Awareness of Women Towards Risk Factors, Screening Practices and Preventive Behaviors of Cervical Cancer

Randa Ismail Abdel Rahman Ismail[1], Amany Samy Badawy[2] , Faten Ibrahim Elsebeiy[3] & Eman Ahmed Gouda Ahmed[4]

[1] B.SC Nursing, Zagazig University,, [2] Professor of Obstetrics and Gynecology Nursing, Faculty of Nursing –Zagazig University and 6 October University, [3] Assistant Professor of Obstetrics and Gynecology Nursing, Faculty of Nursing –Zagazig University, & [4] Lecturer of Obstetrics and Gynecology Nursing, Faculty of Nursing-Zagazig University*

Abstract

Background: Cervical cancer is the third most common disease in women worldwide and is a type of cancer that develops in the cells of the cervix. **Aim of the study**: was to assess awareness of women towards risk factors, screening practices and preventive behaviors of cervical cancer. **Subjects and Method: Research design**: Descriptive design was adopted to carry out this study. **Setting**: The study was conducted at gynecological outpatient clinic at the Zagazig University Hospital. **Subjects**: Purposive sample of 263 women were recruited in this study. **Tools of data collection**: Two tools were used for data collection. **Toll I**: A structured interviewing questionnaire and **Toll II**: African Women's awareness assessment tool about cervical cancer. **Results**: It was indicated that, almost one third of studied women had good awareness level towards risk factors & screening practices of cervical cancer, while almost one fourth of them had good awareness regarding preventive measures and treatment of cervical cancer. Additionally, it reflected a positive a highly significant relation between level of education, occupation, residence and awareness of cervical cancer. Also, there was a highly significant positive correlation between cervical cancer awareness and its domains. Moreover; the highest percent of studied women who had good awareness were university educated, working and from urban areas. It was observed that occupation, educational level and residence had highly significant positive effect on awareness level regarding cervical cancer. **Conclusion**: On the light of the results of the current study it was concluded that; there was a poor total score of women awareness regarding risk factors, screening practices and preventive behaviors of cervical cancer. **Recommendations**: Health- education programs that incorporate the media through diverse channels should be implemented to increase women's awareness regarding cervical cancer.

Keywords: Awareness, risk factors, screening practices, preventive behaviors, cervical cancer.

Introduction

Cervical cancer is a type of cancer that occurs in the cells of the cervix. It is the second most common cancer in women under the age of 50, and the fourth most common cancer in women of all ages globally [1] . In Egypt, about 969 new cervical cancer cases are diagnosed annually, it ranks as the 14th leading cause of female cancer and it is the 11th most common female cancer in women aged 15 to 44 years [2] **.** More than 95% of cervical cancer fatalities are expected to occur in low- and middle-income countries by 2030, when the disease is expected to claim the lives of half a million women yearly [3] .

The most common risk factor of cervical cancer is exposure to the human papilloma virus (HPV). Up to 20 years may pass after the precursor lesion produced by sexually transmitted HPV before invasive cancer develops. However, there are numerous additional risk factors for cervical cancer, including those related to reproduction, sexuality, behaviors, etc. These include having sexual contact before the age of 16 years old, having multiple partners, being exposed to miscarriage prevention drugs, using oral contraceptives (OC), smoking, having a high parity, environment or lifestyle choice, low socioeconomic status, and co-infection with HIV [4]

The HPV test and the Pap test may be carried out singly or simultaneously (called a co-test). Early detection increases the likelihood of a successful outcome from treatment and can stop any early alterations in cervical cell behaviors from progressing to cancer. By scanning for bits of their DNA in

cervical cells, the HPV test can identify the HPV (high-risk or carcinogenic strains) that are more likely to cause cervical cancer. The Papanicolaou test (Pap) is a process used to gather cervix cells so that they can be examined in a lab to discover cancer and pre-cancer. [5].

Early on, cervical cancer frequently exhibits no signs. The most typical sign as it progresses is abnormal bleeding (irregular vaginal bleeding, bleeding between periods, vaginal spotting or unusual discharge post-menopausal bleeding and postictal bleeding). Loss of bladder control, leg pain or swelling, unexplained weight loss, fatigue all the time, and unexplained pelvic or back pain are some more symptoms. A biopsy is necessary to make the diagnosis and determine the kind of cervical cancer when symptoms first appear. At a colposcopy facility, the biopsy is often performed under local anesthesia or, on rare occasions, under general anesthesia. General blood tests and particular radiological scans including MRI & CT are performed after diagnosis to determine whether the cancer has spread outside of the cervix. [6].

There are two main types of cervical cancer namely; Squamous cell carcinoma, this type of cervical cancer begins in the thin, flat cells (squamous cells) lining the outer part of the cervix, which projects into the vagina. Most cervical cancers are squamous cell carcinomas. Adenocarcinoma, this type of cervical cancer begins in the column-shaped glandular cells that line the cervical canal. Sometimes, both types of cells are involved in cervical cancer. Very rarely, cancer occurs in other cells in the cervix [7].

A staging system for cervical cancer was put by [8]. **Stage 1:** Confined to the cervix. This may only be seen by a microscope in Stage 1A. In Stage IB the cancer is seen as a visible tumor but is still localized to the cervix. These stages are often treated by surgery but in larger tumors chemo-radiation may be a superior treatment. **Stage 2:** The cancer has spread from the cervix to the upper vagina (Stage 2A) or into the surrounding tissue known as the parametrium (Stage 2B). Chemo-radiation is the main treatment. Only occasionally may surgery be considered. **Stage 3:** The cancer has spread from the

cervix into the structures around it or into the lymph nodes in the pelvis or abdomen. Chemo-radiation is the preferred treatment. **Stage 4:** The cancer has spread to the bladder or back passage/rectum or further away. The main treatments are chemotherapy, radiotherapy or a combination of these treatments. If the cancer is within the bladder or rectum with no other spread a form of major surgery can be considered·

Prevention of cervical cancer includes; receiving a vaccination to prevent HPV infection, routine pap tests as it can detect precancerous conditions of the cervix, so they can be monitored or treated in order to prevent cervical cancer. In addition; stop smoking, practicing safe sex as it reduces the risk of cervical cancer by taking measures to prevent sexually transmitted infections, such as using a condom every time having sex and limiting the number of sexual partners. Alternative approaches to cervical cancer prevention are currently being investigated, including primary prevention with prophylactic vaccines against human papillomavirus to alternative screening tests and protocols [9].

