



Married Women's Beliefs, Attitudes, and Preventive Practices of Cervical Cancer: The Effectiveness of Psychological Nursing Intervention

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ABSTRACT

Background: Human papillomavirus (HPV) infection causes 75-80% of cervical cancers worldwide. Cervical cancer is considered the second communal cancer in women after breast cancer universally. It can be treatable, avoidable, or recognized early, particularly with systematic screening and vaccination. **The aim** of the study was to assess the effectiveness of a psychological nursing intervention on married women's beliefs, attitudes, and preventive practices of cervical cancer. **Design & tools:** the quasi-experimental study was conducted on 200 randomly selected married women using the Self-Administered Questionnaire and Assessment Sheet for knowledge, beliefs, attitudes, behaviors, and barriers to preventive measures for cervical cancer. **Setting:** it was conducted in the family planning unit in the teaching hospital and gynecology clinic of the university hospital in Shebin-Alkom, Menoufia University, Egypt. **The results** revealed a high statistically significant difference between the study and control groups regarding mean scores of knowledge beliefs, and preventive practice concerning cervical cancer, its screening, and prevention after a psychological nursing intervention compared with before. Also, the majority of the study group practiced preventive measures in a positive way after a psychological nursing intervention compared with the control group. **Conclusion:** the study concluded that the psychological nursing intervention has a positive effect on beliefs, attitudes, and preventive practices of cervical cancer among married women. **Recommendation:** Additional educational intervention is required to encourage adherence to routine cancer screening by raising awareness about cervical cancer among married women. Adding cervical cancer preventive strategies beside other reproductive health services at all health care delivery system levels.

Keywords: Cervical cancer prevention, Human papilloma virus, Human papilloma virus vaccination, Psychological nursing intervention.

Introduction

Cervical cancer (CC) remains a malignancy that disturbs the cells of the cervix, most commonly in the transformation zone where glandular cells of the end cervix transition to squamous cells of the exocervix (*Stumbaret al., 2019*). Persistent infection by human papillomavirus (HPV) is very critical, but not sufficient for the development of cervical cancer (*Volesky, et al., 2019*). Additional factors that lead to occurrence or development include immune suppression, smoking, parity, plus the use of oral contraceptives (*Herrero, 2018*). Infection with serious HPV genotypes is common among sexually active individuals (*Canadian Cancer Society, 2019*). The fourth most communal reason for death from cancer among women is CC. HPV infection of the cervix is the most important risk factor for CC (*Jalil and Karevskiy, 2020*).

Cervical cancer stays a main community health problem that remains to be one of the leading causes of women's genital cancers throughout the world (*Ali et al., 2012*). It is the fourth most common cancer among women globally with an expected 528,000 new cases and 266,000 deaths per year worldwide (*Globocan, 2012*), with the vast majority taking place in developing countries (*Abudukadeer et al., 2015*). Moreover, the death rates for CC are expected to be increased by 25 % in the next decade, even though the fact that HPV is one of the most avoidable cancers (*El Banna et al., 2014*). Studies conducted in Saudi Arabia displayed that 89% of

CC cases were linked to HPV infection, with 78.7% of HPV-positive growths infected with (HPV-16/18). These strains caused cancer to occur earlier by five years than the combined HPV-negative as well as other HPV genotypes (*Alsbeih et al, 2011*).

Cervical carcinoma is a common malignancy among females in developing countries. There are significant associations of CC with illiteracy, poor personal hygiene, living in a rural area, the use of old cloth, early marriage, normal delivery, poor washing of the genitalia after the sexual intercourse, history of sexually transmitted infections (STIs), and genital warts, and deficiency of knowledge about the screening for CC (*Kashyap et al., 2019*).

Although CC is considered one of the avoidable and treatable malignancies, most women in poor countries, including Egypt and Saudi Arabia, have advanced stages that need comprehensive treatment with increased deaths (*Alhamlan et al., 2015*). Every woman should make routine screening by Pap smear test between the age of 31 to 45 years old (*Al Khudairi et al., 2017*). Early screening of CC and HPV vaccination is great challenges for societies and policymakers. So, early screening of CC and HPV vaccination must be stimulated in the community and government ranks. In brief, the HPV vaccine is evidenced to be an important and effective way to prevent CC. Acceptance of HPV vaccination varies between countries, and increasing HPV

vaccine acceptance is a large challenge for the societies and policymakers (*Sopian, et al., 2019*).

The psychological nursing intervention intends to prepare married women with adequate knowledge and skills to perform self-care practices and to have the confidence and motivation to initiate and sustain self-care efforts (*Chan et al., 2014*). Psychological nursing intervention has been broadly used in cancer care to improve psychological and physiological outcomes, thus enhancing patients' quality of life (QOL) (*Lassen et al., 2013*).

Many research studies in different countries show differences in married women's knowledge, belief, and attitude regarding cervical cancer and its prevention. Unlike in developed nations, in developing countries, women have poor knowledge about cervical cancer and its prevention (*Al Meer et al, 2011 and Sancho et al, 2013*). A significant direct relationship was also found between women's knowledge and attitude towards cervical cancer and its prevention practices, and subsequent utilization of the Pap smear tests and HPV vaccination in some studies (*Al-Naggar, 2012 and Mirzaei et al, 2014*).

