



Women's Perception of Transvaginal Sonography: A Study at Nnamdi Azikiwe Teaching Hospital, Nnewi, Anambra State

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Abstract

Original Research Article

Background: Transvaginal sonography is a later addition to the diagnostic techniques available for the evaluation of the female pelvis and can overcome many of the limitations of traditional transabdominal scanning. Transvaginal sonography involves the placement of the probe within the vagina. This is uncomfortable for most women especially in this part of the world where ethical issues are now a challenge. This may reduce the practicability of transvaginal sonography. There is also reluctance in adopting this technique as a routine ultrasound investigation in our locality.

Aim: The purpose of this study was to assess women's views of transvaginal sonography; to assess the acceptability to women of transvaginal ultrasound scans; and to investigate any correlation between their educational background and their perception of the procedure.

Matertials and Method: The sample size used in this study was 80 women. A convenience sampling technique was used in the study. The study utilized questionnaire as a source of data collection.

Results: Results showed that a greater percentage of the women studied have favorable views of transvaginal sonography; majority of women accept transvaginal sonography and would undergo the procedure again if it was recommended by their doctor; and that women's perception of transvaginal sonography is not dependent on their educational background.

Conclusion: The findings suggest that sonographers, especially female sonographers should be well trained in the aspect of transvaginal sonography thereby improving the acceptability to most women. Transvaginal awareness in the gynaecology and obstetrics units should be promoted to give women better knowledge of the procedure.

Keyword: Tranvaginal, gynaecology, Radiography, sonographers and radiology.

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1. INTRODUCTION

Study Perception is a belief or opinion held by many people and based on how things seem [1]. It means the way outstanding of an individual. An individual's attitude is a function of his or her everyday experience and understanding towards something. This strengthens the long-standing emphasis on using reason and facts as the basis for voluntary and purposeful change of behaviour in oneself or the other. If we discover the perceptions operating in a community, the next task is to establish their relative effect in the population under study [2].

Transvaginal sonography is an examination that involves the application of an ultrasound probe in the vagina to visualize organs within the pelvic cavity [3]. To date, it's most frequent use has been in the evaluation of ovulation [4] and in oocyte recovery in infertile patients. Also used to evaluate the miscarriage of early pregnancy. Early gestational miscarriage or pregnancy loss is the loss of pregnancy before twenty weeks [5]. [6] and thus, has been the best method for evaluating the female pelvis. Transvaginal sonography is performed with a high frequency transducer placed in the vagina where it is in close anatomic proximity to pelvic structures. The procedure overcomes difficulties in imaging obese patients, those with a large amount of bowel gas, and those with inadequate bladder filling. Transabdominal sonography is a relatively new technique in pelvic imaging and can overcome many of the limitations of traditional transabdominal scanning [7]. The transvaginal transducer accurately assesses early embryos, ectopic pregnancies, and incomplete abortions. It is especially useful in the work-up of the infertile patient and the monitoring of follicle development in these patients [4]. Transvaginal sonography provided more information than transabdominal sonography in most cases. However, the transvaginal technique is limited in some circumstances because of the smaller field of view of transvaginal probe. Transvaginal sonograms may be limited in patients with large myomatous uteri or large

pedunculated fibroids, because it is difficult to image the entire uterus, and in the evaluation of cephalad or laterally displaced ovaries, because the pelvic structures are out of the focal zone of the transducer. In addition, because of the limited view, a global view of the pelvis cannot be obtained as it can be with transabdominal imaging. Occurrence of discomfort during this examination may limit this procedure in some cases. Patients with pelvic inflammatory disease or laterally located ovaries (requiring more manipulation of the transducer) are uncomfortable. Because elderly patients are uncomfortable with this technique, the transvaginal examination is seldom performed in these patients. Transvaginal ultrasound is an invasive investigation and there are a number of reasons for hypothesizing that it may be a difficult procedure for some women. For example, research has shown that a significant minority of women find vaginal examinations distressing [7] and that, for some women, vaginal examinations may trigger post-traumatic stress symptoms [8]. There have been anecdotal reports that some women have found transvaginal scans very distressing [9] and there have been some medico legal cases involving transvaginal scans [10]. This suggests that there is a need for research on women's experiences of the procedure, examining both its acceptability to women and the relative effects of their perceptions.