Significance of the Study:

Cancer cervix poses a major threat to the reproductive health of women everywhere. It is the second most frequent cause of cancer-related mortality in adult women worldwide. The best strategy for reducing mortality and the burden of cervical cancer is primary prevention and screening. [10]. A number of studies show that increasing women's awareness is crucial for improving cervical cancer prevention and prognosis and will have a significant impact in the fight against this illness [11]. There are few researches on assessing women's awareness of cervical cancer risk factors, screening procedures, and preventive behaviors in Egypt. So, the present study was conducted in Zagazig to assess women awareness regarding cervical cancer risk factors, screening practices and preventive behaviors.

Aim of the study:

The present study aimed to;

Assess the awareness of women towards risk factors, screening practices and

preventive behaviors of cervical cancer.

Such aim had been fulfilled through the following objectives:

1. Identify women awareness level regarding cervical cancer and their source of information.
2. Mention factors associated with accessing screening services among women.
3. Determine women awareness level towards risk factors 'Human Papilloma Virus', symptoms and Pap smear screening practices.
4. Describe the awareness level of women about different preventive behaviors and treatment methods regarding cervical cancer

Research Question:

What was the level of awareness of women toward risk factors, screening practices and preventive behaviors of cervical cancer?

Subjects and Methods:
Research design:
Descriptive design was used in this study.
Study setting:

The study was carried out at the gynecological outpatient clinic at the Zagazig University Hospital in Egypt's Sharkia Governorate. The aforementioned setting was chosen because it serves as both the primary medical facility in Zagazig and the central referral hospital for all of Sharkia's cities where the rate of population attendance is high. It is located in the second floor of the outpatient clinic which is next to the family planning and antenatal care unit. It has two rooms: a small one for the assistant nurse and a large one with all the necessary equipment for an examination. It is accessible every day from 9 am to 2 pm.

Study Subjects:

A purposive sample of 263 women were recruited in the current study and meeting the following criteria: -

Inclusion criteria: -
• Women age was ranged from 20 to 65 years.
• Women who accepted to participate in the study.
• Women free from mental or psychological health issues.

Exclusion criteria
• Women who have had cervical cancer
• Women who underwent total or radical

hysterectomy.

Sample size calculation:
It was determined that, out of the 4519 women who attended the gynecology outpatient clinic at Zagazig University Hospital over the course of six months, 25.5% were aware that cervical cancer is hereditary (women are more likely to develop it if their families have had the disease).**[12]**, at confidence level 95%, and power of test 80%, calculated by Epi info version 6.02. The sample size was estimated to be 263 women.

Tools for data collection:
Two tools were used in the current study: -

Tool I: Structured Interviewing Questionnaire It was developed by the researcher and written in Arabic after reviewing relevant literature and articles as Thapa et al. [13] & Mabotja, et al., [14] to collect the necessary data for achieving the study objectives. It was composed of three parts:

Part 1: Socio-demographic characteristics of the study sample: it was composed of 5 closed ended questions (as age, education, occupation, marital status and residence).

Part 2: Reproductive characteristics included data related: age of marriage, age of first pregnancy, parity, and duration of sexual activity.

Part 3: Contraceptive history: included data about family planning methods already used and duration of its use.

- Assessing their **source of information**.

Tool II: Questionnaire women awareness regarding cervical cancer by using African Women's awareness assessment tool (AWACAN) about cervical cancer **15]**. This had been modified by the researcher after reviewing an in-depth literature as Heena et al [16] & Channon [17] to assess women's awareness about cervical cancer. It included items related to background, anatomy, risk factors, HPV, symptoms, methods of screening& Pap smear, preventive behaviors & treatment.

It was divided into five sections which included;

Section (I): awareness related to the anatomy of female reproductive system and cervical cancer background: It included 6 multiple choice questions; composition of female reproductive system, the site of the

cervix, its function, definition of cervical cancer, whether cervical cancer is prevalent or not and method of transmission,

- **Section (2): -awareness related to the risk factors of cervical cancer.** It included (12) closed ended questions such as using oral contraceptives for more than five years, using condoms, having unprotected sex, poor personal hygiene and also (6) closed ended questions regarding HPV.

- **Section (3): awareness related to symptom of cervical cancer.** It included (12) closed ended questions about the main symptoms such as; (vaginal bleeding between menstrual periods - persistent smelly vaginal discharges, bleeding after sex …etc.) .

- **Section (4): awareness related to screening practices of cervical cancer.** It included (9) questions related awareness regarding screening practices, and (7) questions about utilization of Pap smear test included.; availability of screening service, its interval (every year, three years, five years ……etc., its eligibility …. etc.

  - Also, determine factors associated with possessing the necessary qualifications to use these services, such as a history of STI symptoms, a doctor's recommendation for cervical cancer screening, and the ability to drive oneself to the medical institution.

  Section (5): **awareness related to preventive behaviors and treatment of cervical cancer.** It included (10) questions that involved

  - Methods of prevention: - such as; HPV vaccination -avoiding multiple sexual partners, good genital hygiene ……etc.

  - Different lines of treatment: - which included; surgery, chemotherapy and radiotherapy.

Scoring System: -

A correct answer was scored as "one" and the incorrect "zero". The total awareness score had been calculated by summation of the scores for the correct answers. Maximum score was 62.