Significance of the study

Egyptian women population reaches 30.55 million ages 15 years and older who have the hazard of getting CC. Up-to-date approximations show that eight hundred and sixty-six women are diagnosed with CC and three hundred and seventy-three die from the disease annually. Cervical cancer is ordered as the thirteenth utmost common

cancer amongst Egyptian women and the tenth utmost common cancer among women aged between fifteen and forty-four years. Even though a rigorous screening program for CC is well established through the HPV vaccine and the accessibility of the Pap smear test among different health segments, utmost women today at advanced stages need wide-ranging chemo-radiation therapy. Seeing the importance of the Pap smear test in the early detection of CC, protective interventions with HPV vaccination look to be important. It is obligatory to detect awareness, beliefs, and health-protective practices among married women about the screening of cervical cancer (*Mohamed and Hossein, 2018*).

The screening methods are underutilized in developing countries than in developed countries. It has been estimated that only 5% of married women in developing countries are screened by Pap smear compared to 40-50% in developed countries. Inadequate screening in developing countries may be due to a number of factors like poor educational background, and poor knowledge regarding the availability and benefits of the screening by Pap smear tests. This is further influenced by the affordability of screening tools by the individual and socio-cultural barriers (*International Network for Cancer Treatment and Research, 2017*).

The rural population, due to the traditional practices such as frequent early marriage, less education, and insufficient health awareness requires more training for cervical cancer screening, especially for married women

(Elamurugan *et al.*, 2016). It is very important to create awareness among the communities through the educational programs on early cancer prevention, preventable risk factors, benefits of early diagnosis, and the availability of screening facilities and vaccination. In developed countries, CC screening programs have reduced the incidence of invasive lesions by up to 80% (Abudukadeer *et al.*, 2015). Increasing awareness can positively influence married women's knowledge beliefs, attitudes, and preventive practices of CC. This study was taken up with the objective to study the effectiveness of the psychological nursing intervention on married women's beliefs, attitudes, and preventive practices of CC.

Aim of the study

To assess the effectiveness of the psychological nursing intervention on married women's beliefs, attitudes, and preventive practices of cervical cancer.

Research Hypotheses

Married women who will receive the psychological nursing intervention will have higher mean scores of beliefs and attitudes of CC after the intervention than those who don't.

Married women who will receive the psychological nursing intervention will practice CC preventive measures in a positive way after the intervention than those who don't.

Methods

1-Research Design:

Quasi-experimental design (pre-posttest) has been used.

2. Research Setting:

The outpatient clinic at the Obstetrics and Gynecology Department at Menoufia University and Teaching Hospital and the Family Planning Unit in Shebin Al-Kom Teaching Hospital. Menoufia Governorate , Egypt.

3. Sampling:

A convenient sample of 200 women was divided randomly into the study group and control group; every group comprised 100 women selected from previous setting.

The researcher collected the data from the beginning of January to the end of April, 2022.

Inclusion criteria

(1) Married ladies, (2) age of 18 years or older, (3) not to be diagnosed with gynecological cancer, and (4) freely agreed to participate.

Exclusion criteria

(1) Illiterate women (as they can't read the educational booklet or fill the needed assessment tools), (2) were diagnosed with gynecological cancer, and (3) refused participation in the study.

4. Instruments

After a comprehensive literature review, a standardized self-administered questionnaire was deliberated and provided to participants to fill. The questionnaire provided clear instructions of a brief picture of the reasons behind the study. Each participant freely participated and gave an informed oral consent. The questionnaire was designed to not only inculcate knowledge of CC preventive measures but also to evaluate the beliefs, attitude, practices, barriers, and acceptability of married women towards the

vaccine and pap smear test. It was divided into three main parts:

(1) Self-Administered Questionnaire: Was developed by the researchers to collect data about women's socio-demographic characteristics. As: age, marital status (age at marriage and years of marriage), level of education, occupation.

(2) Knowledge and beliefs assessment: Was developed by the researchers after a broad literature review. It included twenty multiple-choice questions regarding participants' knowledge and beliefs about cervical tumors and their screening and Human Papillomavirus (HPV) vaccination.

Scoring System:

Responses obtained from the participants concerning knowledge were scored and calculated. Their answers were evaluated using a key answer model sheet arranged by the researchers. Each question was given a 0-1-2 grade. Where, (2) correct and complete answers, (1) incomplete answers and (zero) for incorrect and unknown. The total score for knowledge was 37 grades. According to women's response to knowledge and beliefs questions, answers above 67% considered good knowledge, 67-33% considered satisfactory knowledge, and less than 33% considered poor knowledge (*Mohamed& Hossein, 2018*).

(3) Knowledge and beliefs about the importance of pap smear test and HPV vaccination:

It consisted of five statements that were assessed by the 5-item Likert scale: (1 strongly

disagrees, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree). The score ranged from 1 to 25. The total score of each element was calculated for all subjects so as to assess the effectiveness of psychological nursing intervention training on the women's beliefs after the intervention. The total score was 25 divided into two classifications. Grades from 15 to 25 considered positive beliefs while grades (<15) considered negative beliefs (*Mohamed& Hossein, 2018*).

