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Perception and Response among Women Undergoing Transvaginal Ultrasonography

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Abstract: *The present study aimed to assess the perception and response among women undergoing Transvaginal Ultrasonography (TVUS).*
Design: *Descriptive design was used.*
Setting: *This study was carried out at the TVUS center affiliating with the obstetrics and gynecology center in Mansoura University Hospital, Egypt; from February to July 2017.*
Subjects: *145 women selected by purposive sampling selected according to the inclusion and exclusion criteria.*
Tools: *A Structured Interviewing Questionnaire Schedule, Spielberger State -Trait Anxiety Inventory (STAI) and Visual Analog Scale (VAS) For Pain.*
Results: *The mean age of the women was 28.79 years. It was observed pre-the scanning that 85.5% of women didn't know what is TVUS and 84.8% felt anxious regarding the scanning procedure. Also, 85.5% of the women perceived the scanning as an embarrassing event and 53.1% of them found the transvaginal sonography unacceptable. While during the scanning, the results showed that 81.4% among the women were experiencing pain sensation, especially during the insertion and rotation of the probe. Moreover, Most of the women had negative verbal and nonverbal response where 62.1% among them refused to be followed by TVUS and 86.2% covered eyes with hands. Additionally, all the studied women were felt tense and anxious during the examination by TVUS but it varied from mild anxiety (15.2%), moderate (77.2%) and severe (7.6%).*
Conclusion: *The study concluded that the majority of the women was felt anxious regarding having the transvaginal sonography procedure and perceived the scanning as an embarrassing event. Also, most of them were having negative verbal and nonverbal response as well as the feeling pain, tension and anxiety during the scanning.*
Recommendations: *Implement an orientation program by the nurses for the women undergoing transvaginal sonography procedure to minimize the anxiety and embarrassment feeling.*
Keywords*: Perception, Response,Transvaginal Ultrasonography****.***

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I. Introduction

Transvaginal Ultrasonography (TVUS) is an essential examination of the female pelvis. TVUS has been in use for both gynecological and obstetric case management for over two decades **Komolafe et al., (2016).** It is a diagnostic technique and an endo-cavity dynamic scanning modality in which a transducer is inserted into vagina used for the evaluation of the female pelvis and can overcome many of the limitations of traditional trans-abdominal scanning **(Ugwu, 2014).**

Transvaginal Sonography has been provided to unselected women with apparently normal pregnancies, either to assess fetal abnormalities and the risk of preterm delivery. It has many advantages being clearer images of the ovaries in follicular assessment and monitoring, earlier evaluation and management of first trimester pregnancies and its complications and assessment of cervical length. Also, it used to assess cervical changes, especially in the late stages of pregnancy; as well as assess the placenta position and post-menopausal screening for ovarian cancer risks **(Atalabi et al. 2012) & (Mubuuke, 2014).**

There are special preparations should be done for performing TVUS procedure. Pre-scanning, the woman lies in the lithotomy position. Then, the Sonographer distributes KY jelly over an ultrasound transducer before covering it with a sheath. Also, the top of the covered transducer should be lubricated and the transducer is subsequently inserted into the vagina. During scanning, from time to time the transducer can be manipulated in multiple levels to gain images in different views **(Mubuuke, 2014).**

The transvaginal ultrasound examination involves inserting of the lengthy probe into the female's body through the vaginal orifice, thus triggering some responses in the patient for it touches the woman's intimate body parts. A woman may anticipate pain or discomfort towards the procedure. The sonographer and the responsible nurse has to explain the procedure to the concerned patient and any perceived changes while performing the procedure **(Onderi et al. 2015).**

Despite its significance, many women may find the transvaginal sonography procedure invasive, unacceptable and uncomfortable because of physical or psychological pain that may be involved. Although most women often agree to have TVUS and many of them if they have given the choice, they would voluntarily refuse it **(Al Inizi et al. 2008).**

Perception means the ability to understand, see, believe and feel something. The main basis of personal attitude lies in the perceptions and awareness regarding special situation **Ugwu, (2014).** According to **Modica, (2017)** that the acceptance by health care providers and the patients is widespread, but it has many advantages includes greater clinical competence, increased performance, and efficiency as well as reduced costs. The nurse's role in women counseling, education, and management is a vital component of the care of the patient undergoing transvaginal sonography.