Total knowledge regarding cervical cancer was calculated as:

- <50% indicated poor awareness level

- 50% - 75% indicated fair awareness level

- >75% indicated good awareness level

Content Validity and Reliability:

Validity of the tools was tested for content validity by Jury of three experts two professor of obstetrics and gynecology nursing department and one professor of obstetrics and gynecology medicine. These experts assessed the tool for clarity, relevance, comprehensiveness, applicability, and understanding. All recommended modifications in the tools were done. The reliability of the items of the tools was assessed using Cronbach's alpha test, it's a result was 0.75 for Women awareness about the cervical cancer.

Pilot study:

The pilot study was conducted on 10% (26 women) of the total study population that met the criteria. This pilot study was carried out a month prior to the data collecting. The aim of this study was to determine the tools' viability and to identify any issues that were unique to the statement, such as its clarity and sequence. Estimating how long it would take women to complete the study's tools was also helpful. The sample of the pilot study was excluded from the study subjects.

Field work:

The data collection took place in the aforementioned setting, in the waiting area, after the researcher had first used the interview questionnaire sheet to identify the women who met the study's eligibility criteria. After that, they explained the study's purpose to the women and obtained their verbal consent to participate. The sample was chosen on Saturday, Monday, and Wednesday from 9 am to 2 pm from the study setting. The period of data collection was six months, from the beginning of January 2022 to the end of June 2022. Talking to each interviewee spent 30-45 minutes.

Data was collected through the following Phases: -

1- Interviewing phase:

- The initial phase involved evaluating sociodemographic traits. Examples included age, residence, occupation, education level, marital status, etc.

2- Assessment phase:

This phase was completed after obtaining consent in the study setting and assessing the women's awareness of cervical cancer and its various domains, including risk factors, symptoms, and screening practices,

as well as the logistics of obtaining these services, prevention & treatment, and an analysis of their source of information.

Ethical consideration and administration design:

The scientific and ethical committee of the nursing department at Zagazig University granted their permission of the study in terms of ethics. (M.DZU.NUR/158/14/11/2021). Each lady was given a brief explanation of the study's purpose before the instruments were used to help win her confidence and trust. Each lady who accepted to participate in the study verbally agreed to do so after being assured that the information gathered will be treated in confidence and that the study's procedures won't have any negative effects on the participants. Women were told they might leave the study at any moment, without having to give a reason, and that they could.

By submitting an official letter to the management of the outpatient clinic from the nursing department at Zagazig University, permission was officially granted to collect the sample. Meetings and conversations between the researcher and the participants were held to inform them of the study's goal in relation to the ethical concerns.

Statistical analysis:

Using SPSS 20.0 for Windows (SPSS Inc., Chicago, IL, USA 2011), the data were gathered, tabulated, and statistically evaluated. The mean, standard deviation, and median (range) were used to describe quantitative data, while absolute frequencies (number) and relative frequencies were used to express qualitative data (percentage). The chi-square test was used to find the significant association between the demographic and clinical data and the total awareness level. Person correlation coefficient was calculated to assess relation between study variables, (+) sign indicate direct correlation and (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation and values near 0 indicate weak correlation. Multiple linear regression (step- wise) was also used to predict factors which affect total awareness level. Cronbach alpha coefficient was calculated to assess the reliability of the awareness scale through their internal consistency. P-value < 0.05 was considered statistically significant, p-value <

0.01 was considered highly statistically significant, and p- value ≥ 0.05 was considered statistically non- significant (NS).

Results :

Table 1 shows socio-demographic characteristics of the studied women. It was shown that 60.1% of them their ages were ranged between 20 to 39 years old with a mean age of 36.75 11.17 years. 54% of them had secondary education, 71.9% were housewife and 79.1% were married and 63.9% of them were coming from Urban regions.

Table 2 represents reproductive and contraceptive characteristics of studied women. 60.3% of them were married at age twenty or younger, 79.3% of them were multipara and 90.3% had not been sexually active for more than 30 years. In addition,48.5% of them used family planning methods and 62.6% of studied women used these methods for five years or below.

Figure 1: demonstrates that 39.9% of studied women depend on their friends as source of their information, followed by mass media (35.4%), then relatives (13.3%) and health workers (11.4%).

Figure 2: shows factors associated with accessing screening services among women: - it demonstrates that recommendations from a health worker for cervical cancer screening represented 45% from factors affecting access to screening services, followed by history of STIs symptoms (30%), and finally transportation available to travel to the health facility (25%).

Table 3: pertaining total mean scores of studied women' awareness regarding cervical cancer and its domains. It was evident that the highest mean score was for symptoms of cervical cancer (8.69±3.15) while the lowest was for Human Papilloma Virus (HPV) (2.31±2.56) with total mean score (33.62±16.82).

Figure 3 reveals that just 8% of the women who were investigated had an average awareness score, while 30.40% had a good awareness score and 61.60% had a poor awareness score.

Table 4 illustrates relation between personal characteristics of the studied women and awareness of cervical cancer. It showed highly significant (p<0.001)

relation between level of education, occupation, residence and awareness of cervical cancer. Also, significant (p<0.05) relation between marital status and awareness of cervical cancer. Where highest percent of studied women who had good awareness were university educated, working and coming from urban areas.

       Table 5:- illustrate correlation matrix that discovered a highly significant (p< 0.001) positive correlation between cervical cancer awareness and its domains (background ,risk factors …etc).

       Table 6 reveals step wise multiple linear regression for predicting factors which affect total awareness of cervical cancer. It was found that occupation, level of education, and place of residence all had a highly significant favorable impact on cervical cancer awareness.

Discussion.

       Cervical cancer is the fourth most common malignancy in women worldwide. The human papillomavirus (HPV), the most prevalent viral infection of the reproductive system, is considered to be the commonest risk factor of cervical cancer (more than 95%). World Health Organization [18] .