(4) Behaviors, attitudes, practices, and barriers of pap smear test and HPV vaccination:

It consisted of (8) multiple-choice questions. These questions reflected the beliefs, attitudes, practices, and barriers regarding Pap smear test and HPV vaccination: Question (1 to 5) reflects the beliefs ,behaviors, attitudes, and practices of Pap smear test examination and HPV vaccination among women. Question (6) asks about the duration of the last examination with a Pap smear test. Question (7) asks about the barriers of Pap smear test examination among married women. Question (8) examines the barriers to take HPV vaccination (*Mohamed& Hossein, 2018*).

Validity and Reliability:

Data collection tools were reviewed by a jury of experts in the fields of community health nursing, obstetrics nursing and psychiatric nursing to test face and content validity. All of them were asked to examine tools for content coverage, language, clarity, format, and general appearance. Adjustments were made according to the jury's judgment on the sentence's clarity and

appropriateness of content such as "rephrasing and canceling for five questions" were done. Reliability analysis was done to investigate the consistency of internal instruments, used in the study; Cronbach's alpha coefficients were calculated for examining the measurement reliability with multipoint items ($r=0.92$).

Pilot study:

A pilot study was conducted on 10% of studied women (twenty married women) taken from the same setting to check the test feasibility, applicability, and understandability of the instruments, in order to detect any barriers to their application, and also to determine the time required for completion of the questionnaire. This pilot sample was not included in the actual study sample.

Ethical Consideration:

Permission to conduct the study was requested and obtained from the authoritative committee personnel. Informed oral consent was obtained from married women who voluntarily agreed to participate in the study; following a thorough explanation of the aim of the study, and data was confidential and used mainly for the purpose of the scientific research.

Procedure:

Official permission was attained from the administrator of each study setting (the university and teaching hospitals) after obtaining an official letter from the Dean of the Faculty of Nursing Menoufia University and Vice Dean for the postgraduates' studies and research clarifying the

purposes of the study and data collection methods. The intervention was done through three consecutive phases; pre-intervention phase, intervention phase, and Post- Intervention Follow-up Phase.

(1) Pre-Intervention Phase:

After introducing themselves the researchers concisely explained the aim of the study to the participants. Each meeting took around 10-15 minutes. All participants were informed about their freedom to participate voluntarily. After obtaining the oral acceptance of participants to participate in the study, researchers gave them an overview and explanation of the assessment sheet question. Each woman was given the self-administered questionnaire and assessment Sheet for knowledge, beliefs, attitudes, behaviors, and barriers to preventive measures of cervical cancer (pre-test) for both the study and control groups. Also, the necessary clarifications were done according to women's questions.

(2) Intervention Phase:

The psychological nursing intervention was applied to the study group, while the control group received the routine care. The intervention groups met for twelve sessions' consecutive weekly sessions that lasted approximately 2 hrs. This psychological nursing intervention has a set of precise goals for each of the twelve sessions. This used to be carried out through several teaching strategies such as brainstorming, lecture, discussion, demonstration, data show, video, and pictures have been used as media and the

educational booklet was given to each participant. At the end of every session summary, feedback and further clarification were performed for vague items.

The sessions for the psychological nursing intervention:

Session 1: Concerned with open discussion for identification, group integration, explanation of the purpose, and timetable permitted for guidance.

Session 2: Focused on information about cervical cancer, its prevalence, causes, predisposing factors, and signs and symptoms of cervical cancer according to women's educational level.

Session 3: Emphasized on open discussion about women's beliefs, attitudes, and awareness about Pap smear tests and cervical cancer.

Session 4: Highlighted a discussion about cultural constraints/beliefs about cervical cancer and preventive practices of cervical cancer.

Session 5: Concerned with discussion about perceived emotional barriers to screening tests for cervical cancer (fear, embarrassment, and anticipated shame)

Session 6: Targeted on the importance of emotional expressivity and encouraged the expression of feelings, perceptions, and fears regarding cervical cancer screening tests and preventive methods.

Session 7: Concentrated on application of progressive relaxation technique, breathing exercises and meditation and body scanning steps and showing photos that illustrate how to practice these techniques.

Session 8: Focused on practicing progressive relaxation techniques, breathing exercises, and meditation to reduce emotional distress about vaccination and screening methods. Then, the researchers ask married women to apply these exercises at home three times per day continuously.

Session 9: Focused on providing a detailed explanation of vaccination, preventive practices, and different screening methods.

Session 10: Emphasized a discussion about the challenges confronted in gaining access to cervical cancer screening for rural areas.

Session 11: Discussed real expectations through education & guidance and the effective strategies to replace a negative thought with a positive one.

Session 12: Concerned with providing information about cost of the tests, preparations for this test, where and how to access the test to decrease the perceived barriers and increase the perceived benefits of the Pap smear test and HPV vaccination. Then the researchers appreciate all subjects for their presence and for completing the sessions.

(3) Post- Intervention Follow-up Phase:

The post-test was done for both the study and control groups after one month from the intervention to evaluate the effectiveness of the psychological nursing intervention using the same

tools used in the pre-test. As to avoid deprivation of the control group from the research benefits, after ending the intervention, all the contents related to the cervical cancer screening were taught to the women in the control group and educational booklets and videos were given to them.