Transvaginal sonography may be uncomfortable for most women. It can be physically and psychologically stressful for female patients, mainly in the examination of the pelvic region. Some patients may be anxious about the procedure; some may have feared that it might be a painful procedure. Female patient's perception towards the endo-cavity ultrasound is hinged to the stimulus that invokes the five senses **Onderi et al. (2015).** Moreover, after the woman has perceived TVS ultrasound, she may develop an attitude and response towards the procedure that could be positive or negative based on the patients' perception. Consequently, it is very important to investigate women's perception and response towards the transvaginal ultrasound and its effect on the level of pain and anxiety among the female patients **(Ugwu, 2014).**

Significance of the study:

Despite Trans-vaginal Sonography (TVUS) is an essential examination of the woman's pelvis. It is one of the primary screening modality. Unfortunately, this procedure has received mixed experiences from the women who have undergone it. These experiences may be affected by the cultural and social aspect of invasion of a female patient's private life.

Although TVS is a relatively invasive procedure and potentially embarrassing for the woman, it is increasingly the routine examination for pelvic assessment, both in younger and older females **(Gentry-Maharaj et al. 2013).** It was observed that few studies explored the emotional and psychological aspects among women undergoing transvaginal ultrasonography. Accordingly, the presented study is carried out.

Operational Definition:

Transvaginal Ultrasound: Is an imaging procedure performed to create an image of the female genital tract where the transducer device is inserted directly into the vagina and close to the pelvic structures to produce the ultrasound waves, consequently produce a clearer and less distorted image.

Perception: The process of perceiving and reacting to something, it depends on the function of the nervous system and associated with the person's experience, expectations, feelings, and attention **(Alan & Gary. 2011).**

Aim of the study

This study aimed to assess the perception and response among women undergoing Transvaginal Ultrasonography.

Study Questions:

- What is the women's perception towards transvaginal sonography?
- What is the women's response towards transvaginal sonography?
- What is the effect of transvaginal sonography on the level of women's pain and anxiety?

II. Subjects And Method

Study Design

Descriptive design was used.

Study Setting: The study was conducted at the Tansvaginal Ultrasonography Center affiliated with the gynecological clinic at the obstetrics and gynecology center in Mansoura university hospital, Egypt.

Subjects of the Study:
A purposive sample consisted of 145 female patients who attended the previously mentioned study setting, selected according to the following inclusion and exclusion criteria.

Inclusion criteria:
-Women undergoing transvaginal sonography for the first time.

-Accept to participate in the study.

-Able to read and write.

Exclusion criteria:

- Pregnant women.
- Having a lower reproductive tract infection.
- Having any vaginal bleeding.

Sample size:
Calculating sample size for women's acceptance of examining by TVS, through DSS research.com sample size calculator software, at 5% ∞ error (95.0% significance) and 20.0 β error (80.0% power of the study), assuming the percentage of negative feeling of TVS 74.7% **(Komolafe et al. 2016)** and expected to be 65.0% in our community. The calculated sample size is 132 women and adding 10.0% for better quality of data. So the number of study women was 145 women.

Data collection tools: Data were collected through the following tools:

Tool I: A Structured Interviewing Questionnaire Schedule: It was designed by the researchers after reviewing the related literatures to be filled from each woman. It consisted of three parts:
1st Part: Covers the data related to general characteristics (age, education, occupation and residence).
2nd Part: Consists of six questions to assess the woman's perception regarding transvaginal sonography such as (feeling of anxiety, embarrassment, and the acceptance of TVS), each woman answered with yes or no.
3rd Part: Concerns with woman's response during and after the transvaginal sonography. It consisted of four domains (positive verbal, negative verbal, non-verbal positive and non-verbal negative response), each response was measured by yes or no answer.
Tool II: Spielberger State -Trait Anxiety Inventory (SAI): Developed by Marteau & Bekker (1992)
It is consists of six items used to measure the intensity of anxiety feelings; it is used to indicate how the woman feels right now, at this moment or in specific situations. The four responses for each item were 1="not at all," 2="somewhat," 3="moderately so," and 4="very much so." After reverse coding of anxiety-absent items, and multiply the total score by 20/6 so finally, it can range from 20 to 80. A higher score means higher state anxiety. Its level can be classified into (no anxiety (20.0-35.0), mild anxiety (>35.0-50.0), moderate anxiety (>50.0-65.0) and severe anxiety (>65.0-80.0).
Tool III: Visual Analog Scale (VAS) For Pain: Adopted by Crichton (2001)
The visual analog scale (VAS) is a unidimensional measure of pain intensity in adults. For this scale, women indicate their current level of pain along with a 10-cm line with "no pain" (score of 0) and "pain as bad as it could be" or "worst imaginable pain" (score of 10 scales). It is divided into slight pain (1-2), mild (3-4), moderate (5-6), severe (7-8) and very severe pain (9-10).

