia University maternity and children hospital were included in this study. **Tools of data collection:** consisted of three tools, Interviewing assessment tool It encompassed three main parts: (women's socio-demographic characteristics, obstetrical and family history, women's knowledge), attitude assessment tool and women's screening barriers for cervical cancer assessment tool. **Results:** This study revealed that 83.% of the studied women had inadequate knowledge levels toward cervical cancer and its screening, around two thirds of the studied women had a negative attitude toward cervical cancer screening and the most common women's barriers to participation in cervical cancer screening were fear of vaginal examinations, fear of the result, do not know where the test is done, absence of symptoms for cervical cancer. **Recommendation:** Improve awareness through regular health education and using mass media which has an important role in improving the women knowledge and attitudes towards cervical cancer and its screening and there is need to implement regular cervical screening practice at national level.

Keywords: Cancer, Cervical Cancer, Screening, Premenopausal

Introduction

Cervical cancer is a major public health concern globally and a significant cause of mortality and morbidity in women. It is the 4th most common cancer amongst women globally, with an estimated 311,000 deaths and 570,000 new cases reported worldwide in 2018, with about 85% of these cases occurring in low- to middle-income countries (LMICs). (Chisale et al., 2021).

Cervical cancer is a malignant tumour of the cervix that can be divided into two histological types, adenocarcinoma (AC) and squamous cell carcinoma (SCC). SCC is more common and has an occurrence rate of 70%. AC originates from glandular cells that line the cervical canal (the endocervix), whereas SCC originates from squamous cells lining the outer part of the cervix that opens to the ectocervix. The region in which the squamous and the thin, flat glandular cells are located is termed the transformation zone, and the majority of tumours originate from this zone. (Hull et al., 2020).

Despite its preventable nature, globally cervical cancer is regarded as the third most common form of cancer among women after breast and colorectal cancer. The women of poorer communities are mostly affected by the disease. It is evidenced that, approximately 83% of the world's new cases and 85% of all cervical cancer deaths reported are from developing countries. (Mengesha et al., 2020).

Cervical cancer screening is an essential part of a woman's routine health care. Cervical cancer screening can be done in a medical office, a clinic, or a community health center.. The primary goal of screening is to identify precancerous lesions caused by HPV so they can be removed to prevent invasive cancers from developing. A secondary goal is to find cervical cancers at an early stage, when they

can usually be treated successfully. Routine cervical screening has been shown to greatly reduce both the number of cervical cancer cases and deaths from the disease. (Henke et al., 2021)

Barriers for undergoing screening practice were knowledge-related barriers (lack adequate information regarding cervical cancer), symptom-related barriers (lack of symptoms as a barrier for screening). And health system-related barriers (the service is not available at health center. (Getachew et al., 2019)

The nurse has the essential role in avoidance of cervical cancer owing to being a vital cog in the healthcare delivery system. Fortunately, the nurse plays a key role in health education and promotion. Moreover, the nurse has an important task of imparting information on risk factors, discovering early signs of cervical cancer, HPV, and encouraging females to undergo cervical cancer screening frequently. (Ebrahim et al., 2021).

Significance of the study

Egypt has a population of 30.55 million, where women aged 19 years and older are at a risk of acquiring cervical cancer. According to recent estimates, 866 women are diagnosed with cervical cancer each year, with 373 dying as a result. Cervical cancer is the tenth most common malignancy in Egyptian women between the ages of 19 and 44. (Ahmed et al., 2022).

Globally, cervical cancer is the third most common cancer in women, with the highest incidence occurring in those aged 40–49 years. Although common worldwide, the burden of cervical cancer is greater in developing regions, with significant disparities in mortality due to economic, regional, and racial disparities. Knowledge about disease and

early screening is the most effective measure for Cervical Cancer prevention. Lack of awareness, negative attitude, and poor practice about Cervical Cancer and screening and preventive methods are the major causes to increase the incidence of disease. Early detection and treatment via screening can prevent up to 80% of Cervical Cancers. (Taneja et al., 2021).

Awareness raising among the general public about the cervical cancer issue and the prevention mechanisms as well as campaigning for effective policies and services are important strategies for reducing population cervical cancer. Early detection of cervical cancer is also of great importance for improving women's health and reducing the risk of death from cancer. (Zagloul et al., 2020).

Aim of the study:

To determine the level of premenopausal women's awareness and barriers regarding cervical cancer and its screening.

Research question:

1. What are the awareness and barriers of cervical cancer and its screening among premenopausal women?
2. What are the socio-demographic factors associated with awareness and barriers of cervical cancer and its screening among premenopausal women?

Subjects and Methods:

Research Design: A descriptive cross sectional research study.

Research Setting: This study was conducted at inpatient department and outpatient clinic for obstetrics and gynecological diseases at Minia university maternity and children hospital were included in this study.

Time of data collection: The data collection period began from the beginning of April 2021 till October 2021 for six months.

Sample size: Convenience Sample of (235) premenopausal women were recruited in to this study.

