

Effect of video assisted-teaching on level of knowledge, anxiety and pain among women undergoing colposcopy

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Abstract--Colposcopy is considered a stressful and painful procedure. High anxiety levels stem from a lack of knowledge about the procedure and fear of pain. One of the best ways to relieve anxiety is to provide women with knowledge to improve awareness, cooperation during procedures and compliance. Video-assisted- teaching is considered an effective method to provide accurate practical knowledge, decrease anxiety levels and reduce the pain experience among women undergoing colposcopy. Aim of the study: is to evaluate the effect of video assisted-teaching on the level of knowledge, anxiety and pain among women undergoing colposcopy. Research design: A quasi-experimental research design was utilized. Setting: The study was conducted at the colposcopy outpatient clinics at the Obstetrics and Gynecology outpatient department at El Kaser Aliniy University Hospital, Cairo University, Egypt. Sample: A purposive sample of 70 women was recruited for the study. Tools: Five tools were used for data collection 1) Women structured interviewing questionnaire; 2) Beck Anxiety Inventory (BAI) scale; 3) Numerical Pain Rating Scale (NPRS); 4) Knowledge Assessment Questionnaires and 5) Video assisted-teaching booklet. Results: The mean age of the women was 38.90 ± 11.21 years old. The most frequent indication for colposcopy was abnormal Pap smear, persistent vaginal discharge,

unhealthy cervix, unexplained vaginal bleeding and post-menopausal bleeding. There was a statistically significant difference in the total mean score of knowledge, anxiety and pain among women after receiving video assisted-teaching. Conclusion: The study concluded that video assisted-teaching was found to have a positive effect on the level of knowledge, reducing anxiety and pain among studied women. Recommendations: The result of this study should bolster the value of including video assisted-teaching as an integral part of nurses who have a key role in the management of women undergoing colposcopy and care can make it more modulated.

Keywords--Video Assisted-Teaching, Colposcopy, Knowledge, Anxiety, Pain.

Introduction

Cervical cancer is one of the most common malignancies in women between the ages of 35 and 44 years and is the second most common cancer worldwide (American Society of Clinical Oncology, 2017). It remains one of the serious health issues, causing 266,000 female deaths worldwide (National Cancer Institute Surveillance, 2017; World Health Organization, 2014). The high mortality rate from cervical cancer globally (age-standardized rate among women: 13.3/100 000 in 2020) could be reduced by effective interventions at different stages of life (Sung et al., 2021). Early detection of cancerous lesions with colposcopy-directed cervical biopsy can reduce the mortality rate from cervical cancer (Metz, 2018). Colposcopy is approved as the gold standard procedure for direct evaluation of intrauterine pathology and secondary cervical cancer prevention (Kushwah & Kushwah, 2017). The ability to perform the procedure in an outpatient setting without the use of any anesthesia made this procedure simple, quick, economical, and therefore safer for the women (Novikova, 2017). The procedure is typically creating anxiety. Also, many women believe that the primary care team was given little or insufficient information on the implications of the Pap smear and the purpose of colposcopy, which may intensify their anxiety. Moreover, certain individuals have difficulty understanding all the information provided. High anxiety levels may be one factor affecting treatment adherence, which in turn is associated with decreased pain tolerance (Yang et al., 2018).

Anxiety is a non-specific, uncomfortable emotional state, and, in some cases, dread and impending doom (Galaal et al., 2015). Some women may experience distress which is partly related to women's unsatisfactory explanation of the colposcopy procedure itself, worries about reproduction, sexual anxiety, a fear of having cancer, discomfort during the procedure, embarrassment, hospital waiting time, and a longer interval between referral and the actual colposcopy appointment (Mak et al., 2017). Many women with increased anxiety may carry a higher risk of pain experienced, failure to return for follow-up care, and complications during medical procedures (O'Connor et al., 2016).