Validity of the Tools:
Tools were reviewed by three juries from experts specialized in the obstetrics& gynecological nursing field tested the content validity; According to their comments modification were considered.

Reliability:
According to **Marteau and Bekker (1992)** the reliability of Spielberger State -Trait Anxiety Inventory tool was reliable with a Cronbach's alpha score =0.82 for its six items. While, **Gillian et al. (2011)** stated that visual analogue scale test–retest reliability has been shown to be ($r = 0.94$, $P < 0.001$). So the tools were reliable**.**

Pilot Study:
It was conducted on fifteen women (10% of the sample size) were excluded from the study in February 2017 to test the applicability, relevance of the research tools and the clarity of the designed questionnaire. Then all the required modifications were made.

Ethical Consideration:
The researchers have obtained a written consent from the women who participated in the study. They were reassured about the confidentiality of the data as well as they informed about their rights to withdraw from the study at any time. Tools of data collection didn't entail any harm or touch cultural, religious or ethical issue related to women included in the study.

Method:
-The study was carried out at the transvaginal scanning center affiliated with the gynecological clinic at the obstetrics and gynecology center in Mansoura university hospital, in a period from February to July 2017 after obtaining an official permission from the director of the Hospital.
- The researchers selected the women who were subjected to transvaginal sonography examination according to the inclusion and exclusion criteria.
-The researchers introduced themselves to the women and obtained the written consent of them to be included in the study after clarification the aim of the study.
- To ensure confidentiality, each woman was interviewed separately in the waiting room.
- Then, women were asked to complete the questionnaires before, during and after the examination. The collected data were gathered through three phases:

- **1st phase:** pre-scanning, each woman was interviewed individually at the waiting room to collect her general characteristics data and assess her perception towards transvaginal sonography.
- **2nd phase:** During the scanning, the researchers observed the positive and negative non-verbal response of the women. Also, assess the level of pain and feeling of anxiety among the women during the examination by using the visual analog scale and Spielberger State -Trait Anxiety Inventory.
- **3rd phase:** Post-scanning, each woman had assessed regarding her verbal response towards transvaginal sonography examination.

-Then, the collected data are coded then stored and the results were analyzed.

Statistical Analysis:

Collected data were coded, computed and analyzed by using SPSS version 20.0. Data were presented using descriptive statistics in the form of frequencies & percentages. Quantitative variables were presented as means ± standard deviations.

III. Results

Table (1): Frequency distribution of the study sample according to their general characteristics

Characters	Items	No=145	
		No	%
Age (years)	20-	36	24.8
	25-	45	31.0
	30-	39	26.9
	35+	25	17.2
	Mean ± SD	28.79 ± 5.31	
Occupation	Housewife	67	46.2
	Worker	9	6.2
	Employee	65	44.8
	Student	4	2.8
Education	Primary	7	4.8
	Secondary	29	20.0
	Diplome	70	48.3
	University	39	26.9
Residence	Rural	105	72.4
	Urban	40	27.6

Table (1) showed that the age of the study sample ranges from 20.0 to 40.0 years with mean age (28.79 ± 5.31 years). The most frequent age is from 25.0 to 35.0 years (57.9%). Most of the studied women are housewives (46.2%) and employee (44.8%). Their education differs from primary (4.8%), secondary, diploma (68.3%) and university (26.9%). Most of them are from rural areas (72.4%).

Table (2): Frequency Distribution of the Study Sample According to Their Perception before Examining By TVUS.