2. Materials and methods

Research Design

This is a survey prospective study. We used descriptive research design.

Sample Population:

Estimated number of 100 female patients presented for ultrasound scan who were willing to participate in the research at Nnamdi Azikiwe University Teaching Hospital, Nnewi, during the period of the study. Therefore, they formed the

target population.

Minimum Sample Size

The sample size was determined using Yaro Yamane method (as adopted by Ugwuanyi et al., 2017) $n = N / 1 + Ne^2$

Where n = sample size

N = population of study

e = Tolerance error 5%

Therefore $n = 100 / 1 + 100 (0.05)^2$

$100 / 1 + 100(0.0025)$

$100 / 1 + 0.25$

$100 / 1.25$

= 80

Sampling Technique

A convenient sampling method was used to select the respondents where a population of women are selected for inclusion in the sample based on their availability.

Instrument for Data Collection

The study utilized questionnaire as a source of data. The questionnaires were designed to test the research questions formulated in line with the objectives and purpose of study. The questionnaires exhibit good qualities such as: brevity, clarity, and no leading questions. To ensure co-operation, objectivity and sincerity, anonymity of respondents and confidentiality of their reports was guaranteed. The questionnaire which was structured in English Language

contained a total of 27 questions consisting of 26 close ended questions and 1 open ended question. The questionnaire will be divided into 3 sections: section A, B, and C. Section A will contain questions on the demographic data of the respondents, Section B containing questions aimed at accessing the respondent's knowledge of transvaginal sonography, Section C will contain questions aimed at accessing the attitude of the respondent towards transvaginal sonography.

Method of Data Collection:

Questionnaire usage which is a prospective method of data collection was adopted. The questionnaires were subjected to vetting by an experienced person in the field of medical ultrasound (my supervisor) who will scrutinize and make suggestions where necessary, and in some cases recommended the removal of some items which might be irrelevant to the study. 80 questionnaires were produced and because of the distant scope of research some sonographers assisted in the distribution and collection of questionnaires. Some questionnaires were filled and collected immediately while some were returned later.

Methods of Data Analysis

The data was analysed using Statistical Package for Social Sciences (SPSS) version 21.0 and the error limit was set at 0.05. Correlation using Spearman's correlation was used to determine significant relationships (if any) between patient's perceptions of the procedure and some acquired variables.

3. RESULT

Table 1: Statistical summary of respondents showing their mean, median mode and standard deviation of their age, marital status, nationality, ethnicity and educational background

		Age	Marital status	Nationality	Ethnicity	Educational background
N	Valid	100	100	100	100	100
	Missing	0	0	0	0	0
Mean		2.65	2.14	1.03	1.40	3.27
median		3.00	2.00	1.00	1.00	4.00
Mode		3	2	1	1	4
Std. Deviation		.702	.620	.171	.1.005	.993

The table above shows the mean age to be 2.65, median 3.0, mode 3, and SD 0.7. Mean of the marital status mean is 2.14, mode 2, and SD 0.62. Nationality mean is 1.03, median 1, mode 1, and

SD 0.17. Ethnicity mean is 1.4, median 1, and SD 1.0. Educational background , mean 3.2, median 4, mode 4, and SD 0.99.