As well, clinical, and experimental studies of pain perception have found that increasing state anxiety is often associated with increased pain reports, and higher anxiety also exacerbates pain. This is because there is a biological interconnection between the physiological effects of anxiety and pain perception by activation of an adrenergic response (Bosgraaf et al., 2013). Women who were more likely to experience greater pain were nulliparous, postmenopausal, with a history of dysmenorrhea, or with anxiety (Kola et al., 2012). Although technological advances have dramatically reduced the patient pain and discomfort during colposcopy, the pain remains an essential determinant of the general acceptability of this procedure (Doan & Rebecca, 2016).

Notably, it is very important to reduce levels of anxiety and pain to improve screening efficacy. Various interventions have been tried in women undergoing colposcopy to reduce their levels of anxiety and pain, such as information booklets, brochures, leaflets, informational video colposcopy, and educational counselling (Comba et al., 2020). Video-assisted teaching refers to giving education or information with help of video, is an effective anxiety-reducing intervention, and a time-efficient method to reduce pain and anxiety during the examination (Cancer Council Australia, 2017). Watching video assisted-teaching may confer a higher level of confidence and realistic expectations, as well as decrease patients' preoperative anxiety (Ahmed & Mohamed, 2019). Therefore, practical and comprehensive informational videos given to women may reduce pain and anxiety. In particular, it requires preparatory sensory data and information (Ketelaars et al., 2017).

In general, gynecological nurses are involved in almost every aspect of women's care: informing and counseling women about abnormal results, providing emotional support and education, and managing follow-up (Abdelhakima et al., 2019). Direct contact with the experienced colposcopy nurse who can provide support and counseling may also improve the overall patient satisfaction as well as decrease the anxiety or other negative emotions associated with the colposcopy process to improve clinical outcomes for patients, maintain their cooperation, reduce pain during the procedure, prevent any complications and improve compliance (Comba et al., 2020; Abdelhakima et al., 2019). So, gynaecological nurses and health care providers need to increase the women's level of awareness about the procedure through video assisted-teaching methods and should provide adequate easily understandable information supported by videos to reduce the anxiety and pain among women during the procedure. Therefore, this study aimed to evaluate the effect of video assisted-teaching on the level of knowledge, anxiety, and pain among women undergoing colposcopy.

Significance

Cervical cancer is the third most common gynecological malignancy that can affect women, after breast and endometrial malignancy (Abd-El-Fatah et al., 2020 and Lee, 2017). The American Cancer Society reported that there were 12,340 new cases of cervical cancer with 4,030 deaths in the USA (American Cancer Society, 2020). Cervical cancer is the most common cancer among women with approximately 604000 new cases and 342 000 deaths in 2020 worldwide. About 90% of the new cases and deaths globally in 2020 occurred in low- and middle-income countries (Sung et al., 2021). Data from Egyptian studies provide widely varying estimates of pre-invasive cervical lesions prevalence ranging from 1% to 8% with an age range between 20 and 60 years. Thus, cervical cancer ranks as the second most common cancer among Egyptian women (Comba et al., 2020). Colposcopy is the cornerstone of cervical precancerous lesion evaluation. In conjunction with screening and treatment of precancerous lesions, colposcopy has played a crucial role in reducing the incidence and mortality due to cervical cancer for the past 50 years. Thus, cervical cancer ranks as the second most common cancer 50 years. Colposcopy-directed punch biopsies are associated with anxiety, discomfort, cramping, and pain. During colposcopy, women experiencing pain are anxious, and strategies to reduce the level of pain and anxiety before and during colposcopy are effective (Bruni et al., 2019).

Several interventions have been attempted to reduce this anxiety, pain and improve adherence to follow-up appointments. Some researchers found that information provided before primary colposcopy in the form of leaflets or handouts has not been shown to significantly reduce women's state of anxiety and pain (Das, 2014). Another study concluded that the additional information given before colposcopy also did not affect anxiety (Abdelhakima et al., 2019). One meta-analysis indicated that no influence of music on pain, anxiety, and satisfaction was observed in patients undergoing colposcopy (Bytzer & Lindeberg, 2017). The results of another study concluded that the informational video has been found to help reduce anxiety and improve awareness and satisfaction among upper endoscopy patients (Comba et al., 2020). Several studies, on the other hand, reported no benefit of an information video in improving patients' anxiety prior to colonoscopy (Ahmed & Mohamed, 2019).