Items	Yes	No
	No (%)	No (%)
Know what is TVS	21 (14.5)	124 (85.5)
Feel anxious regarding having the scan	123 (84.8)	22 (15.2)
Feel embarrassed to have this scan	124 (85.5)	21 (14.5)
Find vaginal ultrasonography acceptable	68 (46.9)	77 (53.1)
Accept vaginal scanning in the future if indicated	57 (39.3)	88 (60.7)
Recommend vaginal scanning to friends or family	51 (35.2)	94 (64.8)

Table (2) reveals that most of the studied women did not know what TVS (85.5%), 84.8% felt anxious regarding having the scan and 85.5% perceived the scanning as an embarrassing event. Also, more than half among them find the overall vaginal sonography unacceptable (53.1%). Nevertheless, 39.3% accept vaginal scanning in the future if indicated and only about one third of them recommend vaginal scanning to friends or family (35.2%).

Table (3): Frequency distribution of the Study Sample according to their reported causes of anxiety before the scanning by TVS.

Cause of anxiety	No=123	
	No	%
Scanning procedure	60	48.8
Result of scan	24	16.6
Both	39	26.9

Table (3) shows that 48.8% of women reported that they were anxious due to the scanning procedure, while 16.6% were anxious regarding the expectation of scanning results and 26.9 % were anxious for the both causes together.

Table (4): Frequency distribution of the study sample according to their response during the transvaginal ultrasonography.

Items of Response	Yes	No
	No (%)	No (%)
Positive Verbal Response		
Rewarding TVS experience	56 (38.6)	89 (61.4)
Accepted to be followed by TVS	55 (37.9)	90 (62.1)
Sonographer answer her questions during the scanning	60 (41.4)	85 (58.6)
Sonographer should be female	129 (89.0)	16 (11.0)
Negative Verbal Response		
Refused to be followed by TVS	90 (62.1)	55 (37.9)
Painful insertion and rotation of the probe	121 (83.4)	24 (16.6)
Rotation of the probe accompanied by sexual feeling	53 (36.6)	92 (63.4)
Unsafe exposure to TVS	27 (18.6)	118 (81.4)
Misunderstanding of the procedure and finding	36 (24.8)	109 (75.2)
No pre-scanning preparations	101 (69.7)	44 (30.3)
Nonverbal Positive Response		
Relaxed facial expression	38 (26.2)	107 (73.8)
Happy	23 (15.9)	122 (84.1)
Viewing the scanning with interest	19 (13.1)	126 (86.9)
Cooperative and listening to sonographer instructions	36 (24.8)	109 (75.2)
Nonverbal Negative Response		
Fearful	120 (82.8)	25 (17.2)
Irritable and changing her position	121 (83.4)	24 (16.6)
Closed her thigh during probe insertion.	118 (81.4)	27 (18.6)
Covered eyes with hands	125 (86.2)	20 (13.8)
Apathetic	35 (24.1)	110 (75.9)

Table (4) shows the response of the studied women during TVS. As regards the positive verbal responses it differs from being 89.0% reported that the Sonographer should be female, 62.1% were not accepted to be followed by TVS, and followed by 61.4% did not reward TVS experience. As regards to the negative verbal

response, it differs from being felt painful insertion and rotation of the probe (83.4%), refused to be followed by TVS (62.1%). Also, the table shows the positive nonverbal response where 86.9% did not view the scanning with interest. In relation to the nonverbal negative response, it showed that 86.2% covered eyes with hands, 82.8% felt fearful, 83.4% irritable and changing their position and 81.4% closed their thigh during probe insertion.

Figure (1): Experienced pain/physical discomfort reported by the studied sample during TVUS examination.

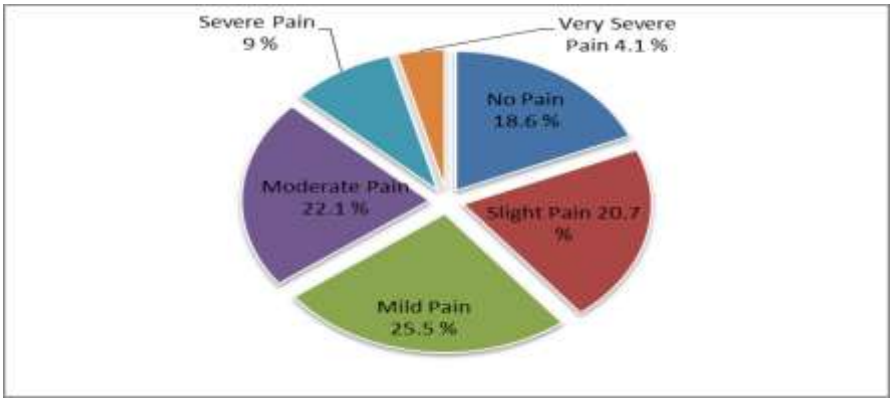

Figure (1) shows that 81.4% of the examined women by TVS reported pain sensation during TVS; out of them (20.7%) experienced slight pain, 25.5% mild pain, 22.1% moderate pain compared to a few of them with severe pain (9.0%) and very severe pain 4.1%.