       The most fortunate aspect about it is that it can be prevented and treated in its early stages. Regular Pap screenings and HPV vaccination beginning at age 21 may reduce the chance of developing cervical cancer. Additionally, give up smoking, engage in safe sexual practices and using condoms whenever possible to prevent STDs Senkomago, et al [19] .

       Women from poor socioeconomic standers do not receive cervical cancer screenings (such as Pap tests). People are unaware of these health services, and some people, who are bashful, choose to ignore the symptoms. Thus, they are not screened or treated adequately for cervical cancer. Therefore, this study was framed in the light of the study aim which was to; assess the awareness of women towards risk factors, screening practices and preventive behaviors of cervical cancer.

       Regarding the socio-demographic characteristics, the results of the current study showed that the participating women had a mean age of 36.75 11.17 years, were almost two thirds married, and had married when they were at least twenty years old. About half of them also had a secondary education. These results were in conformity with Thapa, et al [13] who studied "Knowledge, attitude, practice and barriers of cervical cancer screening among women living in Mid-Western Rural, Nepal." revealed that; the mean age of their participants was 30.13±10.4years, majority of them were married, also nearly half had secondary education also.

       Furthermore, these results corroborated with Ramadan, et al [20] who studied "Health belief model-based educational program about cervical cancer prevention on women knowledge and beliefs" in El-Maasara maternal and child health center, Helwan City, Egypt that clarified the majority of participants were married , almost vast majority of them were housewives and half of them were secondary educated.

       On the other hand, these findings were contrast with a cross-sectional study conducted in Johannesburg by Mabotja, et al [14] who studied "Beliefs and perceptions regarding cervical cancer and screening associated with Pap smear uptake:" that reported only almost one fourth of participants were married, about one third of them were housewives and more than two thirds were secondary educated. From the researcher point of view this might be owing to the custom of community in Egypt that is not interested by female education and low socioeconomic that hampers obtaining university education.

       Concerning the residence, the present study revealed that less than two thirds of women were coming from urban areas. This was supported with a cross-sectional study in Tanzania by Mabelle, et al [21] who studied "Knowledge towards cervical cancer prevention and screening practices among women who attended reproductive and child health clinic at Magu District Hospital, Lake Zone Tanzania: That revealed nearly three fifths of women were belonged to urban areas.

       While on the other hand, Kashyap,

et al [22] who studied "Risk factors of cervical cancer: A case-control study". In India that revealed nearly two thirds of studied women were belong to rural areas. Also, these results were in contrast with Zagloul et al [23] who studied "Cervical cancer knowledge, attitude, and practices: educational program management for female workers at Port Said University". showed that three fifths of women were belong to rural areas. Such discrepancy might be due to the difference in research setting and the sampling technique.

As related to the reproductive characteristics of the studied women, the present study showed that; The majority of participants were multipara and almost two thirds of them became pregnant for the first time after twenty, and the vast majority had not been sexually active for more than 30 years. These findings were in partially agreement with Ifemelumma, et al [24] who studied "Cervical cancer screening: assessment of perception and utilization of services among Health Workers in Low Resource Setting." reported that half of their participants were multipara and were sexually active for less than 25 years. Moreover, Dhaher [25] in the southern region of Saudi Arabia mentioned that nearly half of the participant women were multiparous and had three or more children. From the researcher point of view, this may be due to the high rate of young marriages as well as cultural and religious beliefs that view having a large family as strength.

Regarding the use of contraceptive methods, the present study showed that; almost half of the studied women had used family planning and two thirds of them used these methods for less than five years. This was in confirmity with Ramadan, et al [20] who reported that the majority of women in their study had been used different types of contraceptive methods. This may be attributed to that the majority of current study sample was of childbearing and reproductive age**..**

Meanwhile,..these findings were inconsistent with a study in Thailand by Piyachat [26] found that more than one- third of their participants don't use any type of

contraceptive methods. From the researcher point of view such difference might be due to differences in the study setting and sample size, as well as various cultural and religious perspectives on the use of contraception.

Concerning source of information of participant women related cervical cancer. Our study demonstrated that nearly two fifths of studied women depend on their friends as their source of information, These results were in contrary with Xu, etal (27) who demonstrated "The determination of the knowledge level and behavior of Turkish women from various occupations about human papillomavirus, cervical cancer, and pap smear test" that revealed only 7.8% of women stated that their source of knowledge from their friends .In addition Olubodun, etal. (28) in South West of Nigeria." showed only 1.6% of participants had their knowledge about cervical cancer by their friends. This may be attributed to difference of study subjects.

Concerning factors associated with accessing screening services among women the present study findings revealed that, recommendations from a health worker for cervical cancer screening was the commonest factor represented among nearly half of participants, followed by history of STIs symptoms among less than one third, and finally transportation available to travel to the health facility among one fourth. This was in contrary with Phaiphichit, et al [29] they found in their study tilted by '' Factors associated with cervical cancer screening among women aged 25–60 years in Lao People's Democratic Republic' that; having sexually transmitted infections was the most common factors associated with accessing screening services among women followed by receiving recommendations for screening from health workers. This may be attributed to the difference in study setting and sampling.

In the regards of the total mean scores of awareness regarding cervical cancer and its domains. The current study revealed that the highest mean score was for symptoms of cervical cancer while the lowest was for Human Papilloma Virus (HPV) with total mean score (33.62±16.82). These findings were in

contrast with Kuku, etal.,2018 [30] in a Nigerian who mentioned that the highest mean score of knowledge among the studied women was for HPV infection (9.43 ± 2.12 while the lowest score related to knowledge regarding Pap smear(2.11±3.42) .