Inclusion criteria:

- Premenopausal women with gynecological diseases.
- Women at age from 40-50 years

Exclusion criteria:

- Psychiatric disorders.
- Women suffering from cervical cancer.

Tools of data collection:

Interviewing questionnaire were developed by the researcher after reviewing of related literature. It consisted of three tools:

First tool: Interviewing assessment tool.

It consisted of (30) items. It encompassed three main parts:

Part 1: concerned with women's socio-demographic characteristics: such as age, Level of education, occupation, residence and marital status. In addition to source of knowledge about cervical cancer and its screening.

Part 2: Obstetrical and Family history: such as age at first birth, gravidity, parity, number of abortions, breastfeeding and Family history of cancer and cervical cancer.

Part 3: concerned with assessment knowledge of the studied women regarding cervical cancer and its screening. It was adopted by (Thapa et al., 2018) included (17) multiple choice questions about definition of cervical cancer, risk factors, signs & symptoms of disease, Prevention of cervical cancer, diagnosis, methods of treatment, complications of disease, knowledge about pap smear and cervical cancer screening procedure.

Scoring system:

The answer was evaluated using model key answer prepared by the researcher, the women's answer related to knowledge were scored and calculated. The score was (1) score for correct answer & (0) score for incorrect answer and don't know, the total knowledge score (17) was classified as adequate knowledge if the total score equal and higher 50% and inadequate knowledge if the total score less than 50%.

Second Tool: Attitude assessment tool

It was adopted by (Riaz et al., 2019)

A modified Likert scale was used to assess the attitude of Premenopausal women to cervical cancer and its screening. The scale consisted of 14 statements related to cervical cancer & early detection measures.

Scoring for attitude:

Assessed the attitude using a 5-point Likert scale. The scoring system used was: strongly disagree =1, disagree=2, neither agree nor disagree =3, agree= 4, strongly agree=5. The responses were summed and a total score was obtained and was classified as:

- Positive attitude if total score $\geq 50\%$.
- Negative attitude if total score $< 50\%$

Third tool: Women's screening barrier for cervical cancer
It was adopted by (Thapa et al., 2018). It consisted of 14 statements

Assessment of women's screening barriers for cervical cancer such as the following statements: Lack of awareness, Fear of vaginal examinations, absence of symptoms for cervical cancer, the Pap screening is too expensive, It is embarrassing to have a cervical cancer screening test.

Validity and Reliability:

To establish validity, the questionnaire was reviewed and validated by the Jury committee that was composed of a panel of 5 experts of Obstetrics and Gynecological Nurse professors staff (Minia University), To establish reliability, we use alpha Cronbach's way to check the stability of the internal consistency of tools.

Pilot Study:

A pilot study was carried out on 10% (24) women from the total number of sample to assess the tools clarity, objectivity and feasibility. As well to estimate the time needed to be applied. According to the results of the pilot all required and necessary modifications were done and the women who were tested in the pilot study were not included in the study sample.

Ethical consideration: Before the conduction of the pilot study as well as the actual study, this study was approved by ethical committee of the Minia university hospital and faculty of Nursing. Verbal consent was obtained from premenopausal women that were to participate in this study, after explaining the nature and purpose of the study. Study subject have the right to refuse to participate and or withdraw from the study without any rational any time. Participants were assured that all their data are highly confidential

Study Procedure:

Verbal consent was obtained from the patients to participate in this study. For six months, the researcher visited inpatient department and outpatient clinic for gynecological diseases two days per week. The number interviewed subjects were from 6 to 8 women per day.

All of the women were informed that their participation was completely voluntary, and they were reassured that their responses would be kept private. The researcher explained the nature and purpose of the study through direct personal contact, which took between 15 and 20 minutes and taken oral consent.

The researcher then filled out questionnaires from the women who had taken part in the study. The researcher evaluates the woman's expertise and activities by answering

all of the questions contained in the questionnaires. The time taken for each was around 20-30 minutes depending on the response of each woman. The data collection period began from the beginning of April 2021 till October 2021. After finishing data collection needed, the researcher gave women advice and guidance about cervical cancer and it's screening as:(definition, signs and symptoms, complications, Risk factors, diagnosis, prevention, treatment, Purpose of pap smear and when should women start getting pap smear).

Statistical Design:

The collected data was be tabulated, computerized, analyzed and summarized by using descriptive statistical tests to test research hypothesis by using SPSS version (IBM 28) and excel for figures. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. The level of significance was be accepted at $P < 0.05$ and was be considered highly significant when P-value less than or equal 0.01. Fisher exact test / chi test was used to detect the relation between studied women knowledge/attitude based on their selected socio-demographic characteristics.