Statistical Analysis:

Statistical analyses were made using (SPSS version 25). Primarily, the reliability of the used instrument for the present samples was ensured by examining the internal consistency coefficients. Frequencies means and standard deviations were calculated to describe the sample. chi-square test (X^2) was used to compare between pre-test and post-test among participating women. Statistical significance was considered at a P-value <0.05

Descriptive statistics: in which quantitative data is presented in the form of numbers and percentages.

Analytical statistics: used to find out the possible association between studied factors and the targeted disease, the used tests of significance included:- **a) Reliability analysis Cronbach's Alpha:** Used to measure the validity and reliability of the questionnaire which was greater than 95% for the axis called "Importance of pap smear test and HPV vaccine", so we can say that its results can be taken. **B) Kolmogorov-Smirnov & Shapiro-Wilk tests:** were used to determine if the data was normally distributed or not, whereas it was not normally distributed. **C) Chi-Square (X^2) test (nonparametric test):** was used to know if there was an association between two categorical

variables or not, which were not normally distributed.

D) Fisher's Exact test (non-parametric test): also was used to know if there was a relationship between two categorical variables or not but here categorical must be 2×2 just like these variables (total score of pre-knowledge intervention group & occupation) which were not normally distributed.

E) Spearman Rank-correlation coefficient (ρ): was used to measure the strength and direction of the association. Thus their correlation with each other existed or not, which means if one of them changes the other must be changed. **F) Wilcoxon Signed Ranks test (nonparametric test):** was used to compare means between one group once in case pre another post, in other words, determine if there was a difference in means before applying for a program and after applying it. **G) Mann-Whitney test Mann-Whitney test:** was used to compare the means of independent two groups once for the same parameter, in other words, to determine if there was a difference in means between two groups.

Note that:

- If a P-value was higher than the level of significance ($\alpha = 0.05$) considered that the test was statistically non-significant.
- If a P-value was lower than and equal to the level of significance ($\alpha = 0.05$) considered that the test was statistically significant.
- In variables family history of STD & cervical cancer can't compute chi-square test because it had constant responses.

- **M ± SD** this formula is represented the common average and standard deviation between the two groups.
- ** Means correlation is significant at $\alpha = 0.01$ level in which we can say that the test was trusted at 99%.

Results

Our results contained 5 tables and 4 figures to achieve the study aim and hypotheses as the following:

Table (1): This table revealed that more than half of the study and control groups (57 % and 56 %, respectively) were in the age range of 26 to 45 years old. In both groups, there was a highly significant difference in age (P-value = 0.00). In terms of marriage age, 80 % of those in the study and 81 percent of those in the control groups married between the ages of 20 and 25. The age of marriage did not differ significantly between the two groups (P-value = 1). In addition, this table showed that in the study and control groups, 60 % and 59 % of them married within 1-5 years, respectively. In terms of education, the current findings show that 59 % and 57 % of the study and control groups, respectively, have a university degree. More than half of the participants worked in both groups, with 60% in each.

Table (2): This table revealed that there was a highly statistically significant difference between the study group and the control group in terms of the total mean score of knowledge about cervical cancer, papillomavirus, Pap smear, and HPV vaccination, risk factors, symptoms, and

prevention after the intervention compared to before, where (P = 0.000).

Table (3): This table revealed that the total mean scores of practices (cervical cancer Pap smear test, and HPV vaccination) between the study group and the control group were statistically significant after the intervention (P =0.000) compared to before the intervention.

Table (4): This table reveal that (46%) and (47%) of the study group were strongly agreed and agreed, respectively, on the importance of cervical screening with Pap smear test to prevent cervical cancer, with a mean and SD as (4.39 ± 0.62) . In addition, 35% of the study participants agreed that a pap smear test should be performed every 2 or 3 years. In moreover, 41% of the study group agreed that the human papillomavirus vaccine is important in preventing cervical cancer. Moreover, (42% and 42%) of the study group reported that they agreed and strongly agreed that the human papillomavirus vaccine should start at the age of 19 years. As regards to the control group, (70%) of them didn't know about the importance of cervical screening with a Pap smear test. Also, (81%) of them didn't know that the Pap smear test should start at 20 years old and should be done every 2 or 3 years. Moreover, (81%) of the control group didn't know about the importance of the human papillomavirus vaccine in preventing cervical cancer and that it should start at age 19.

Figure (1): This figure illustrated that (17%) of the study group was afraid to perform this test because they thought that it was painful; (14%) reported

that they felt shy to ask for the test; (7% and 7%, respectively) reported that they did not hear about anyone who did it; and they were still young to do such a test. Moreover, the same percentage (5%) of the study group reported that they felt anxious to do this test; they didn't know where it could be done, they had social difficulties, the physician did not request it; and the test is expensive. Additionally (4%) of the study group reported that their husband would not agree and (3%) reported that it is not a necessary test. As regards to the control group, 57% of them have a lack of knowledge regarding Pap smear test. Also, 43% of them reported that they didn't think that they needed it.

Figure (2): This figure revealed that the majority (84%) of the study group were practice cervical cancer prevention in a positive way after the intervention compared with the control group.

Figure (3): This figure showed that less than two thirds (60%) of the study group acquired a good level of knowledge regarding cervical cancer prevention after the intervention compared with the control group.

Figure (4): This figure revealed that more than two thirds (69.9%) of the study group had a significant improvement in their knowledge and belief about Pap smear test after the psychological nursing intervention compared with the control group.