Table (5): Distribution of the Study Sample according to their anxiety feeling during TVUS.

Items	Not at all		Somewhat		Moderately		Very much	
	No	%	No	%	No	%	No	%
I feel calm	58	40.0	60	41.4	26	17.9	1	0.7
I am tense	6	4.1	36	24.8	80	55.2	23	15.9
I feel upset	8	5.5	21	14.5	93	64.1	23	15.9
I am relaxed	18	12.4	42	29.0	83	57.2	2	1.4
I feel content	44	30.3	49	33.8	43	29.7	9	6.2
I am worried	4	2.8	20	13.8	100	69.0	21	14.5

As regards to the distribution of the study sample according to the items measuring their anxiety during TVS. Table (5) shows that most of the women reported somewhat for feeling calm, relaxed and content by 41.4%, 29.0% and 33.8% respectively. While the reverse was reported moderately as regard feeling tense, upset and worry by 55.2%, 64.1% and 69.0% respectively.

Table (6) and Figure (2): The average score of anxiety scale (STAI) reported by women during TVUS examination and its level.

Anxiety Score (STAI)	Range Ranges in the studied women Mean ± SD	20.0 – 80.0 46.67 – 70.0 57.65 ± 5.57

Figure (2): STAI anxiety scale levels reported by women during TVUS examination.

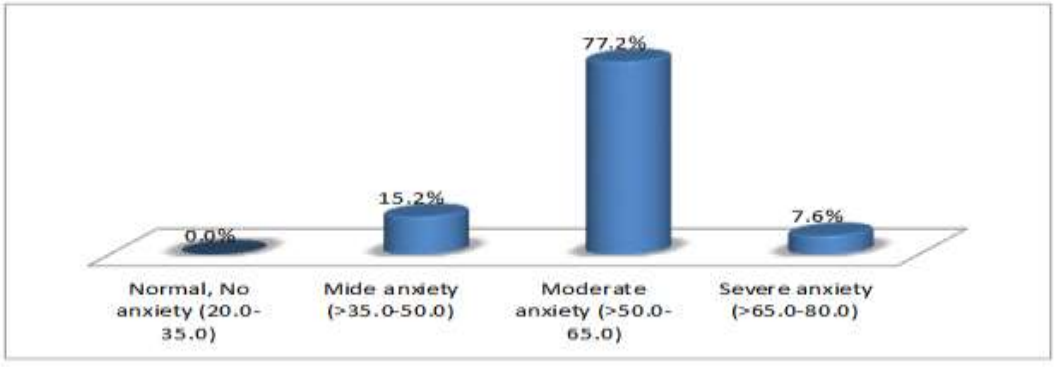

Table (6) shows the average score STAI anxiety scale reported by women during TVS examination and its level. Among the studied women the STAI ranges from 46.67 to 70.0 with mean score 57.65 ± 5.57. All of the studied women evaluated by STAI scale were having anxiety from examination by TVS but it varied from mild anxiety (15.2%), moderate (77.2%) and severe (7.6%) **(Figure 2).**

IV. Discussion

This study aimed to assess the perception and response among women undergoing transvaginal ultrasonography. This aim was answered within the framework of the present study questions; the first study's question was about what is the women's perception towards Transvaginal Ultrasonography? The present study findings revealed that the majority of women felt anxious regarding having the scan and perceived the scanning as an embarrassing event.

Regarding this matter, these results were in agreement with **Komolafe et al. (2016)** who conducted a study to evaluate the Awareness and Acceptance of women for TVUS in Nigeria and stated that three-quarters among women expected TVUS to be painful, expected high level of anxiety when they do TVUS and more than half of them thought TVS will cause more vaginal bleeding. This could be due to their sense of the unknown. Also, the majority of them were from rural area. Likewise, **Onderi et al. (2015**) study the women's perception regarding transvaginal sonography in Kenya and found that the majority of the study participant's felt embarrassed regarding the transvaginal scanning.