Concerning total score of awareness related to cervical cancer. According to the study's findings, revealed that almost two thirds of studied women had poor score related to awareness of cervical cancer but **a**lmost one third of them had good score. And small percentage of them had average score. These results disagree with Devkota, et al [31] who studied "Awareness on cervical cancer among reproductive aged women of Kathmandu, Nepal." concluded that more than two thirds of studied women had average awareness of cervical cancer, 17.9% had good awareness and 11% had poor awareness. This may be attributed to the difference in the educational level and regional distribution of the studied women.

Regarding relation between personal characteristics of studied women and awareness level of cervical cancer. The findings of the current study revealed a highly significant (p<0.001) relation between level of education, occupation, residence and awareness level of cervical cancer. Also, a significant relation (p<0.05) had also been found between marital status and awareness of cervical cancer and a highly significant (p<0.001) positive correlation was also found between cervical cancer awareness level and its domains (background, risk factors, etc. In addition, the highest percent of studied women who had good level of awareness had university education, were working and from urban area.

These findings were supported by Yahyai, et al [32] their study entitled "Knowledge , Attitudes , and Practices Regarding Cervical Cancer Screening among Omani Women Attending Primary Healthcare Centers in Oman who found out that; cervical knowledge scores were highly significantly(p<0.001) associated with education level and occupation, a significant relation (p<0.05) between marital status and awareness of cervical cancer. Also, highest percent of studied women who had good level

of awareness undergraduates, were married and working.

Moreover; Akinlotan [33] in their study ''Cervical Cancer Screening Barriers and Risk Factor Knowledge Among Uninsured Women'' in Colombia showed significant correlation between educational attainment and knowledge of risk factors, screening practices of cervical cancer (r = 0.1381, P < 0.01).

According to multiple linear regression for predicting factors, it was observed that occupation, educational level and residence had a highly significant positive effect on awareness of cervical cancer. This was in partially agreement with Weng, et al [34] in their cross-sectional study in Tanzania which presented that the educational level was the most a significant predictor with a positive effect on the awareness level regarding cervical cancer. On the other hand; these findings were in contrast with Ayanto et al [35] in Ethiopia, show that the screening utilization among participants regarding cervical cancer is significantly associated with screening services utilization as compared to participants with poor knowledge.

Conclusion:

On the light of the results of the current study it was concluded that; almost one third of studied women had good awareness of risk factors of cervical cancer, also the same percentage had good awareness regarding the screening practices. While almost one fourth of them had good knowledge of preventive measures and treatment of cervical cancer. In conclusion total score of women awareness regarding cervical cancer was almost one third of the studied women had good awareness, almost two thirds had poor knowledge and very small percentage of women had average awareness.

Recommendations:

In the light of the current study findings, the following recommendations were suggested:

- Targeted interventions including population- based cervical screening and diagnostic services can translate high awareness into actual benefits.

• The need for health-education programs that incorporate the media through diverse channels should be implemented to increase women's awareness regrading risk factors, screening practices and preventive measures of cervical cancer.**.**

Table 1: Distribution of the studied women according to their socio-demographic characteristics (n=263).

Item	No.	Percent (%)
Age (in years)		
20-39	158	60.1
40-	65	24.7
50 -65	40	15.2
Mean± SD	36.75±11.17	
Education		
Illiterate/ Read and write	11	4.2
Essential	21	8
Secondary	142	54.0
University	89	33.8
Occupation		
House wife	189	71.9
Working	74	28.1
Marital status		
Single	26	9.9
Married	208	79.1
Divorced	10	3.8
Widow	19	7.2
Residence		
Rural	95	36.1
Urban	168	63.9

Table 2: Distribution of the studied women according to their reproductive and contraceptive characteristics (n=237).

| Item	No.	Percent (%)
Parity		
Nullipara	17	7.2
Primipara	32	13.5
Multipara	188	79.3
Age at marriage (in years) (n=237)		
≤20 years	143	60.3
>20 years	94	39.7
Mean± SD	20.75±2.33	
Age at first pregnancy		
≤20 years	70	29.5
>20 years	167	70.5
Mean± SD	20.50±5.75	
Duration of sexual activity		
≤30 years	214	90.3
>30 years	23	9.7
Mean± SD	15.92±10.03	
Use of family planning methods (n=237)		
Yes	115	48.5
No	122	51.5
Duration of its use(n=115)		
≤5 years	72	62.6
>5 years	43	37.4
Mean± SD	4.58±3.12	
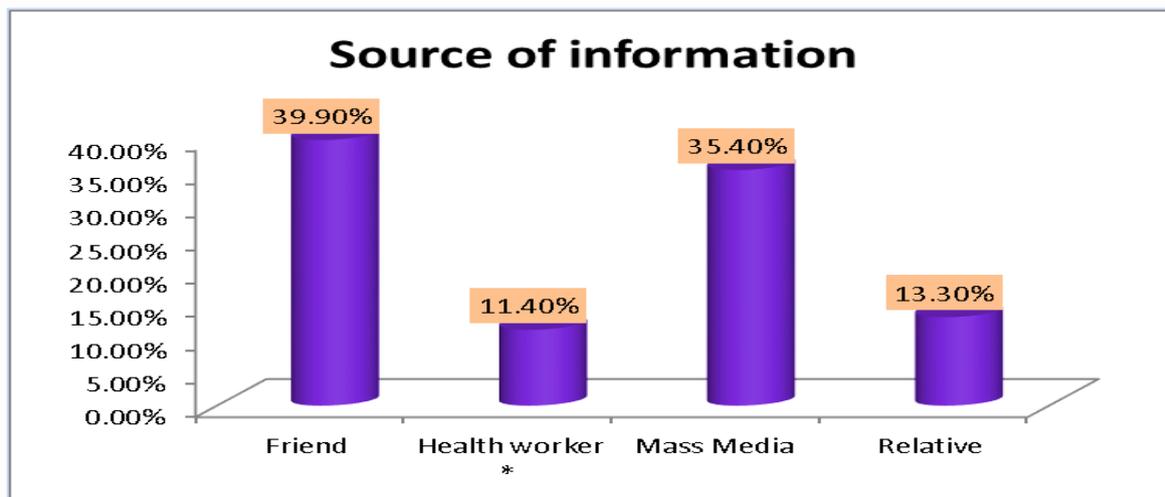
Figure (1): Percent Distribution of the studied women regarding their source of information.
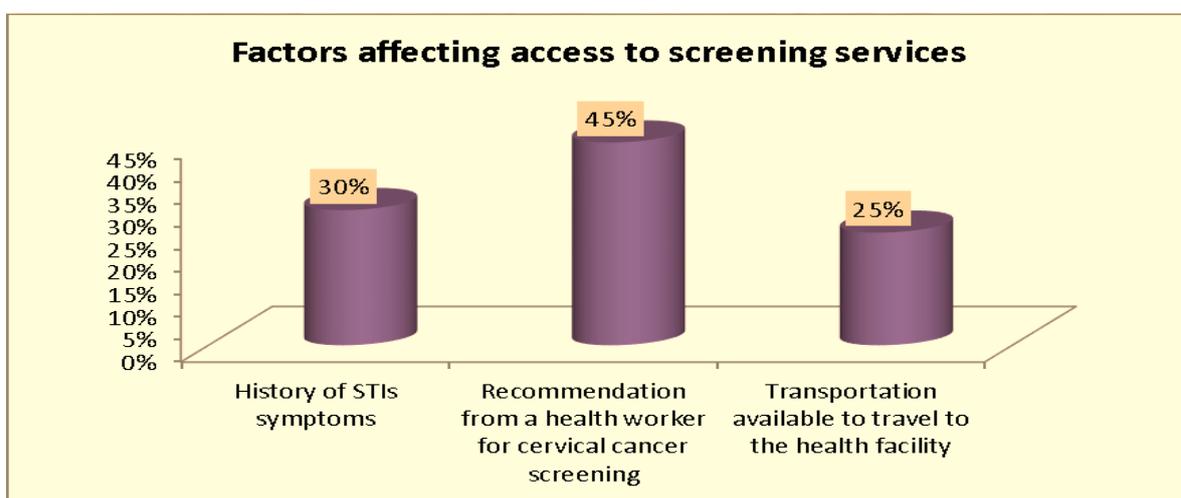