Table (5): This table revealed that there was a highly statistically significant correlation between subjects' knowledge and practice of cervical cancer

and its preventive measure in the study group. Regarding control group, all variables whether knowledge or practice had a highly statistically significant correlation.

Table (1):- Descriptive statistics for the socio-demographic Data

Demographic characteristics	Study No. & %	Control No. & %	P-value
Age / years			
< 20	20	25	0.00 0 Sig.
20 – 25	18	18	
26 – 45	57	56	
> 45	5	1	
Marital Status			
Married	72	77	0.69
Divorced	23	21	4
Widowed	5	2	Not Sig.
Age at Marriage			
< 20	20	19	1
20 – 25	80	81	FE
26 – 30	-	-	Not Sig.
> 30	-	-	
Years of Marriage			
< 1	-	-	
1 – 5	60	59	0.40
6 – 10	20	19	8
> 10	20	22	Not Sig.
Education level			
Illiterate	-	-	0.40
Read & write	3	5	1
Secondary	38	38	Not Sig.
University	59	57	
Occupation			
Work	60	60	0.10 2
Not work	40	40	FE Not Sig.

Statistically Significant at $p \leq 0.05$ FE : Fisher's exact test

Table (2): The mean knowledge score of the study subjects before and after the psychological nursing intervention using Mann-Whitney test

Knowledge Variables	Before intervention			After intervention		
	Study Mean ± SD	Control Mean ± SD	P-value	Study Mean ± SD	Control Mean ± SD	P-value
Cervical cancer	-	-	1	0.91 ± 0.38	-	0.000
Human Papillomavirus	-	-	1	0.84 ± 0.37	-	0.000
Pap smear & HPV vaccination	-	-	1	2.37 ± 0.61	0.11 ± 0.35	0.000
Risk factors	0.40 ± 0.80	0.42 ± 0.82	0.861	1.64 ± 0.77	0.42 ± 0.82	0.000
Symptoms	-	-	1	1.59 ± 0.79	-	0.000
Prevention	0.40 ± 0.80	0.44 ± 0.83	0.729	1.04 ± 0.60	0.45 ± 0.83	0.000
Total	0.80 ± 0.98	0.86 ± 0.99	0.668	8.39 ± 1.76	0.98 ± 1.09	0.000

Statistically Significant at p ≤ 0.05 HPV: Human Papillomavirus

Table (3): The mean practice score of the study sample before and after the intervention using Mann-Whitney test

Practice Variables	Before intervention			After intervention		
	Study Mean ± SD	Control Mean ± SD	P-value	Study Mean ± SD	Control Mean ± SD	P-value
Pap smear test	0.40 ± 0.49	1.05 ± 0.90	0.000	1 ± 1.30	0.42 ± 0.50	0.000
Cervical cancer	0.40 ± 0.49	0.41 ± 0.49	0.886	0.77 ± 0.42	0.42 ± 0.50	0.000
HPV vaccination	0.20 ± 0.40	0.21 ± 0.41	0.861	0.93 ± 0.48	0.34 ± 0.48	0.000
Total	1 ± 0.90	1.05 ± 0.90	0.693	2.7 ± 1.64	1.18 ± 0.96	0.000

Statistically Significant at p ≤ 0.05 HPV: Human Papillomavirus

Table (4): Subjects' knowledge and beliefs towards the Pap smear and human papillomavirus vaccination in both groups analysis by Five Likert scale

Importance		Strongly disagree %	Disagree %	Don't know %	Agree %	Strongly agree %	Mean ± SD	Rank
1. Cervical screening with pap smear test important to prevent cervical cancer.	Study	-	-	7	47	46	4.39 ± 0.62	1
	Control	3	27	70	-	-	2.67 ± 0.53	
2. The Pap test should start 20 years old.	Study	16	25	10	31	18	3.1 ± 1.39	5
	Control	-	19	81	-	-	2.81 ± 0.39	
3. The Pap test should be done every 2 or 3 years.	Study	4	11	16	35	34	3.84 ± 1.13	4
	Control	-	19	81	-	-	2.81 ± 0.39	
4. Human papillomavirus vaccine prevent from cervical cancer.	Study	1	10	13	41	35	3.99 ± 0.99	3
	Control	-	16	81	3	-	2.87 ± 0.42	
5. Human papillomavirus vaccine should start 19 years.	Study	2	4	10	42	42	4.18 ± 0.91	2
	Control	-	19	81	-	-	2.81 ± 0.39	

Figure (1): Subjects' beliefs, attitudes and barriers regarding Pap smear test among the intervention (study) and control group before the intervention

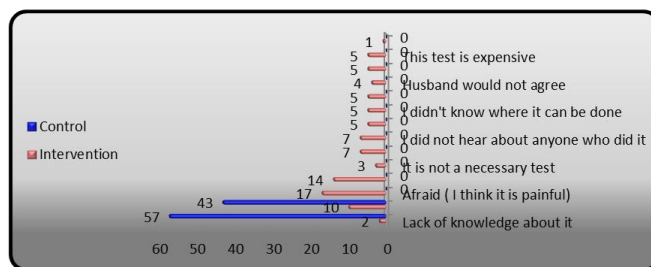


Figure (2): Women's behaviors and practices towards cervical cancer prevention after the intervention