Additionally, the study findings revealed that more than the half of them found the overall transvaginal sonography unacceptable. This result could be reported because it is the first time for them to having transvaginal sonography in addition to their limited knowledge and awareness about it as well as they were not prepared well before the scanning.

These results were inconsistent with **Ugwu, (2014)** who stated in the study conducted in Portharcourt to assess women's perception of Transvaginal Sonography, that the majority of the studied women have favorable views of transvaginal sonography where accept to undergo the procedure again if it was recommended. Similarly, the study implemented by **Komolafe et al., (2016)** who found that women who undergone previous TVS were more likely to be willing to accept TVS in the future and recommend it to others.

In like manner, this was the experience of **Atalabi et al. (2012)** stated in their study about the acceptability of Transvaginal ultrasonography and its predictors among African women that women indicated that they would be willing to accept TVS. Similarly, **Basama et al. (2004)** found that women's perception of TVS was favorable, whether they had prior knowledge and previous experience of it or not. Moreover, **Okeji et al. (2017)** reported in the study piloted in Nigeria to assess the attitude and perception of women regarding TVS that more than half of women didn't consider it as an embarrassing and stressful examination and accept to undergo the transvaginal sonography examination in the future.

Furthermore, only about more than half of the women didn't recommend vaginal scanning to friends or family, these findings could be associated with their anxiety and embarrassment feeling that felt before the examination. This result were contradicted with **Bello and Odeku, (2015)** in the study implemented to assess the feasibility and acceptability of tranvaginal sonography to women in Nigeria and Ibadan, where stated that all the women participated in the study after they completed it reiterated that they would be willing to have the procedure again in future. This result reinforces the idea behind the experience where this study conducted for the women that have transvaginal sonography for the first time, so their feelings and perception affected their decision and attitude, beside that this result contradicted our results because the study sample from different culture, religion and traditions.

Concerning to the reported causes of women's anxiety before their examination by TVS, it was observed that nearly half of the women reported that they anxious from the scanning procedure followed by anxiety regarding the expectation of scanning results. This finding could be noted because that those women who ever did any form of transvaginal scanning and did not receive any counseling regarding this type of scanning. Similarly, **MacLean et al. (2004)** reported that there is a high level of anxiety in women who attend the antenatal unit for transvaginal scanning and probably relating to anxiety about the outcome of the scan, rather than the procedure as well as the previous experience of a vaginal scan did not seem to lower the anxiety with 73% of women in both the group who had undergone previous TVS in their study conducted to assess the acceptability of transvaginal ultrasound scanning.

Similarly, **Niazi et al. (2015)** stated that most of the patients undergoing TVS were hesitant about the pain before the scanning procedure, but when they were reassured regarding the scanning and they were moderately cooperative and comfortable.

Concerning the second study's question about what is the women's response towards TVS? As regards to verbal response, the findings of this study revealed that the majority of women preferred that the Sonographer should be female. This result could be related to their Arab culture, religious and traditional aspects. This result was supported by **Niazi et al. (2015)** in the study about the transvaginal sonography in Pakistan and found that a few number of females refused the scan in comparison to another study and the reason was related to that that all the TVS were done by a female radiologist.

As well as, most of them were not rewarding TVS experience and did not accept to be followed by it. In like manner, **Mubuuke, (2014)** supported these findings in the study carried out in Uganda to explore the experiences of women that have undergone TVS and observed from their responses that the TVUS procedure was not acceptable to these women. This result could be because of the health team that didn't make enough effort for preparing the women to make it a positive experience for them.

Also, the present results showed that most of the women had felt pain, especially during insertion and rotation of the probe, this pain sensation may be due to inadequate preparations such as inadequate wipe of the head of the probe by KY gel, positioning of women besides that sometimes in case when the ovary was far from the vaginal fornix, the sonographer had to push the probe to be inserted Furthermore to push the vaginal fornix. This result was in agreement with **Bello& Odeku. (2015)** as they stated that the procedure was abandoned due to severe discomfort during the examination.