TABLE 2: The age distribution, marital status, nationality, ethnicity and educational background of respondent

		N	Percent (%)
Age	15 – 25	6	60%
	26 – 35	57	57.0%
	36 – 45	30	30.0%
	Above 46	7	7.0%
Marital status	Single	4	4.0%
	Married	87	87.0%
	Divorced	0	0.0%
	Widowed	9	9.0%
Nationality	Nigerian	97	97.0%

	Others	3	3.0%
Ethnicity	Igbo	86	86.0%
	Hausa	0	0.0%
	Yoruba	2	2.0%
	Others	12	12.0%
Educational Background	Primary	13	13.0%
	Senior Secondary	34	34.0%
	Tertiary	53	53.0%

Table 2 above shows, the age group distribution, marital status, nationality, ethnicity and educational background of respondent. Age group 15 – 25 (n = 6) 6.0%, 26 – 35 (n = 57) 57.0% 36 – 45 (n = 30) 30.0% and Above 46 (n = 7) 7.0%. Marital status, Single (n = 4) 4.0% Married (n = 87) 87.0%, Divorced (n = 0) 0.0%, widowed (n = 9) 9.0%. Nationality Nigerian(n = 97) 97 97.0%, Others (n = 3) 3.0%. Ethnicity,

Igbo (n = 86) 86.0% Hausa (n = 0) 0.0% Yoruba (n = 2) 2.0% and Others (n = 12) 12.0%. Educational Background, Primary (n = 13) 13.0%, Senior Secondary (n = 34) 34.0% and Tertiary (n = 53) 53.0%. From the table, 57% fall under the bracket of 26-35 while 87%, 97%, 86% and 53% were married, Nigerians, Igbos and attended up to tertiary level of education.

Table 3: Correlation between respondent's educational background and their knowledge of what transvaginal scan is

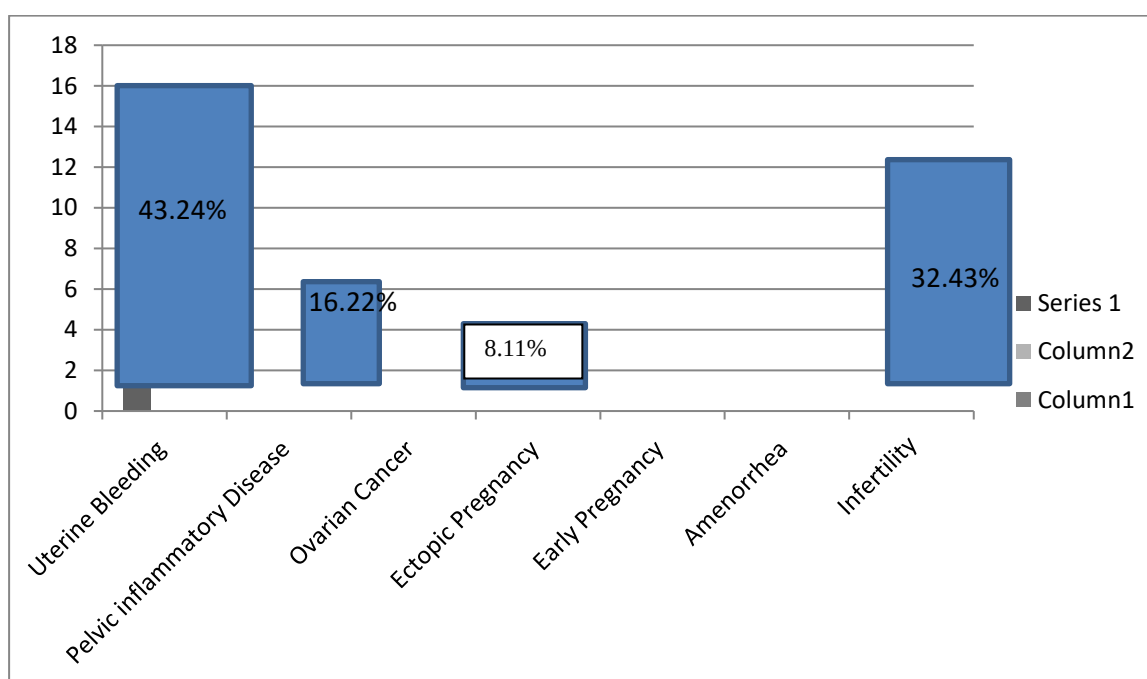
		Educational Background	Have you heard of transvaginal scan before now
Education Background	Pearson	1	.344**
	correlation		.000
	Sig. (2-tailed)		100
	N	100	
	Pearson	.344**	1
Have you heard of transvaginal scan	correlation		

before now	Sig. (2-tailed)	.000
N	100	100

Table 3: Correlation between respondent's educational background and their knowledge of transvaginal scan. Pearson correlation Sig. (2-tailed) N 1 100 .344** .000 100