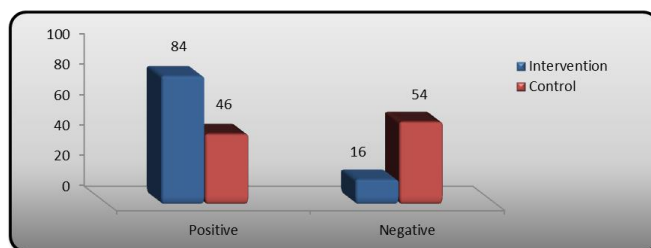


Figure (3): Women's knowledge towards cervical cancer prevention after the intervention

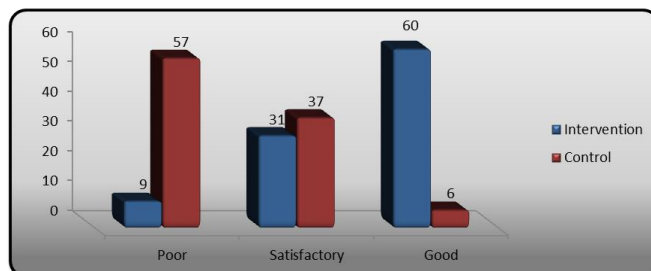


Figure (4): Subjects' knowledge and beliefs concerning Pap-Smear before and after the intervention

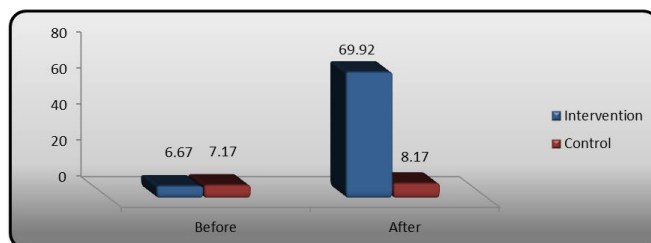


Table (5):- Correlation coefficients of the study group regarding knowledge and practice before and after the intervention

Before & After intervention				
Correlation → Knowledge				
Variables	Study group Person coefficient	P-value	Control group Person coefficient	P-value
Cervical cancer	-	-	-	-
Human Papillomavirus	-	-	-	-
Pap smear test & HPV vaccination	-	-	-	-
Risk factor	0.169	0.092	-	-
Symptoms	-	-	-	-
Prevention	0.80**	0.000	0.993**	0.000
Total	0.168	0.095	0.946**	0.000
Correlation → Practice				
Pap smear test	0.031	0.756	0.877**	0.000
Cervical cancer	0.446**	0.000	0.938**	0.000
HPV vaccination	0.179	0.075	0.718**	0.000
Total	0.116	0.249	0.912**	0.000

Statistically Significant at $p \leq 0.05$ HPV: Human Papillomavirus

Discussion

According to *Mattiuzzi and Lippi (2020)*, cervical cancer is one of the leading causes of cancer death in married women. In the previous 30 years, the number of females affected by cervical cancer has increased from 10% to 40% due to a lack of or inadequate implementation of the prevention program *Song et al., (2017)*. Cervical cancer is the second most common disease in women around the world, and early identification can help to reduce its associated morbidity *Naz et al., (2018)*.

According to the current findings, more than half of the study and control groups (57 % and 56 %, respectively) were in the age range of 26 to 45 years old. This indicated that women who are late in their reproductive period should be aware of cervical cancer prevention methods because its risk is higher. Also, the current finding revealed that there were statistically significant differences in age between the two groups (study and control). This finding was incongruent with *Samami et*

al.,(2021) who found that "the participants' mean age of the study group was 36.42 ± 8.35 and 37.02 ± 10.15 for the control group, with no statistically significant differences between the two groups." Also, *Mohamed and Hussein (2018)* found "there were no statistically significant differences regarding the age of the two groups ($P = 0.911$ "); this discrepancy could be related to sample size discrepancies.

In terms of marriage age, the majority of the studied women were married between the ages of 20 and 25, and there was no significant difference between the study and control groups; this outcome was supported by the study of *Mohamed and Hossein (2018)* which revealed that "there was no significant difference between both groups about the age at marriage". Contradicted to the present finding *El-Sayed et al., (2020)*, reported that "slightly more than half of the studied women were married at age less than 20 years." This discrepancy could be the result of differing sample sizes. In terms of occupation, the existing study found that less than two-thirds of the studied women were working in both groups. This result was reinforced by *El-Sayed et al., (2020)* which found that "slightly more than two-thirds of the studied women were working."

Concerning educational level, current research found that more than half of married women in both groups had a high level of education. In both groups, more than one third had completed secondary school. Contradicted to this result the study of *El-Sayed et al.,(2020)* revealed that "fewer than half of the study participants had secondary school and slightly less than one-fourth

of them read and wrote and had a university level of education." Also, *Mohamed and Hossein (2018)* discovered that "more than two-thirds and slightly above half of the study and control groups respectively, had secondary education." Furthermore, *Samami, et al., (2021)* challenged the current finding, stating that "the majority of the participants in their study were housewives (eighty-five percent in the study group and ninety-three percent in the control group), and there were no statistically significant differences between them according to Fisher test results ($P = 23.29$ "); this contradiction may be due to different sample sizes.