From previous studies, we may infer that a large discrepancy exists in the effectiveness of information and video in the reduction of pain and anxiety. Research on the effect of video assisted-teaching on the patient's knowledge and nurses is rare. Previous research may be biased and does not answer the question of whether video assisted-teaching is beneficial for patients and nurses in daily practice. So, the current study focuses on the role of gynaecology nurses in increasing women's level of knowledge about colposcopy during the waiting time before the procedure. Therefore, the current research aimed to evaluate the effect of video assisted-teaching on the level of knowledge, anxiety, and pain among women undergoing colposcopy.

Subjects and Methods

Aim

The aim of the current study is to evaluate the effect of video-assisted teaching on the level of knowledge, anxiety and pain among women undergoing colposcopy.

Research Hypotheses

Women enrolled in the video assisted-teaching method will have a higher level of knowledge regarding colposcopy procedure, lower level of anxiety, and lower level of pain at post-procedure time than before conducting the procedure.

Research Design

Quasi-experimental research design (one group pretest-posttest) was used to evaluate the effectiveness of video-assisted method. Data has been collected at two times, pretest, and posttest in relationship to their level of knowledge about colposcopy, anxiety, and pain using a self-administered questionnaire.

Setting

The present research was performed at the colposcopy outpatient clinics at Obstetrics and Gynecology outpatient department at El Kaser Aliniy University Hospital, Cairo University, Egypt. Obstetrics and Gynecology outpatient clinics provide free healthcare to pregnant women as well as women with gynaecological problems or complains as well as premarital counseling services. The clinics are held by obstetricians and gynecologist as well as obstetric health nurses.

Sample:

A purposeful sample of 70 women was recruited from the colposcopy outpatient clinic at one major hospital in Cairo, Egypt. Throughout two years (starting from early May 2019 to late May 2021). Inclusion criteria were; 1) women at age of 18-49 years, 2) scheduled for the first time for a colposcopy procedure, and 3) women who have mental or cognitive disabilities that may interfere with comprehension of the questions of the study were excluded from the current study.

Tools for data collection:

Five main tools were used for data collection; 1) women's structured interview questionnaire, 2) Beck Anxiety Inventory (BAI) scale, 3) Numerical Pain Rating Scale (NPRS), 4) Knowledge assessment questionnaires and 5) Video-assisted-teaching and booklet.

Tool I- Women structured interview questionnaire: It was developed by the researcher and includes two parts: First part: includes data related to demographic characteristics such as age, residence, educational level, and occupation. Second part: It includes data related to medical and obstetric assessment record related to past medical history, obstetric profiles, types of contraceptives, obstetric history, indications for colposcopy, and hospital waiting time.

Tool II - Beck Anxiety Inventory (BAI) scale: It was adopted from (Beck, Epstein, Brown and Steer, 1988) and used to measure anxiety. It is a self-report measure of anxiety that included 21 items of somatic and cognitive symptoms such as numbness or tingling, feeling hot, wobbliness in the legs, and unable to relax. Internal consistency for the BAI Cronbach's $\alpha=0.92$. Test-retest reliability for the BAI = 0.75. The total score is calculated by finding the sum of all the items. All items are scored on a four-point Likert scale from 0 to 3 with higher scores indicating a greater state of anxiety: 0 = Not at all; 1 = Mildly, but it didn't bother me much; 2 = Moderately – it wasn't pleasant at times, and 3 = Severely- it bothered me a lot. Total scores range from 0 to 63. The interpretation of anxiety scores is as the following: Low anxiety (0 to 21); Moderate anxiety (22 to 35); and High level of anxiety (36 and above) (Beck et al., 1988). The scale in this study showed good internal consistency with Cronbach' Alpha of 0.78.

Tool III- Numerical Pain Rating Scale (NPRS): It was adopted from (Melzack and Katz, 1994) was used to measure pain. The NPRS is a segmented numeric version of the visual analog scale (VAS), a horizontal bar/line in which a respondent selects a whole number (0 no pain at all to 10 worst imaginable pain) that best reflects the intensity of her pain. The interpretation of the pain severity scores is as the following: No pain (0); Mild pain (1-3), Moderate pain (4-6); Severe pain (7- 10). The NPRS has high test-retest reliability, $r = 0.96$ (Hawker et al., 2011). It was used two times to assess pain before and after the intervention. The scale in this study showed high internal consistency with Cronbach' Alpha of 0.89.