Results

Table (1): Percentage distribution of the studied women regarding their socio-demographic characteristics (n = 235)

Socio-demographic characteristics	No.	%
Age / years		
40 - <45	140	59.6
45 - ≤50	95	40.4
Mean ± SD	44.12 ± 3.14	
Residence		
Urban	63	26.8
Rural	172	73.2
Marital status		
Married	231	98.3
Widow	4	1.7
Educational level		
Illiterate	34	14.5
Secondary level	171	72.7
University	27	11.5
Postgraduate	3	1.3
Occupation		
Housewives	177	75.3
Working	58	24.7

Table (1): demonstrates that 59.6% of the studied women aged between 40 - <45years with mean age 44.12 ± 3.14 years. Nearly three-quarters (73.2%, 72.7%, & 75.3%) of them live in a rural area, had secondary educational level and housewives' studied women respectively and vast most (98.3%) was married.

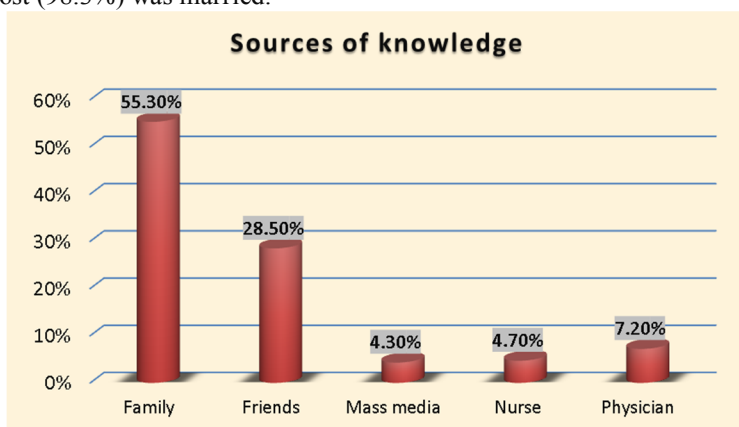


Figure (1): Percentage distribution of the studied women regarding their source of knowledge about cervical cancer and it's screening (n = 235)
 Figure (1): illustrates that 55.3% of the studied women their source of knowledge about cervical cancer was their family and 28.5% was their friends

Table (2): Percentage distribution of the studied women regarding their knowledge about pap smear screen (n = 235)

Items	No.	%
Purpose of pap smear		
Early detection of cervical cancer	190	80.9
Detection of STD	29	12.3
Detection of HIV/AIDS	16	6.8
recommended for pap smear screening		
women who have experienced sexual intercourse	194	82.5
Postmenopausal women	23	9.8
Married women who were never pregnant	18	7.7
When should women start getting a pap test		
At 21 years old	4	1.7
At 25 years old	17	7.2
At 30 years old	23	9.8
Do not know	191	81.3
#Setting for HPV test /pap screening		
Hospital(Gynecological clinic)	46	19.6
primary health care centers	4	1.7
Private clinic	4	1.7
Do not know	186	79.1
The optimal time for pap smear screening		
During menstruation	3	1.3
One day after menstruation	21	8.9
Ten days after menstruation	69	29.4
Do not know	142	60.4
The recommended interval of pap smear testing		
Annually	191	81.3
Every 3 years	25	10.6
Every five years	17	7.2
Once in a lifetimes	2	0.9
screening eligibility		
Female (15-29)	10	4.3
Studied women 30 years age and above	41	17.4
Elderly studied women	5	2.1
Don't know	179	76.2
cervical cancer screening procedure		
pap smear	96	40.8
Human papillomavirus DNA testing	6	2.6
Do not know	133	56.6

#not normally distributed (select more than one answer)

Table (2): presents that 80.9%, & 82.5% of the studied women known that early detection of cervical cancer is the purpose of pap smear, and studied women who have experienced sexual intercourse were recommended for pap smear screening respectively. 81.3% of them don't know the time to get a pap test, 79.1% don't know the setting for HPV test/pap screening, 60.4% don't know the optimal time for pap smear screening, 76.2% don't know screening eligibility, and 56.6% don't know cervical cancer screening procedure.