As regards subjects' beliefs, attitudes, and barriers concerning Pap smear test among the study and control groups before the intervention.

The existing study revealed that more than one-eighth of the study group was afraid to perform this test because they thought it was painful and saw it as a painful procedure. This can be linked to a lack of knowledge about cervical cancer early detection, the horror of screening, the fear of the unknown, and misunderstandings about cervical tests, all of which act as obstacles to cervical cancer screening, which is necessary for early detection; this finding was reinforced by the study of *Zagloul et al., (2020)* which found that "more than half of the studied subjects had a negative attitude towards cervical cancer and screening measures before the program implementation and more than one-third of the studied women had deficient knowledge around the importance of Pap smear before the program implementation." Also,

Ebu et al., (2015) discovered that "the majority of their participants had negative belief regarding Pap smear tests as embarrassing and uncomfortable." Moreover, the existing finding was supported by *Ekane, et al., (2015)* who confirmed that "45.3 percent of the participants were disturbed that anything bad would happen as a result of a Pap smear test". Furthermore, *Wright et al., (2014)* revealed that "The first concern identified as a perceived barrier to cervical cancer screening among Hispanic married women was anxiety ". Besides, *Monteiro, et al., (2017)*; revealed that "The fear of bleeding or abortion was identified among pregnant and postpartum women in Fortaleza, Ceará, Northeastern Brazil as one of the reasons opposing cervical cancer screening"

Furthermore, the existing study found that (14% of the study group) are embarrassed to ask for the test; this could be due to embarrassment, fear, and concern about the person gender who performs the test for them, lack of confidentiality, and traditional and religious concerns; this finding was consistent with *Anaman-Torghoret et al., (2017)* who found that lack of knowledge about cervical cancer and the Pap smear test, the absence of warning signs, fear and embarrassment, apprehension about service provider gender, privacy issues, cultural and religious principles, and healthcare system factors were all identified as barriers to screening. Also, *Wong et al., (2018)* revealed that "Pap test beliefs, the worry of a serious illness diagnosis, perceived harm, embarrassment, and poor access to women's health care providers were highlighted as factors for low cervical cancer screening support"

The current study revealed that seven-percent of the study group, said that they had never heard of anybody doing the Pap smear test and that they were still too young to do such tests, indicating a

lack of awareness about cervical cancer screening. Additionally, the same percentage (five-percent of the study group) stated that they are anxious to do this test, that they don't know where it can be done, that they have social difficulties, that their physician did not request it, and that the test is expensive; this could be due to the fact that the importance of the Pap smear test was not fully recognized among married women or an insufficient knowledge about the test. Furthermore, four-percent of the study participants reported that their husband would not agree, and three-percent stated that the test is unnecessary; this could be due to cultural differences. On the other hand, in the control group (fifty-seven percent) reported a lack of knowledge about Pap smear test and (forty-three percent) believed that they didn't need it; this could be due to psychosocial barriers, cultural influences, or a lack of awareness.

Hypothesis 1: Married women who will receive the psychological nursing intervention will have higher mean scores of beliefs and attitudes of CC after the intervention than those who don't.

The Mann–Whitney test revealed a highly statistically significant difference in mean scores of knowledge about cervical cancer, human papillomavirus, Pap smear test, and HPV vaccination, risk factors, symptoms, and prevention between the study and the control groups after psychological nursing intervention (P-value =0.000) compared to before the intervention (P-value =0.668). This could be due to the fact that all of the participants are interested in learning more about cervical cancer, as well as the use of

images to draw attention to educating participants during the intervention; and direct interaction with the participants allows for clarification of anything that is unclear. This result was supported by *Ebu et al., (2019)* who found that "there were statistically significant differences in the pre- and post-test scores for cervical cancer screening knowledge using paired sample t-tests." In the same line, *Mohamed and Hossein (2018)* found that "after the intervention, there was a highly significant improvement in women's knowledge about risk factors, signs and symptoms, diagnosis, and preventive methods of cervical cancer in the intervention group as compared to the control group".

Moreover, the Mann–Whitney test revealed that there were highly statistically significant differences between the two groups in the total mean scores of practice about cervical cancer, Pap smear test, and HPV vaccination after the psychological nursing intervention (P-value =0.000) compared to before intervention (P-value =0.693). This could be attributed to the beneficial effects of psychological nursing intervention, which provided the study group with the critical information and advice that changed their health attitudes and preventative actions, ultimately leading to behavior change. This finding was supported by *Zagloul et al., 2020*, who found that "women's knowledge mean scores about cervical cancer were lacking before the program implementation, but significant improvement was achieved immediately post-program and after three months of program implementation."

Concerning correlation coefficients of the study group regarding knowledge and practice before and after the intervention.

In the study group, there was a highly statistically significant correlation between women's knowledge and practice regarding cervical cancer prevention measures, whereas in the control group, there was a highly statistically significant correlation in all variables, whether knowledge or practice. This finding was consistent with *Zagloul et al., (2020)* who found that "there was a positive highly statistically significant relation between women's total knowledge scores, total practice scores, and attitude scores in both the immediate and 3-months after the program implementation."

As regarding to Women's knowledge and beliefs towards the Pap smear and human papillomavirus vaccination in both groups.