Tool IV-Knowledge Assessment Questionnaires: It was developed by the researcher after utilizing the national, and international guidelines and an extensive literature review (Cancer Council Australia, 2017; Ketelaars, et al., 2017; Mak et al., 2017; O'Connor et al., 2016; Galaal et al., 2015). The final scale form is consisted of 16 items covering the key components related to the procedure, were included such as definition, indications, time for the procedure, steps, precautions, preparation, pre-procedural instructions, way of performance, duration, results, complications, and follow-up. The zero score indicates that the woman does not know, the 3 score indicates an incomplete answer and the 6 score indicates a correct complete answer with a total score of 96. The total knowledge scores were categorized into: Unsatisfactory knowledge (less than 50 percent); Satisfactory knowledge (50 to less than 70 percent); and Good knowledge (more than70 percent). The Cronbach's alpha of the scale in this study was 0.79.

Tool V- Video assisted-teaching- booklet.

It was developed by researchers after utilizing national, and international guidelines and an extensive literature review (Cancer Council Australia, 2017; Ketelaars, et al., 2017; Mak et al., 2017; O'Connor et al., 2016; Galaal et al., 2015). It consists of: (a) Images of the hospital, the outpatient clinic with reception, the waiting and examination rooms, and the medical staff, (b) Parts of the uterus, (c) Definition of colposcopy; (d) Indications; and (e) Preparation before, during and after the procedure; f) possible treatment and the course of the consultation.

Validity and Reliability:

Face, content, and construct validity have been carried out through a panel of experts in the field of psychology, maternal-and newborn health nursing and education department. The tools have been constantly reviewed reaching the final agreement with the national and international guidelines. For language appropriateness, a pilot study was conducted on 10 women. No further changes are needed. The reliability was tested to determine the consistency of the measurement tool by administrating the questionnaire to 10 women who used the test-retest. The Cronbach's alpha was for tool BAI, NPRS, and **knowledge assessment questionnaires** (0.78, 0.89, and 0.79 respectively) respectively. The statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1; a higher estimation more than 0.7 indicate acceptably reliability.

Ethical Considerations:

Data has been collected after obtaining the head manager of the output patient clinics at Cairo university hospital. The written consent form has been signed by women after clarification of the aim of the study, significance, that participation is voluntary and that they have the right to withdraw or refuse to participate without any direct or indirect effect on the provided quality of care. Also, women were informed that obtained data was used for research and scientific purposes only and that no one has access to data except the research team. The confidentiality and anonymity of each subject were confirmed through the coding of all data. Data kept in password-protect computer and desk-Process of care. Also, women were informed that obtained data will not be included in any further studies.

Procedure:

Official permission was approved from the head of the colposcopy outpatient clinics at Obstetrics and Gynecology outpatient department at El Kaser Aliniy University Hospital, Cairo University, Egypt. The researcher introduced herself to women who met the inclusion criteria and inform them about the purpose of this research at the colposcopy clinic. Media for teaching as Video assisted-teaching and booklet was developed by the researcher after a comprehensive literature review and revised by the expert in the field, to give information in a simple way that might reduce anxiety and stress for women.

Data obtained in the colposcopy outpatient clinic from 9 AM to 2 PM, two days per week, over a span of two years from early May 2019 to late May 2021. The collection of data was carried out through the following three phases (Interviewing and assessment phase, Implementation phase and Evaluation phase).

Interviewing and assessment phase

Once official permission to carry out the study was granted to proceed with the study; the aim of the study was explained to all women who met the inclusion criteria and those who agreed to participate. The assessment of the demographic characteristics, and medical and obstetric assessment sheet were done using the structured interview questionnaire two hours before colposcopy in the private room. This interview consumed about 5-10 minutes for each woman.