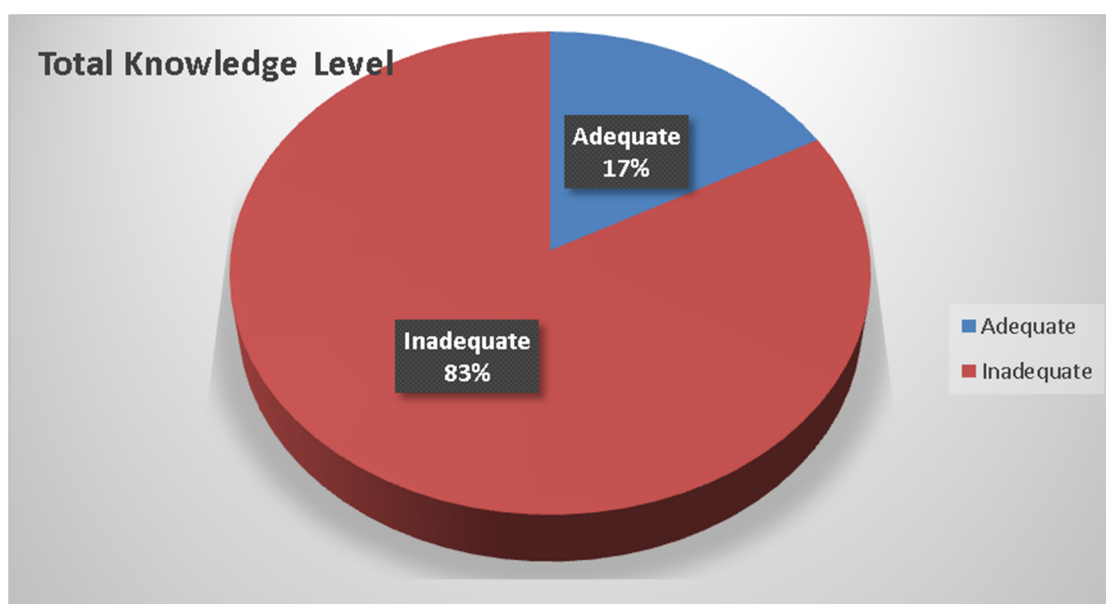


Figure (2): Percentage distribution of the studied women regarding their total knowledge levels towards cervical cancer and it 's screening (n = 235)

Figure (2): illustrates that 83.0% of the studied women had inadequate knowledge levels toward cervical cancer screening.

Total attitude level

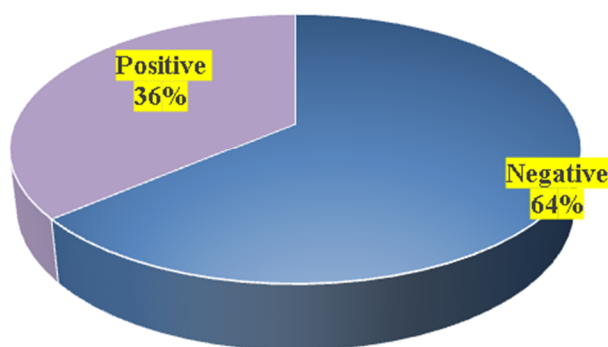


Figure (3): Percentage distribution of the studied women regarding their total attitude levels towards cervical cancer screening (n = 235)

Figure (3): illustrates that around two thirds (64) of the studied women had a negatively attitude toward cervical cancer screening.

Table (3): Percentage distribution of the studied women regarding their barriers to participation in cervical cancer screening (n = 235).

Barriers	Yes		No	
	No.	%	No.	%
Lack of awareness	212	90.2	23	9.8
It is embarrassing to have a cervical cancer screening test	212	90.2	23	9.8
Carelessness	218	92.8	17	7.2
Fear of vaginal examinations	229	97.4	6	2.6
Fear of result	228	97.0	7	3.0
Physical disability	8	3.4	227	96.6
Pap smear test is too expensive	209	88.9	26	11.1
Absence of symptoms for cervical cancer	224	95.3	11	4.7
Lack of family support	18	7.7	217	92.3
Difficult access to hospital	14	6.0	191	94.0
Not recommended by health professional	182	77.4	43	22.6
My culture/religion do not allow me to be screened	11	4.7	224	95.3
I do not know where the test is done	226	96.2	9	3.8
Cervical cancer screening is so painful	146	62.1	89	37.9

Table (3): presents that most of the studied women's barriers to participation in cervical cancer screening were fear of vaginal examinations, fear of the result, do not know where the test is done, absence of symptoms for cervical cancer, lack of awareness, and embarrassing to have a cervical cancer screening test (97.4%, 97.0%, 96.2%, 95.3%, and 90.2% respectively).

Table (4): Relations between studied women socio-demographic characteristics with their total knowledge and attitude towards cervical cancer and its screening (n = 235).

Socio-demographic characteristics	No.	Knowledge level				Attitude level			
		Inadequate (n = 195)		Adequate (n = 40)		Positive (n = 85)		Negative (n = 150)	
		No.	%	No.	%	No.	%	No.	%
Age / years									
40 - <45	140	114	81.4	26	18.6	67	47.9	73	52.1
45 - ≤50	95	81	85.3	14	14.7	18	18.9	77	81.1
Fisher / X ² (P Value)		0.800 (0.670)				34.4 (<0.0001)**			
Residence									
Urban	63	46	73.0	17	27.0	18	28.6	45	71.4
Rural	172	149	86.6	23	13.4	67	39.0	105	61.0
Fisher / X ² (P Value)		6.049 (0.014)*				2.153 (0.142)			
Marital status									
Married	231	191	82.7	40	17.3	83	35.9	148	64.1
Widow	4	4	100.0	0	0.0	2	50.0	2	50.0
Fisher / X ² (P Value)		0.835 (0.361)				0.337 (0.562)			
Educational level									
Illiterate	34	34	100.0	0	0.0	6	17.6	28	82.4
Secondary level	171	151	88.3	20	11.7	62	36.3	109	63.7
University	27	8	29.6	19	70.4	15	55.6	12	44.4
Postgraduate	3	2	66.7	1	33.3	2	66.7	1	33.3
Fisher / X ² (P Value)		51.729 (0.001)**				56.629 (<0.0001)**			