The existing study found that less than half of the study group (46 %, 47 %) strongly agreed and agreed respectively regarding the importance of cervical screening with Pap smear test to prevent cervical cancer with a Mean \pm SD were (4.39 \pm 0.62); this reflected the positive effect of the psychological nursing intervention; this finding was in consistent with the study of *Ebu et al., (2015)* which found that, "Only three (0.8 percent) of the 392 responders had had a Pap smear test". Also, the present study revealed that slightly more than one-third of the study group agreed that the Pap smear test should be performed every 2 or 3 years; this result was in consistent with the

recommendation of *American Cancer Society, (2011)* which stated that "A Pap smear test should be performed every three years as a standard cancer screening approach". In contrast to this result, *Saslow et al. (2012)* and *Mengesha et al., (2020)* revealed that "only about twenty-one percent of their participants stated that they had heard of the Pap smear test, and only 47 (43.9%) of those who had heard of the Pap smear test believed that a seemingly healthy woman should have one at least three times in her life. "This inconsistency could be attributable to a lack of knowledge about cervical cancer screening tests and treatment."

Furthermore, less than half of the study group agreed that the human papillomavirus vaccination is important in preventing cervical cancer; this finding was supported by *Mallam et al., (2019)*; "which conducted a study to analyze medical and paramedical students' knowledge, attitudes, and practices about human papilloma virus vaccination, as well as to establish the rate of the acceptance of human papilloma virus vaccination" ; their study revealed that "more than half of the medical, less than half of the pharmacy, and more than one third of the nursing students were willing to embrace the vaccine, and would recommend the vaccine to their families and friends". Also, *Jalani et al., (2016)*. "They conducted a cross-sectional study in several schools in rural areas of Negeri Sembilan, Malaysia to assess the knowledge, attitude, and practice towards human papillomavirus (HPV) infection, cervical cancer, and HPV vaccination

practice; their findings concluded that a majority of the respondents (86.6 percent) indicated their intention to get HPV vaccine," Furthermore, *Shaikh et al., (2019)* indicated that "The HPV vaccine was deemed safe, effective, and required by the majority of the participants 62.0 % (n=237) expressed interest in a future HPV vaccination." and "95.5 % (n=365) of the unvaccinated population said they would consider getting vaccinated for HPV in the future if their doctors recommended it".

Additionally, the current study revealed that more than two-thirds of those in the control group were unaware of the importance of cervical cancer screening with a Pap smear test. Also, the majority of them were unaware that the Pap smear test should begin at the age of 20 and be repeated every 2 or 3 years and were unaware about the value of the human papillomavirus vaccine in preventing cervical cancer, or that vaccination should begin at the age of 19. This could be due to the fact that none of the study participants (both study and control groups) had a family history of cervical cancer, making the relevance of the Pap smear test unappreciated, or it could be due to a lack of health insurance and limited access to care.

Hypothesis 2: Married women who will receive the psychological nursing intervention will practice CC preventive measures in a positive way after the intervention than those who don't.

The current study revealed that the majority of the study group practiced cervical cancer preventive measures completely in a positive way after receiving the intervention. This could be due

to the positive effects of psychological nursing intervention, as it provided the study group with important information and guidance that influenced their health beliefs and preventive behaviors, resulting in behavior change. This finding was in the same line with *Zagloul et al., (2020)* who revealed that "there was a general increase in the awareness, practice, and attitude of the studied married women concerning cervical cancer with a highly statistically significant difference at P-values 0.001 compared to before the program".

Also, the present study revealed that less than two-thirds of the study group acquired a good level of knowledge about cervical cancer preventive measures after the intervention; This could be related to the intervention's effectiveness in raising married women's awareness and motivation about this topic; this finding was congruent with *(Zagloul et al., (2020)* who found that "the mean scores of women's knowledge in all areas of knowledge regarding cervical cancer were significantly improved immediately post-program and after three months of program implementation." Also, *Ahmed et al., (2018)* revealed that after the program, the majority (84%) of the subjects had a good level of knowledge about cervical cancer preventive-behaviors".

Furthermore, present study concluded that more than two-thirds of the study group had a significant improvement in their knowledge, beliefs, and attitudes about Pap smear test after receiving the psychological nursing intervention; This could be due to a psychological nursing intervention that provides married women with the

essential and scientific knowledge about the importance of the screening techniques, as well as helping them in changing their attitudes, as well as women's willingness to learn more about the preventive measures of CC. This finding was consistent with *Simanullang and Sitopu, (2020)* which revealed that “women's knowledge regarding the ability of pap smears to identify and prevent cervical cancer increased significantly following intervention”. Also, *Zagloul et al., (2020)* found that “a Women's knowledge about the Pap smear test and cervical cancer prevention improved significantly following the test and after three months of the psychological nursing implementation”.

Conclusion

The study concluded that the psychological nursing intervention had a positive effect on married women's beliefs, attitudes, and preventive practices of CC. This study suggests that Pap smear test and HPV vaccination acceptability will be high after cost issues are resolved, as well as raising knowledge and lowering barriers to CC prevention.

Recommendations

According to the study results the following recommendations are suggested:

- 1) Married women should be encouraged to participate actively in the screening program and take the responsibility for their own health.
- 2) More educational intervention is needed to encourage married women to have cancer screenings on a regular basis.

- 3) Health providers should inform women about screening programs during premarital counseling sessions.

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