Implementation phase

The researcher approached the study sample from arrival until finished the procedure for at least 3 to 5 hours. The intervention was conducted on an individual basis or varied from 1-3 women in groups. On the other hand, the intervention was performed in the presence of one or two family members to support women emotionally. In order to promote the instructional process, audiovisual aids such as booklet, posters and video-assisted teaching film the view of the video by data show device in a private room in outpatient gynecology clinics was used. This video aimed to provide information that might reduce anxiety and stress for women referred for colposcopy.

As well as; each subject received a copy of booklet and brochure in the Arabic language with many coloured images that help to remind important details during and after the procedure. Video assisted-teaching and booklet were prepared by the researcher after comprehensive literature review and included knowledge regarding colposcopy, to present information in a simple way for subjects. On the day of colposcopy, before endorsing video assisted-teaching, the level of anxiety, pain and knowledge was assessed by the researcher. The researcher offered video assisted-teaching for 10 minutes.

After watching the video-assisted- teaching, group discussion was used as a teaching method where the study sample can discuss any problems, worries and concerns they have with each other and the researcher. The researcher used the data show device in private room in outpatient gynecology clinics. The session lasted for about 30 to 45 minutes. Video assisted-teaching consists of: (a) Images of the hospital, the outpatient clinic with reception, the waiting and examination rooms, and the medical staff, (b) Parts of the uterus, (c) Definition of colposcopy; (d) Indications; and (e) Preparation before, during and after the procedure; f) possible treatment and the course of the consultation.

Evaluation phase

Then, all women completed the questionnaires again immediately after completion of the procedure in the waiting room, regarding the level of anxiety, pain and knowledge.

Statistical Analysis

The collected data were scored, tabulated and analyzed using Statistical Package for the Social Science (IBM-SPSS 25) program. Knowledge, pain, anxiety, demographic, and health related variables were described using the central tendency measures and dispersion measures. Differences and comparisons were examined using t-test, Pearson r, and ANOVA. Paired t-test was used to examine the pre and post-effect of intervention. The significance level was set at $p < 0.05$.

Results

Statistical findings were presented in the following order: The first section is devoted to a description of the socio-demographic characteristics, and medical and obstetric assessment data. The second section presents the result that answered the research hypotheses in relation to variables regarding the level of knowledge, anxiety and pain.

Section I: Socio-demographic characteristics, medical and obstetric assessment data:

Table (1): In relation to demographic characteristics; the study subjects consisted of 70 women; the married women ranged in age from 20 years to 49 years, with a mean age of 38.90 ± 11.21 years old. Moreover, almost half of the women (58.6%) lived in urban areas and (31.4%) of them were graduated from secondary school. Regarding occupation, (67.1%) were housewives.

Table (1): Frequency and percentage distribution of socio-demographic characteristics among women undergoing colposcopy (n = 70)

Variables	No.	%
Age:		
20-	17	24.3
30-	25	35.7
40-	28	40
Mean \pm SD	38.90 ± 11.21	
Residence:		

Rural	29	41.4
Urban	41	58.6
Educational level:		
Can't read and write	7	10
Read and write	14	20
Primary school	17	24.3
Secondary school	22	31.4
University educations	10	14.3
Occupation:		
Work	23	32.9
Housewife	47	67.1

As shown in table (2), women who had a past medical history, anemia and hypertension (45.7% and 26 %) were the most common past medical problems encountered by the women undergoing colposcopy. Added to that, the mean number of pregnancies was (4.51 ± 2.51) . (88.6%) of the study sample had history of the contraceptive used. The most frequent methods were IUD and progestin-only contraceptives (35.7 and 30 %) respectively. Vaginal bleeding and fibroids (20% and 18.6%) were the most common obstetric history. The most frequent indication for colposcopy was Pap smear, persistent vaginal discharge and unhealthy cervix (30%, 21.4% and 20%) respectively. The entire study sample had an experience of hospital waiting time for colposcopy with mean of 3.14 ± 1.28 hrs.