Occupation									
Housewives	177	159	89.8	18	10.2	57	22.2	120	67.8
Working women	58	36	62.1	22	37.9	28	48.3	30	51.7
Fisher / X ² (P Value)			23.838 (0.001)**				4.888 (0.027)*		

Table (4): presents that 70.4% and 37.9% of university and working women had adequate knowledge levels towards cervical cancer screening with highly statistically significant differences, P-value < 0.001, 0.001 respectively and 81.1% of the studied women's aged between 45- ≤50 years, 82.4% of illiterate women, 63.7% of secondary level women and 67.8% of the housewives had negative attitude towards cervical cancer screening (P- value <0.0001; <0.0001; & 0.027 respectively).

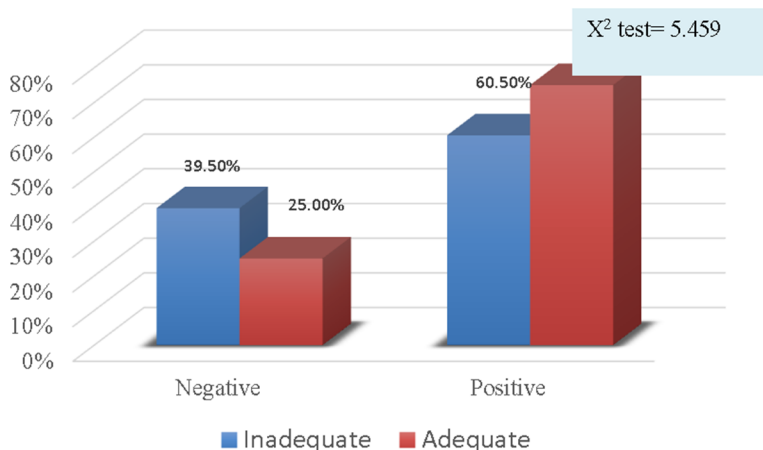


Figure (4): Relations between the studied women's knowledge and attitude towards cervical cancer and it's screening (n= 235).

Figure (4): illustrates that 75.0% of the studied women who had adequate knowledge had positive attitude toward cervical cancer screening with statistically significant differences with P-value < 0.019.

Discussion

Cervical cancer is a preventable disease due to the long preinvasive stage. Early detection and appropriate treatment are possible if robust screening is implemented. According to the World Cancer statistics >80% of all the cervical cancer cases are found in developing and low-resource countries, because of a lack of awareness and difficulty in running cytology-based screening programs. (Sachan et al., 2018).

Regarding Socio-demographic characteristics the current study found that more than half of the studied women aged between 40 - <45years with mean age 44.12 ± 3.14 years. Nearly three-quarters of them live in a rural area, had secondary educational level and housewives and vast most was married.

This result come in line with (Diouf et al., 2020) who studied "Systematic screening for cervical cancer in Dakar region: prevalence and correlation with biological and socio-demographic parameters" reported that the age group with the largest number of participants was the 40–49 age with an average age of 41 ± 11.16 years, more than one third had secondary educational level and more than half housewives

This result inconsistent with (Ruddies et al., 2020) who studied “Cervical cancer screening in rural Ethiopia: a cross-sectional knowledge, attitude and practice study” reported that the mean age was 35.5 years (SD= 5.6 years), the majority was married, housewife and lived in a rural setting. Also (Touch et al., 2018) who studied “Knowledge, attitudes, and practices toward cervical cancer prevention among women in Kampong Speu Province, Cambodia” which stated that three- quarters women had a low education level (75%) with no education or primary school education), most of women were married and one quarter housewives.

Regarding source of knowledge about cervical cancer and it’ s screening the present study showed that more than

half of women their source of knowledge were their family and more than one quarter from their friends. This may be due to the lack of health education from doctor and nurses about cervical cancer and it’ s screening.

This result was confirmed by(Kasa ET AL.,2018) who studied “Knowledge, attitude and practice towards cervical cancer among women in Finote Selam city administration, West Gojjam Zone, Amhara Region, North West Ethiopia, 2017” stated that more than half of women respondents their family and friends were the source of information.

Contrary, these findings were in disagreement with the study done by (Okunowo et al., 2018) who studied “Women's knowledge of cervical cancer and uptake of Pap smear testing and the factors influencing it in a Nigerian tertiary hospital” found that the commonest sources of knowledge about cervical cancer were from radio/television followed by the doctors/nurses. Similarly, (Dhaher, 2019) who reported that less than two third women’s sources of information regarding both cervical cancer and the screening was from social media and more than one quarter from doctor.