**Correlation is significant at the 0.01 level (2-tailed).

Fig 1: Showing reasons why respondents are undergoing transvaginal scan



From the graph above uterine bleeding is the major cause why respondents underwent transvaginal scan (43.24%), while ectopic pregnancy is the least cause (8.11) and no respondent underwent transvaginal scan because of ovarian cancer, early pregnancy, amenorrhea, folliculometry and other cause.

From the graph above uterine bleeding is the major cause why respondents underwent Fig 1:

Reasons why the respondents are undergoing transvaginal scan From the graph above uterine bleeding is the major cause why respondents underwent transvaginal scan (43.24%), while ectopic pregnancy is the least cause (8.11). No respondent underwent transvaginal scan because of ovarian cancer, early pregnancy, amenorrhea, folliculometry and other causes.

Table 4: Respondents view on the embarrassment, stress, pain, comfortability and acceptability of TVS.

		N	Percent(%)
Was the scan embarrassing in anyway	Very	5	5.0%
	Considerately	5	5.0%
	A little	10	10.0%
	Not at all	80	80.0%
Was the scan in any way stressful	Very	2	2.0%
	Considerately	4	4.0%
	A little	12	12.0%
	Not at all	82	82.0%
Was the scan painful		9	9.0%
	Very		
	Considerately	10	10.0%
	A little	15	15.0%
	Not at all	66	66.0%
		63	63%
Was the exam comfortable	Very		
	Considerately	3	3%
	A little	4	4%
	Not at all	30	30%
Was the nature of the examination acceptable to you		73	73%
	Yes		
	No	27	27%
	Not Sure	0	0.0%

Table 4: Respondents view on the Embarrassment, stress, pain, comfortability and acceptability of TVS. N Percent(%). Was the scan embarrassing in anyway Considerately (5)

5.0% a little. (10)10.0%, Not at all. (80) 80.0%. Was the scan in any way stressful. Very stressful, (2) 2.0% Considerately stressful (4) 4.0%, a little stressful (12) 12.0% and not at all

stressful (82) 82.0% Was the scan painful, Very painful (9) 9.0%, Considerately painful (10) 10.0%, a little (15) 15.0% and not at all (66) 66.0%. Was the exam comfortable, Very comfortable, (63) 63% Considerately (3) 3%, a little (4) 4% and not at all (30) 30%. Was the

nature of the examination acceptable to you, Yes (73) 73%, no (27) 27%, and not Sure (0) 0.0%. From the table 80%, 82% and 66% saw TVS as not being embarrassing, not stressful and not painful while 63% and 73% were comfortable and accepted the nature of TVS respectively.

Table 5: Showing respondent choice on if traansvaginal scan should be carried out by a male or female sonographer.

				Count	Table N%
Was the examination carried out by a malel or female sonographer	If male, would you	Yes		58	72.5%
	Have preferred a female	No		7	8.75%
	If female, would you	Yes		2	2.5%
	Have preferred a male	No		13	16.25%

Table 5: shows that 72.5% of respondents prefer a female sonographer while 11.25% prefers a male sonographer.

Table 6: Response on whether they would like to undergo transvaginal scan again

		Frequency	Percent
No		18	22.0
Yes		62	78.0
Total		80	100.0

Table 6: Response on whether they would like to undergo transvaginal scan again. (62) 78% of the respondents would like to undergo TVS again if necessary and (18) 22% would not like to undergo TVS again.