Table 2: Frequency and percentage distribution of medical and obstetric assessment among women undergoing colposcopy (n = 70)

Items	No	%
*Past medical history:		
Anemia.	42	45.7
Hypertension.	24	26.0
Cardiac disease.	17	18.5
Diabetes.	9	9.8
Obstetric profiles:		
The number of pregnancies.	4.51 ± 2.51	
Number of living children.	2.92 ± 1.55	
Types of contraceptives:		
IUD.	25	35.7
Progestin-only contraceptive.	21	30
Combined oral contraceptive.	9	12.9
Male condom.	7	10
No use of contraceptives.	8	11.4
Obstetric history:		
No.	8	11.4
Vaginal bleeding.	14	20
Fibroids.	13	18.6
Recurrent miscarriage.	9	12.9
Sexually transmitted disease.	8	11.4
Infertility.	7	10
Polycystic ovaries.	7	10
Ectopic pregnancy.	4	5.7

Indications for colposcopy:		
Abnormal Pap smear.	21	30
Persistent vaginal discharge.	15	21.4
Unhealthy cervix.	14	20
Unexplained vaginal bleeding.	10	14.3
Post-menopausal bleeding.	10	14.3
Hospital waiting time (hours).	3.14 ± 1.28	

* The total number is not mutually exclusive. i.e., each woman in the study had more than one past medical history

Section II: Knowledge, anxiety and pain level among women undergoing colposcopy

Table (3), it was observed that there is a statistically significant increase in a total mean score of knowledge level before and after intervention (21.64 ± 12.07 and 83.31 ± 7.80) respectively at p-value (0.001). Concerning anxiety level, the current study denoted that there is a statistically significant decrease in total mean score of anxiety level before and after intervention (57.58 ± 8.17 and 19.15 ± 9.88) respectively at a p-value (0.001). On the other hand, there is a statistically significant decrease in total mean score of pain severity before and after intervention (9.30 ± 1.12 and 4.78 ± 1.49) respectively at a p-value (0.001).

Table (3): Comparison of knowledge, anxiety, and pain mean score among women undergoing colposcopy before and after intervention (n = 70)

Variables	Before intervention		After intervention		p-value
	No	%	No	%	
Knowledge level					
Unsatisfactory	62	88.6	6	8.6	
Satisfactory	8	11.4	13	18.6	0.06
Good	0	0.0	51	72.9	
Mean \pm SD	21.64 ± 12.07		83.31 ± 7.80		0.001*
Anxiety level					
Low (0-21)	0	0	51	72.9	
Moderate (22-35)	7	10	11	15.7	0.58
High (36 and above)	63	90	8	11.4	
Mean \pm SD	57.58 ± 8.17		19.15 ± 9.88		0.001*
Pain intensity					
Mild (1-3)	3	4.3	8	11.4	
Moderate (4-7)	3	4.3	59	84.3	
Severe (8-10)	64	91.4	3	4.3	
Mean \pm SD	9.30 ± 1.12		4.78 ± 1.49		0.001*

*Statistically significant p-value ≤ 0.05

Table (4), ANOVA test reveals that there is a highly statistically significant difference among the study sample regarding mean anxiety score and different categories of knowledge level ($p < 0.01$). While no statistically significant association between mean pain score and total knowledge categories.

Table (4): Relationship between the total mean score of knowledge categories and total mean of anxiety level and pain severity after intervention (n=70)

Variables	Total knowledge categories			ANOVA
	Unsatisfactory (6)	Satisfactory (13)	Good (51)	
Anxiety	74 ± 22.27	50 ± 27.43	29.52 ± 13.36	F= 21.73 P = 0.001*
Pain	4.66± 1.63	4.46 ±1.45	4.88 ±1.50	F=0.42 P=0.65

*Statistically significant p-value ≤ 0.05

Table (5): Relationship between pathological results of abnormal Pap smear and biopsy regarding knowledge, anxiety, and pain severity mean score among women undergoing colposcopy (n = 70)