Regarding knowledge related to pap smear screening the present study shows that the majority of the studied women known purpose of pap smear, Women who have experienced sexual intercourse were recommended for pap smear screening, don't know the time to get a pap test, don't know the setting for HPV test/pap screening, more than half don't know the optimal time for pap smear screening. This may be due to unavailable of information about the Pap smear test.

This result was confirmed by (Norkhafizah et al., 2019) who mentioned the most of participants knew that the purpose of Pap smear screening was to detect cervical cancer, the majority knew that Pap smear is recommended for women who have had sexual intercourse, did not know the suitable age for Pap smear testing and the interval between tests, and

nearly one third did not know where to go for testing. Also (Nurjihan et al., 2019) reported that most of the respondents did know the use of Pap smear in detecting and preventing cervical cancer.

Contrary, (Okunowo et al., 2018) who studied "Women's knowledge of cervical cancer and uptake of Pap smear testing and the factors influencing it in a Nigerian tertiary hospital" found that less than a third of women had knowledge of the purpose of Pap smear.

Regarding their total knowledge levels toward cervical cancer and its screening the present study showed that more than three-quarters (83.0%) of the studied women had inadequate knowledge levels toward cervical cancer its screening. This is relatively higher than the finding of (Abiye et al., 2020) who reported that only 77.4% of the respondents had inadequate awareness of cervical cancer. This result come in the line with (Thapa et al., 2018) who studied "Knowledge, attitude, practice and barriers of cervical cancer screening among women living in mid-western rural, Nepal" stated that majority (87%) of participants had inadequate level of knowledge towards cervical cancer screening.

Similarly, this result was confirmed by (ESWI et al., 2019) who studied "Assessment of Cervical Cancer Awareness among Women Attending Gynecological Clinic at Beni-Suif University" who found that majority of women were unaware of the presence of cervical cancer screening program in Egypt, while almost all women unaware if there is cervical cancer screening program.

Regarding their total attitude levels towards cervical cancer screening the current study illustrated that around two thirds of the studied women had a negatively attitude toward cervical cancer screening. This result higher than study done by (Tilahun et al., 2019) who stated that more than half of the study participants had a negative attitude towards cervical cancer screening.

The current results were in agreement with the study done by (Said et al., 2018) who studied "Effect of an educational intervention on women's knowledge and attitude regarding cervical cancer" which stated that the majority women had a negative attitude. This may be due to inadequate knowledge levels toward cervical cancer screening. On the contrary the result of the study done by (Songsiriphan et al., 2020) found that nearly one quarter of the participants had a negative attitude toward cervical cancer screening.

Regarding the barriers of the women to participation in cervical cancer screening the present study showed that most of the studied women's barriers to participation in cervical cancer screening were fear of vaginal examinations, fear of the result, do not know where the test is done, absence of symptoms for cervical cancer, lack of awareness, and embarrassing to have a cervical cancer screening test. This may be due to lack of knowledge about cervical cancer screening.

This result come in the line with (Getachew et al., 2019) who stated that barriers for screening are an absence of symptoms, a lack of knowledge about screening and the lack of a screening service in their living area

Similarly (Chandrika et al., 2020) found that fear and absence of signs and symptoms were the major barriers among participating women. Also (Ogbonna, 2021) reported that the main identified barriers to screening were, lack of money, lack of information/awareness, screening location is far, and lack of knowledge of where screening is done.

Likewise (Songsiriphan et al., 2020) who studied "Knowledge, Attitudes, and Practices Regarding Cervical

Cancer Screening among HIV-infected Women at Srinagarind Hospital" reported that the major reasons for not undergoing screening were embarrassment, lack of symptoms, fear of the results, and fear of pain.

Regarding the relations between studied women socio-demographic characteristics with their total knowledge and attitude towards cervical cancer and its screening the current study showed that educational level and occupation of studied women were a highly statistically significant relation with the knowledge and also age, education and occupation had significant with the attitude towards cervical cancer screening (P-value <0.0001; <0.0001; & 0.027 respectively).

Actually, the factors of educational level would positively have an impact on the knowledge of women regarding cervical cancer. These findings were in agreement with the study done by (Said et al., 2018) found that there was a highly statistically significant relation between knowledge and educational level and occupation of studied women.

This result was confirmed by (Tsegay et al., 2020) who reported that age, education and occupation were significantly associated with the knowledge score of cervical cancer screening at P-value of less than 0.05 and also had significant with the attitude towards cervical cancer screening at a P-value of less than 0.05

Furthermore, a study which was conducted by (Tekle et al., 2020) who showed that mothers who had a secondary level of education were about five times more knowledgeable about cervical cancer screening compared with those who did not attend formal education. This indicated that educated women had more knowledge about cervical cancer screening.

Regarding relations between the studied women's knowledge and attitude towards cervical cancer and its screening the present study showed that three-quarters of the studied women who had adequate knowledge had positive attitude toward cervical cancer screening with statistically significant differences with P-value < 0.019.