Figure (2): Percent Distribution of the studied women regarding factors affecting access to screening services.

Table 3: Total mean scores of studied women's awareness regarding cervical cancer and its domains (n=263).

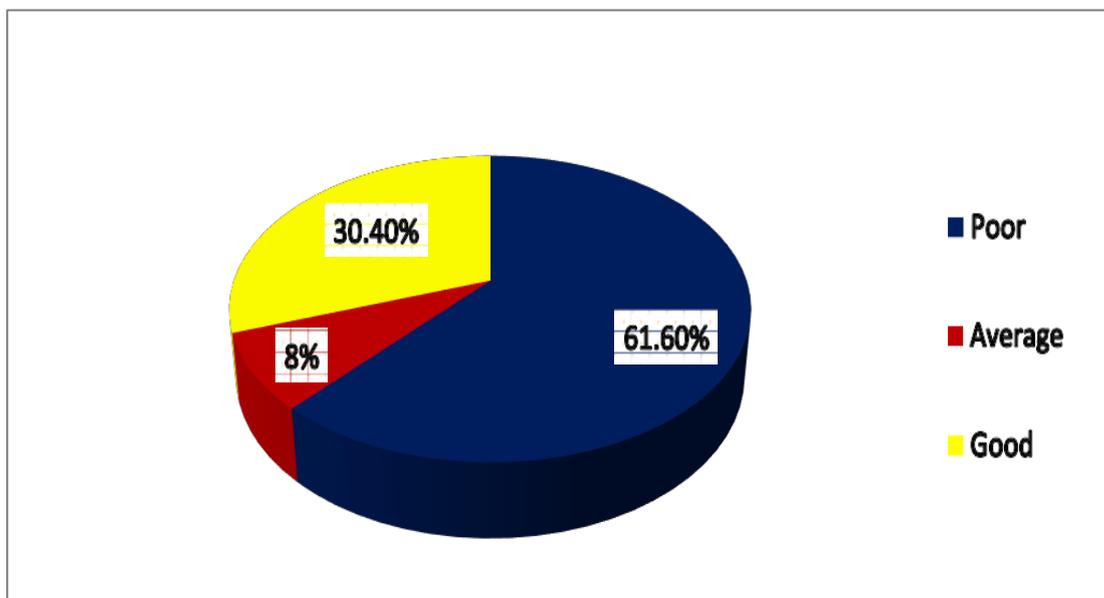| Studied women' awareness regarding cervical cancer	Mean ±SD
Anatomy of female reproductive system and background of Cervical cancer (6) *	4.25±1.41
Risk factors of cervical cancer (12) *	7.01±3.84
Human Papilloma Virus (HPV) (6) *	2.31±2.56
Symptoms of cervical cancer (12) *	8.69±3.15
screening practices of cervical cancer (Pap smear test) (9) *	4.61±2.81
Utilization of pap test (7)*	2.44±2.12
preventive measures and treatment (10) *	4.28±2.80
Total (62) *	33.62±16.82

* Maximum score

Figure (3): Distribution of the studied women awareness level concerning cervical cancer(n=263).

Table 4: Relation between personal characteristics of the studied women and awareness of cervical cancer (n=263).