Variables	Colposcopy				Biopsy			
	Normal (n = 49)		Abnormal (n = 21)		Normal (n = 18)		Abnormal (n =3)	
	Before	After	Before	After	Before	After	Before	After
Knowledge	21.93 ± 12.66	82.83 ± 8.05	20.95 ± 10.80	84.42 ± 7.25	21.66 ± 11.29	83.50 ± 7.38	16.66 ± 7.09	90.00 ± 3.00
	P = 0.001*		P = 0.001*		P = 0.001*		P = 0.001*	
	57.55 ± 8.19	18.97 ± 9.09	57.66 ± 8.33	19.57 ± 11.75	57.11 ± 8.90	20.72 ± 12.24	61.00 ± 1.00	12.66 ± 5.03
Anxiety	P = 0.001*		P = 0.001*		P = 0.001*		P = 0.001*	
	9.36 ± 1.16	4.87 ± 1.62	9.14 ± 1.01	4.57 ± 1.12	9.22 ± 1.00	4.55 ± 1.14	8.66 ± 1.15	4.66 ± 1.15
	P = 0.001*		P = 0.001*		P = 0.001*		P = 0.001*	

*Statistically significant p-value ≤ 0.05

Table (5): Concerning the colposcopy, the results indicate that 49 (70%) of the participant were normal, while 21(30%) were abnormal. Furthermore, (95.7%) of the study sample had normal biopsy results, while the remaining (4.3%) were abnormal biopsy result. Paired sample t-test shows that there were statistically significant differences before and after intervention regarding total knowledge score, anxiety level, and pain score among normal and abnormal Pap smear and biopsy result at a p-value (0.001).

Discussion

In recent years, the majority of women who attend a colposcopy consultation have reported considerable anxiety in advance of the appointment. This is often related to uncertainty about the diagnosis and treatment choices (Zheng, 2020). Gynecological nurses should take steps to ease these anxieties while protecting the dignity and privacy of each woman (Restall et al., 2020). The best intervention to reduce anxiety is to provide women with adequate knowledge about the procedure. There is strong evidence that providing women with accurate and well-presented knowledge enhances their colposcopy experience and reduces anxiety (Abdelhakima et al., 2019; Ahmed & Mohamed, 2019; Molaei et al., 2019).

So, this study aimed to evaluate the effect of video assisted-teaching on the level of knowledge, anxiety, and pain among women undergoing colposcopy. The findings of this study confirmed the hypotheses that there was a significant difference in the level of knowledge, the total mean score of anxiety and pain severity among women undergoing colposcopy after video assisted-teaching method as compared to before intervention. The two main parts of the discussion of the results are as follows: (I) Demographic characteristics, medical and obstetric history, and (II) Evaluation of knowledge, anxiety, and pain.

Section I: demographic characteristics, medical and obstetric history:

Seventy married women were recruited over a two-year period in a purposeful research sample; their ages ranged from 20 to 49 years, with a mean age of (38.90 \pm 11.21) years. In Africa, cervical cancer is the most common cancer among women, with a high prevalence in the 15 to 44 age group (Diouf et al., 2020; Woldetsadik et al., 2020). Furthermore, almost half of the women lived in urban and less than one third of them had finished secondary school. Additionally, more than two-thirds of the women were housewives. In my opinion, low educational levels among the women in the current study do not seek the hospital or clinic unless it is absolutely necessary and ignore any symptoms or any pain suffers, resulting in serious medical problems. This finding was consistent with many researchers who agreed that the majority of the study sample were illiterate people who lived in rural areas had a negative impact on their health. In developing countries including Ethiopia, most patients are coming to the health facility after the advanced stage of the disease. Several reasons are noted in different studies; for instance, location, access to the health facility, low academic level, financial capability, and later visits to their doctor (Molaei et al., 2019).

Added to that, all of the women had past medical history, anemia and hypertension were the most common problems encountered by the women undergoing colposcopy. Vaginal bleeding and fibroids were the most common obstetric history. The most frequent indication for colposcopy was abnormal Pap smear, persistent vaginal discharge and unhealthy cervix.

This finding was consistent with many researchers who found that the most common abnormal clinical signs were abnormal vaginal bleeding, whereas atypical squamous cells of undetermined significance remained the most common abnormal Pap smear test result and abnormal appearance of the cervix (Woldetsadik et al., 2020; Molaei et al., 2019).