This result was confirmed by (Said et al., 2018) found that there was appositive association between studied women total knowledge and total attitude score. That means increase knowledge is positively associated with increase attitude. Also (Teame et al., 2019) reported that good knowledge about cervical cancer and screening and positive attitude were significantly associated with utilization of cervical cancer screening (AOR = 2.34 95%CI: 1.18, 4.59), (AOR = 2.42 95%CI: 1.22, 4.77) and (AOR = 15.10 95%CI: 8.01–28.44

Conclusion

This study concluded that majority of women had inadequate knowledge levels toward cervical cancer and its screening. Furthermore, around two thirds had a negative attitude toward cervical cancer screening. The most common women's barriers to participation in cervical cancer screening were fear of vaginal examinations, fear of the result, do not know where the test is done, absence of symptoms for cervical cancer, lack of awareness, and embarrassing to have a cervical cancer screening test.

From this study the following recommendations can be suggested:

1. Improve awareness through using mass media health education which has an important role in improving the women knowledge and attitudes towards cervical

cancer and it's screening and also can involve a large number of women.

2. Regular health education for women and recommendation for screening by nurses and obstetricians and gynecologists it will greatly contribute to a Pap smear, and ultimately reduce the incidence and burden of cervical cancer
3. There is need to implement regular cervical screening practice at national level to improve knowledge to overcome any perceived barriers to screening, and hopefully to increase the uptake of screening.
4. Vaccines should be included in the Egyptian national immunization program. Vaccines protect against acquiring HPV infection and the development of subsequent HPV-associated disease.
5. Further researches needed to be conducted on other different settings to assess the knowledge about risks factors, prevention and screening for early detection of cervical cancer and to assess barriers of the women toward cervical cancer screening.