Personal characteristics		Awareness Level about cancer cervix						χ^2	P-value
		Poor (n=162)		average (n=21)		Good (n=80)			
		No	%	No.	%	No.	%		
Age in years	20	4	2.5	0	0.0	2	2.5	14.040	0.081
	21-29	47	29.0	4	19.0	28	35.0		
	30-39	40	24.7	7	33.3	26	32.5		
	40-49	38	23.5	9	42.9	18	22.5		
	50 -65	33	20.4	1	4.8	6	7.5		
Education	Illiterate	4	2.5	0	0.0	0	0.0	179.146	0.001**
	Read and write	7	4.3	0	0.0	0	0.0		
	Essential	20	12.3	1	4.8	0	0.0		
	University	9	5.6	7	33.3	73	91.2		
Occupation	House wife	151	93.2	18	85.7	20	25.0	125.391	0.001**
	Working	11	6.8	3	14.3	60	75.0		
Marital status	Single	12	7.4	0	0.0	14	17.5	16.604	0.011*
	Married	127	78.4	21	100.0	60	75.0		
	Divorced	6	3.7	0	0.0	4	5.0		
	Widow	17	10.5	0	0.0	2	2.5		
Residence	Rural	79	48.8	2	9.5	14	17.5	29.685	0.001**
	Urban	83	51.2	19	90.5	66	82.5		

**: statistically highly significant (p<0.001) *: statistically significant (p<0.05).

Table 5: Correlation matrix among different study variables.

	knowledge	Background	Risk factors	HPV	Symptoms	screening practices	Utilization of pap test	preventive measures and treatment
Knowledge								
Background	0 .747**							
Risk factors	0 .954**	0 .673**						
HPV	0 .913**	0 .630**	0 .831**					
Symptoms	0 .814**	0 .590**	0 .774**	0 .618**				
Screening practices	0 .939**	0 .684**	0 .851**	0 .892**	0 .684**			
Utilization of pap test	0 .908**	0 .656**	0 .806**	0 .886**	0 .633**	0 .878		
preventive measures and treatment	0 .942**	0 .638**	0 .940**	0 .840**	0 .699**	0 .871**	0 .823**	

**: highly statistically significant ($p < 0.001$); HPV: Human Papilloma Virus

Table 6: Step wise multiple linear regression for predicting factors which affect total awareness level about cervical cancer.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	-25.005-	3.928		-6.366	.000	-32.743-	-17.267-
Occupation	16.888	2.019	.428	8.366	0.001**	12.911	20.865
Education	5.087	.838	.302	6.073	0.001**	3.437	6.737
Residence	7.431	1.671	.217	4.448	0.001**	4.139	10.723

**: highly significant ($p < 0.001$).

References

[1] Natioal Cancer Institute, What's cancer?Availableathttps://www.cancer.gov/about-cancer/understanding/what-is-cancer. Last occursed October202.

[2] Bruni L, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, Bosch FX, de Sanjosé S ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre). Human papilloma virus and related diseases in Egypt. Summary Report 17 June 2019

[3] MCGRAW, S. L. & FERRANTE, J. M Update on prevention and screening of cervical cancer. World journal of clinical oncology. 2016; 5: 744.

[4] Remschmidt C, Kaufmann AM, Hagemann I, et al . Risk factors for cervical human papillomavirus infection and high-grade intraepithelial lesion in women aged 20 to 31 years in Germany. Int J Gynecol Cancer2015;23:519-26.

[5] Nelson R. FDA OKs HPV DNA test for primary cervical cancer screening. Medscape Medical News. April 24,2018.

[6] Maurie, Markman,M.,D.Cervical cancer symptoms.President of Medicine & Science, Cancer Treatment Centers of America®. page was updated on May 21, 2021.

[7] Loopik DL, Doucette S, Bekkers RL, Bentley JR. Regression and progression predictors of CIN2 in women younger than 25 years. J Low Genit Tract Dis.2016;20:213-217.

[8] International Federation of Gynecology and Obstetrics (FIGO), Staging Classification for Cervical Cancer :Added Benefits of Imaging2018.

[9] Centers for Disease Control and Prevention. HPV Vaccine Information for Clinicians. Accessed at www.cdc.gov/hpv/hcp/need-to-know.pdf on July 12 2016.

[10] Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, Znaor A, Soerjomataram I, Bray F. Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available from: https://gco.iarc.fr/today2018.

[11] Arafa MA; Rabah DM; Farhat KH. Rising cancer rates in the Arab World: now is the time for action. East Mediterr Health J.2020;26(6):638–640. https://doi.org/10.26719/emhj.20.073.

[12] Mwaka ,D.A., Orach ,G.C., Were ,M.E., Lyratzopoulos ,G.,Wabinga ,H and Ro,M: Awareness of cervical cancer risk factors and symptoms: cross-sectional community survey in post-conflict northern Uganda2015 https://www.researchgate.net/publication/280389782

[13] Niresh T, Maharjan M, Marcia A. , Shah R, Swati Shah, Narayani Maharjan, Navin Shrestha, **and Hongbing Cai** "Knowledge, Attitude, Practice and Barriers of Cervical Cancer Screening among Women Living in Mid- Western Rural, Nepal." Journal of Gynecologic Oncology 2018 29(4):1–12. doi: 10.3802/jgo.2018.29.e57.

[14] Mabotja M , Chisale M, Levin J, and Kawonga M . "Beliefs and Perceptions Regarding Cervical Cancer and Screening Associated with Pap Smear Uptake in Johannesburg: A Crosssectional Study." PLoS ONE 16(2February)2021. doi: 10.1371/journal.pone.0246574.

[15] Moodley ,Id, J., S. E. Scott, A. D. Mwaka, D. Constant Id, J. N. Githaiga, S. Stewart, A. Payne, L. Cairncross, N. I. M. Somdyala Id, and F. M. Walter . "Development and Validation of the African Women Awareness of CANcer (AWACAN) Tool for Breast and Cervical Cancer."2019 1–14.