The entire study sample had experience of hospital waiting time for colposcopy with a mean of 3.14 ± 1.28 hrs. Waiting time for a diagnostic medical procedure is a stressful period that leads to an uncomfortable procedure by increasing anxiety. Many researchers recommended that future studies should aim to investigate the appropriate time of giving information in order to lower pre-procedural anxiety (Diouf et al., 2020 and Abdelhakima et al., 2019). In the current study, all women were informed about the procedure on the day of colposcopy because early education by a nurse significantly reduces the state of anxiety and pain perception.

Section II: Evaluation of knowledge, anxiety and pain

The results of this study revealed that the intervention has a positive impact where anxiety and pain have been reduced post-intervention with a connection to the increased level of knowledge among women undergoing colposcopy. The results infer that women's knowledge about colposcopy procedure did contribute positively and lessened anxiety and pain perception. In other words, the educational package provided has contributed to improve and correcting women's understanding of the procedure and all related issues. One explanation is related to the content of the package that has been tailored to meet all informational needs of women undergoing colposcopy addressing pain and anxiety-related factors. Such findings support what was reported previously that the preparatory sensory and pre-procedural information such as watching a video of the colposcopy procedure is needed to reduce stress and anxiety (Sari et al., 2021 and Lee, 2017). Moreover, providing more information about colposcopy and the cervical cancer screening process may potentially reduce anxiety in these patients which agree with the findings of this study (Zheng, 2020).

Using video has been found to reveal more positive outcomes than using traditional methods such as leaflets which indicate that visual material might have better outcomes than written materials (Mary et al., 2018; Arabul et al., 2013). Although the results in this agree with most findings of previous studies; however, other researchers reported that providing women with video information about colposcopy does not significantly reduce their anxiety (Hilal et al., 2017). The disagreement in the reports could be related to the measurement used and the design of the study.

Regarding pain, we found that pain perception has decreased postoperatively indicating that lack of knowledge regarding procedure might have contributed to higher levels of pain at the baseline. Therefore, using a multimodal approach, such as the video assisted-teaching method, has been found to affect women's perception of pain through correcting information and answering and relieving their worries. Worth to say that pain and anxiety are also liked, which infers that with a decreased level of anxiety and worry, the pain has also decreased. Several reports indicated that anxiety before colposcopy causes pain and discomfort during the procedure (Gaina et al., 2022; Monerris et al., 2020). Although the area of pre-procedure interventions has been adequately studied, the inconstant reports have contributed to the significance of this study where a simple format of video-assisted teaching could improve the treatment outcomes such as decreasing pain and relieving anxiety. For example, Jouya et al., (2018) concluded that no positive effect of music on patients' level of pain, anxiety or satisfaction, while Deo et al. (2020) while Chain et al., (2020) and Deo et al., (2020) recommended that auriculotherapy could be an effective approach to reduce anxiety and pain.

The result of the current study shows that video-assisted teaching has a positive effect on knowledge levels while reducing their pain and anxiety. Health education should be a core component of the nursing care program. Health education for women should be complemented by video tools in order to enhance health status, reduce anxiety and pain, and boost follow-up compliance. It is important to use caution when interpreting the study's findings. The small sample size and use of simply a pre-posttest methodology in this study are two limitations. Longitudinal and follow-up care provided over a longer period of time with multiple points of measurement may produce better results.

Conclusion

The current study's findings reported that the video assisted-teaching was a generally effective teaching strategy in enhancing knowledge level, reducing anxiety; and diminishing the pain experience among women under colposcopy examination. We can therefore draw the conclusion that video assisted-teaching can be incorporated into nursing interventions as a component of patient care.

Recommendations

According to the study findings, the following recommendations were proposed: a) The study can be replicated on large probability samples and at other settings to have a wider generalization of findings; b) A study can be conducted using non-pharmacological interventions such as music, transcutaneous electrical nerve stimulation, uterine stretching, uterine pressure, warming of distension medium, hypnosis, virtual reality, vocal-local to facilitate the dissemination of good clinical practices among obstetrics and midwives nurses; c) The results of this research study can be used by clinical nursing staff to improve the awareness of women, reduce anxiety, pain and increase satisfaction regarding colposcopy procedure and give quality care to the women; and d) Perform blinded randomized clinical trials related to this topic to reach a better conclusion.

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