References

1. Abiye, T. O., Oluchi, S. R., Ibekwe, E. S., & Tamuno-Opubo, C. S. (2020). Cervical Cancer Awareness and Its Risk Factors Amongst Female Undergraduate Students of Rivers State University. *Radiation Science and Technology*, 6(4), 32.
2. Ahmed, A. H., Yakout, S. M., & Tosson, M. M. (2022). Health Belief Model-based educational program about cervical cancer prevention on women knowledge and beliefs. *Assiut Scientific Nursing Journal*, 10(30), 51-60.
3. Chandrika, K., Naik, B. N., & Kanungo, S. (2020). Awareness on cancer cervix, willingness, and barriers for screening of cancer cervix among women: A community-based cross-sectional study from urban Pondicherry. *Indian Journal of Public Health*, 64(4), 374.
4. Chisale Maboja, M., Levin, J., & Kawonga, M. (2021). Beliefs and perceptions regarding cervical cancer and screening associated with Pap smear uptake in Johannesburg: A cross-sectional study. *PLoS one*, 16(2), e0246574.
5. Dhaher, E. A. (2019). Knowledge, attitudes and practices of women in the southern region of Saudi Arabia regarding cervical cancer and the Pap smear test. *Asian Pacific journal of cancer prevention: APJCP*, 20(4), 1177.
6. Diouf, D., Diop, G., Diarra, C. A. T., Ngom, A. I., Niane, K., Ndiaye, M., ... & Dem, A. (2020). Systematic screening for cervical cancer in Dakar region: prevalence and correlation with biological and socio-demographic parameters. *Infectious Agents and Cancer*, 15(1), 1-8
7. Ebrahim Mahmoud, A., Abdelhakeem Aboud, S., & Kamal Ali, F. (2021). Effect of the educational package based on health belief model on nursing students' knowledge and attitude regarding human papillomavirus and cervical cancer. *Journal of Nursing Science Benha University*, 2(2), 809-828.
8. ESWI, S. A., MASRY, G. H., AZZAM, F., & EBRAHIM, M. (2019). Assessment of Cervical Cancer Awareness among Women Attending Gynecological Clinic at Beni-Suif University. *The Medical Journal of Cairo University*, 87(June), 1901-1909.
9. Getachew, S., Getachew, E., Gizaw, M., Ayele, W., Addissie, A., & Kantelhardt, E. J. (2019). Cervical cancer screening knowledge and barriers among women in Addis Ababa, Ethiopia. *PLoS one*, 14(5), e0216522.
10. Henke, A., Kluge, U., Borde, T., Mchome, B., Serventi, F., & Henke, O. (2021). Tanzanian women's knowledge about Cervical Cancer and HPV and their prevalence of positive VIA cervical screening results. Data from a Prevention and Awareness Campaign in Northern Tanzania, 2017–2019. *Global health action*, 14(1), 1852780.
11. Hull, R., Mbebe, M., Makhafola, T., Hicks, C., Wang, S. M., Reis, R. M., ... & Dlamini, Z. (2020). Cervical cancer in low and middle-income countries. *Oncology Letters*, 20(3), 2058-2074.
12. Kasa, A. S., Tesfaye, T. D., & Temesgen, W. A. (2018). Knowledge, attitude and practice towards cervical cancer among women in Finote Selam city administration, West Gojjam Zone, Amhara Region, North West Ethiopia, 2017. *African health sciences*, 18(3), 623-636.
13. Mengesha, A., Messele, A., & Beletew, B. (2020). Knowledge and attitude towards cervical cancer among reproductive age group women in Gondar town, North West Ethiopia. *BMC Public Health*, 20(1), 1-10.
14. Norkhafizah Saddki, M., & Norehan Mokhtar, M. (2019). Cervical cancer and pap smear screening: knowledge, attitude and practice among working women in northern state of Malaysia. *Med J Malaysia*, 74(1), 9.
15. Nurjihan, T. F., Rahman, T. A., Rahman, N. A. A., Shafri, M. A. M., & Haque, M. (2019). The knowledge, attitude, and practice regarding pap smear, cervical cancer, and human papillomavirus among women attending a mother and child health clinic in Kuantan, Malaysia. *Indian Journal of Medical and Paediatric Oncology*, 40(02), 193-200.
16. Ogbonna, F. S. (2021). Assessing the awareness/knowledge of cervical cancer and screening among rural women, and the health stakeholders' perception of the relevant strategy implementation in Imo state, South-Eastern Nigeria (Doctoral dissertation, Anglia Ruskin University).
17. Okunowo, A. A., Daramola, E. S., Soibi-Harry, A. P., Ezenwankwo, F. C., Kuku, J. O., Okunade, K. S., & Anorlu, R. I. (2018). Women's knowledge of cervical cancer and uptake of Pap smear testing and the factors influencing it in a Nigerian tertiary hospital. *Journal of cancer Research and Practice*, 5(3), 105-111.
18. Ruddies, F., Gizaw, M., Tekla, B., Thies, S., Wienke, A., Kaufmann, A. M., & Kantelhardt, E. J. (2020). Cervical cancer screening in rural Ethiopia: a cross-sectional knowledge, attitude and practice study. *BMC cancer*, 20(1), 1-10.
19. Sachan, P. L., Singh, M., Patel, M. L., & Sachan, R. (2018). A study on cervical cancer screening using pap smear test and clinical correlation. *Asia-Pacific journal of oncology nursing*, 5(3), 337.
20. Said, S., Hassan, H., & Sarhan, A. (2018). Effect of an educational intervention on women's knowledge and attitude regarding cervical cancer. *American Journal of Nursing Research*, 6(2), 59-66.
21. Songsiriphan, A., Salang, L., Somboonporn, W., Eamudomkarn, N., Nhokaew, W., Kuchaisit, C., & Harnlakorn, P. (2020). Knowledge, Attitudes, and Practices Regarding Cervical Cancer Screening among HIV-infected Women at Srinagarind Hospital: A Cross-Sectional Study. *Asian Pacific Journal of Cancer Prevention: APJCP*, 21(10), 2979.
22. Taneja, N., Chawla, B., Awasthi, A. A., Shrivastav, K. D., Jaggi, V. K., & Janardhanan, R. (2021). Knowledge, attitude, and practice on cervical cancer and screening among women in India: a review. *Cancer Control*, 28, 10732748211010799.
23. Teame, H., Gebremariam, L., Kahsay, T., Berhe, K., Gebreheat, G., & Gebremariam, G. (2019). Factors affecting utilization of cervical cancer screening services among women attending public hospitals in Tigray region, Ethiopia, 2018; case control study. *PLoS one*, 14(3), e0213546.
24. Tekle, T., Wolka, E., Nega, B., Kumma, W. P., & Koyira, M. M. (2020). Knowledge, attitude and practice towards cervical cancer screening among women and associated factors in hospitals of Wolaita Zone, Southern Ethiopia. *Cancer management and research*, 12, 993.
25. Thapa, N., Maharjan, M., Petrini, M. A., Shah, R., Shah, S., Maharjan, N., ... & Cai, H. (2018). Knowledge, attitude, practice and barriers of cervical cancer screening among women living in mid-western rural, Nepal. *Journal of gynecologic oncology*, 29(4).
26. Tilahun, T., Tulu, T., & Dechasa, W. (2019). Knowledge, attitude and practice of cervical cancer screening and associated factors amongst female students at Wollega University, western Ethiopia. *BMC research notes*, 12(1), 1-5.
27. Touch, S., & Oh, J. K. (2018). Knowledge, attitudes, and practices toward cervical cancer prevention among women in Kampong Speu Province, Cambodia. *BMC cancer*, 18(1), 1-8.
28. Tsegay, A., Araya, T., & Amare, K. (2020). Knowledge, attitude, and practice on cervical cancer screening and associated factors among women aged 15–49 years in Adigrat Town, Northern Ethiopia, 2019: a Community-Based Cross-Sectional Study. *International Journal of Women's Health*, 12, 1283.
29. Zagloul, M. C., Hassan, H. E., & Naser, E. G. (2020). Cervical Cancer Knowledge, Attitude, and Practices: Educational Program Management for Female Workers at Port Said University. *International Journal of Studies in Nursing*, 5(3), 1.