[16] Heena H , Sajid D, Isamme A , Muhammad R, Rabeena Tabasim,4T Gazi P, and Amani A Knowledge, Attitudes, and Practices towards Cervical Cancer and Screening amongst Female Healthcare Professionals: A Cross-Sectional Study. Journal of Oncology Volume 2019, Article ID 5423130, 9 pages

[17] Channon A ,V. H. T. So,. A., M. M. Ali et al., "Uptake of breast and cervical cancer screening in four Gulf Cooperation Council countries," European Journal of Cancer Prevention, vol. 28, no. 5, pp. 451–456, 2018

[18] World Health Organization. "WHO Guideline for Screening and Treatment of Cervical Pre-Cancer Lesions for Cervical Cancer Prevention."2021.

[19] Senkomago, Virginia, S. Jane Henley, Cheryll C. Thomas, Jacqueline M. Mix, Lauri E. Markowitz, and Mona Saraiya. "Human Papillomavirus – Attributable Cancers — United States , 2012 – 2016." 2019 68(33):2012–16.

[20] Ramadan, Sabah, Hussein Ahmed, Amany Mohamed, and Saad Esa. "Health Belief Model-Based Educational Program about Cervical Cancer Prevention on Women Knowledge and Beliefs." 2018 39–49. doi: 10.4103/ENJ.ENJ

[21] Mabelele, Mabula M., John Materu, Faraja D. Ng, and Michael J. Mahande . "Knowledge towards Cervical Cancer Prevention and Screening Practices among Women Who Attended Reproductive and Child Health Clinic at Magu District Hospital , Lake Zone Tanzania : A Cross-Sectional Study."2018 1–8.

[22] Kashyap, Nainakshi, Nadiya Krishnan, Sukhpal Kaur, and Sandhya Ghai . "Risk Factors of Cervical Cancer: A Case-Control Study." Asia-Pacific Journal of Oncology Nursing 2019 6(3):308–14.

[23] Zagloul, Mervat Caber, Hanan Elzeblawy Hassan, and Elsaida Gouda Naser . "Cervical Cancer Knowledge, Attitude, and Practices: Educational Program Management for Female Workers at Port Said University."International Journal of Studies in Nursing 020 5(3):1. doi: 10.20849/ijsn.v5i3.776.

[24] Ifemelumma C, Anikwe, B. C. Okorochukwu, F. A. Onu, J. A. Obuna, B. N. Ejikeme, and O. P. Ezeonu . "Cervical Cancer Screening: Assessment of Perception and Utilization of Services among Health

Workers in Low Resource Setting." International Journal of Reproductive Medicine2019:1–8.doi: 10.1155/2019/6505482.

[25] Dhaher, Enas A . "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 2019 20(4):1177–84.doi: 10.31557/APJCP.20.4.1177.

 [26] Piyachat E 1*, Roopngam E "Effect of Pleurotus Sajor-Caju Polysaccharide Encapsulated in Poly D , L Lactide-Co- Glycolide Nanoparticles for HPV Vaccine in Murine Model."2018 5(3):

[27]   Xu, Xue; Li, Mengzhi; Hu, Jun; Chen, Zheng; Yu, Jinyu; Dong, Yan; Sun, Chengtao; Han, Junqing "Somatic Mitochondrial DNA D‐Loop Mutations in Meningioma Discovered : A Preliminary Data A Comprehensive Overview of Mitochondrial DNA 4977-Bp." Journal of Cancer Research and Therapeutics **(2018)**. 14(7):1525–34. doi: 10.4103/jcrt.JCRT.

[28] Olubodun T, Odukoya O, and Mobolanle Rasheedat Balogun "Knowledge, Attitude and Practice of Cervical Cancer Prevention, among Women Residing in an Urban Slum in Lagos, South West, Nigeria." Pan African Medical Journal **(2019)**. 32:1–10. doi: 10.11604/pamj.2019.32.130.14432.

 [29]   Phaiphichit J, Paboriboune P, Kunnavong S, Chanthavilay P Factors associated with cervical cancer screening among women aged 25– 60 years in Lao People's Democratic Republic. PLoS ONE .**(**2022) 17(4):   e0266592.   https://doi.org/ 10.1371/journal.pone.026659.

[30] Okunade K, Kuku A, Jubril O., Kehinde S. Okunade, and Rose I. Women's knowledge of cervical

cancer and uptake of Pap smear testing and the factors influencing it in a Nigerian tertiary hospital "SC." Journal of Cancer Research and Practice. **(2018)** doi: 10.1016/j.jcrpr. 02.001.

[31]   Devkota, Pramila, Sakshi Aryal, Poonam Devi Shrestha, and Rhinu Shrestha "Awareness on Cervical Cancer among Reproductive Aged Women of Kathmandu , Nepal." (August) **(2020).**.

 [32]   Yahyai, Tagharid Al, Marwa Al Raisi, and Rahma Al Kindi : "Knowledge , Attitudes , and Practices Regarding Cervical Cancer Screening among Omani Women Attending Primary Healthcare Centers in Oman: A Cross-Sectional Survey. (2021)**.**" 22:775–83.

(33) Akinlotan, M., Bolin, J.N., Helduser, J. et al: Cervical Cancer Screening Barriers and Risk Factor Knowledge Among Uninsured Women. J Community Health 42,   770–778   (2017). https://doi.org/10.1007/s10900-017-0316-9

 [34] Weng, Qiao, Jie Jiang, Fatma Mrisho Haji, Lamlet Hassan Nondo, and Huaijun Zhou "Women's Knowledge of and Attitudes toward Cervical Cancer and Cervical Cancer Screening in Zanzibar, Tanzania: A Cross-Sectional Study." BMC Cancer (2020). 20(1):1–12.

 [35] Ayanto, Samuel Yohannes, Tefera Belachew, and Muluemebet Abera Wordofa "Determinants of Cervical Cancer Screening Utilization among Women in Southern Ethiopia Federal Ministry of Health South Nations Nationalities and People Regional Government." Scientific Reports (0123456789): **(2022).** 1–10. doi: 10.1038/s41598-022-18978z.