Concerning the women's nonverbal response, it was observed that most of the women were felt fear, irritable and changing their position, closed her thigh during probe insertion and covered eyes with hands. All of these responses were evidence that those women were complaining of pain sensation and discomfort during the scanning time.

In view of the above, **Mubuuke, (2014)** expressed agreement with the preceding results and found that the women experienced discomfort tense and anxiety during TVUS scanning, and the common words to express their responses included an embarrassment, fear, guilt, pain, regret, and tension. On the contrary, **Al Inizi et al. (2008)** reported low levels of anxiety and discomfort because the women were reassured and counseled before and during the transvaginal sonography procedure.

The plausible interpretation of this noted difference largely lies in counseling and communicating with the women and creating rapport with them as well. In this study, women didn't receive any prior counseling and explanation about the procedure. Additionally, there was a communication gap between the women and the health team performing the TVUS procedure.

In relation to the third study's question that was about what is the effect of TVS on the women's feeling of anxiety and pain? The results showed that more than three-quarters among the examined women by TVS reported pain sensation. Out of them, the greater percentage reported a mild and moderate level of pain; the pain sensation could be occurred because of insertion and rotation of the Ultrasonography probe and inadequate preparation before and during the examination.

These findings were compatible with the results reported by **Gentry-Maharaj et al. (2013)** in their study about the acceptance of transvaginal sonography in the United Kingdom that point out 23.3% of women reported pain and discomfort during TVS and Only 3.5% of those women reported experiencing moderate and severe pain. As well as, the feeling of embarrassment feeling was reported by women during the scan. Also, **Clement (2003)** found women who have had TVS showed that just a little over a third had mild discomfort. Even though it appears women tend to refuse TVS in terms of discomfort generally.

Furthermore, these results were in agreement with **Onderi et al. (2015)** in the study about evaluation of women's perception during TVS and stated that most of the women anticipated pain and affinity of experiencing physical discomfort during the TVS.

By the same token, it was reported by **Levmore-Tamir et al. (2015)** in the study about the transvaginal sonography during the second trimester of pregnancy, it was demonstrated that thirty percentage of the studied women were more uncomfortable and harmful with TVU as a result of the application of gentle pressure to the uterus and transducer rotation in combination with manual abdominal pressure when performing the vaginal ultrasound.

In relation to the intensity of anxiety among the studied women, the current study presented that most of the women reported moderate feeling of anxiety. According to the study conducted in India by **Shetty et al. (2014)** about awareness of women towards a transvaginal ultrasound during the first trimester of pregnancy, found a greater number of the study participants with no previous experience about TVS had moderate degree of anxiety, as well as they felt embarrassed by the procedure.

Moreover, **Onderi et al. 2015** stated that the patients' feeling towards TVS were varied and more than half of them were worried with a feeling of tense and upset. Furthermore, **Alghamdi et al. (2013)** reported in the study piloted in Philadelphia to assess the perceptions of transvaginal ultrasound by women being evaluated for complications during pregnancy that about half of the women were reported a feeling of anxiety. The reported source of anxiety was the pain, fetal well-being, and embarrassment. Likewise, the majority of them reported no change or more positive perception and anxiety before the scanning compared to after TVS examination.

As a matter of fact, transvaginal ultrasonography is a nursing concern because she has an essential role pre-scanning, during scanning as well as post-scanning. When the nurse competently plays her role this was reflected upon enhancing the female patient satisfaction and minimizing the anxiety and pain feeling.

V. Conclusion

The study concluded that the majority of women was felt anxious regarding having the Transvaginal Sonography procedure, perceived the scanning as an embarrassing event and didn't find it acceptable. Also, most of them were having negative verbal and nonverbal response as well as the feeling of pain, tension and anxiety during the scanning.

VI. Recommendations

In view of the findings arising from the present study, the researchers recommend the following:

- Implement an orientation program by the nurses for the women undergoing Transvaginal Sonography procedure to minimize the anxiety and embarrassment feeling
- Apply counseling programs to prepare the women for TVS scanning and to improve their perception.

VII. Further studies

Study the coping pattern among women undergoing transvaginal sonography.

VIII. Acknowledgment

The authors gratefully acknowledge all women participated in the study and offer a grateful appreciation for the health team members for their invaluable assistance in data collation, all thanks and appreciation to our professors for encouraging us in this study, and refuse to be acknowledged.

IX. Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

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