Table 7: Showing respondents response on how to improve the practice of transvaginal scan

	N	Percent (N%)
	14	17.5%
A clearer ultrasound machine should be invented	5	6.25%
A more comfortable machine should be used	5	6.25%
It should be conducted by female Radiographers only	7	8.25%
Male Radiographers should be exempted from the scan	9	11.25%
What would you suggest in order to improve the practice of transvaginal sonography		
Much time should not be wasted	4	5%
One probe should not be used for every patient	6	7.5%
Only the Radiographer should be in the room	7	8.75%
Proper patient consent should be gotten	5	6.25%
Students should not be present during the scan	9	11.25%
The exam should be explained	6	7.5%

to the patient properly

The scan should be done male to male and female to female	2	2.5%
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Table 7: Showing respondents response on how to improve the practice of transvaginal scan N Percent (N%) 14 (17.5%) A clearer ultrasound machine should be invented. 5 (6.25%) A more comfortable machine should be used. 5 (6.25%) it should be conducted by female Radiographers only 7 (8.25%) Male Radiographers should be exempted from the scan 9 (11.25%). What would you suggest in order to improve the practice of transvaginal sonography. Much time should not be wasted 4 (5%) One probe should not be used for every patient 6 (7.5%) Only the Radiographer should be in the room 7 (8.75%). Proper patient consent should be gotten 5 (6.25%). Students should not be present during the scan 9 (11.25%). The exam should be explained to the patient properly 6 (7.5%) The scan should be done male to male and female to female 2 (2.5%)

4. DISCUSSION

Findings from this study shows that majority of the respondents (57%) were within the 26-35 years age range. This could be because this is the optimal child bearing age in the society today and therefore the period associated with most gynaecological and obstetric conditions. Also, a major percentage of the respondents were married. This could be because as shown by the study, majority of the women underwent the scan as a result of infertility. This research reveals that a major percentage of the respondents had up to tertiary level of education, while had just primary level of education. This might be as a result of the increased awareness of the need for the education of the girl-child in the society today. The research reveals that the majority of the respondents are Nigerians while of the respondents are from other African countries.

The research also reveals that of the respondents are Igbo's, are Yoruba's and other ethnicities comprises of the remaining 12%, no Hausa participated in the research. This might be because the research work was carried out in the south eastern part of the Nigeria.

Findings from this study showed that 66% of the women did not perceive TVS painful. This is an indication that there is a positive view of TVS among the population studied. Similar findings have been published in previous studies. However; the result gotten in this study is a bit lower. This may be because the tertiary hospitals where the previous studies were carried out are more professionally standardised than the centers where the present study was carried out. Also, majority of the women considered TVS not stressing. This finding is in line with that of [11] This shows that the view of TVS in Nnewi metropolis is favourable and encouraging as TVS can as thus be used in this locality to improve reproductive health. This study reveals that, a good number of the women found TVS embarrassing while few regarded it as being embarrassing. This is in line with previous studies as [12] and [13] where 88.9% and 76% respectively found TVS not embarrassing. The reason for the high percentage in this study may be because TVS is carried out by female sonographers in most of the centers, and as presented earlier, 72.5% of the women would have preferred a female sonographer. 63% of the women perceived TVS as comfortable, this is not in line with the previous studies as there is a marked decrease in the response.

This study showed that 73% of the women found TVS acceptable. This implies that majority found TVS acceptable. However, this is a bit lower than the percentage gotten from some

previous studies. This may be because of the low level of practicability TVS has in this part of the world compared to other parts of the world. However, acceptability might increase as TVS practice increases as women will get more exposed to it. Also, findings in this study showed that 78.4% of the women will agree to undergo TVS again if they had to. This shows a high level of general acceptability. This is also a bit lower than results gotten from previous studies by [14] and [15] where 100% and 99% of the women agreed to undergo TVS again if they had to. This may also be because of the non-routine practice of TVS in this part of the world. However, the level of acceptability of TVS is not surprising considering its advantages and previous studies too.

The correlation of educational background and perception of TVS) showed that there was a direct relationship between the educational background and their knowledge of the exam which in turn affected their perception towards transvaginal scan positively as majority of women would still want to undergo the examination again if prescribed by their doctors. However, the relationship was statistically significant ($P > 0.05$). This implies that women's perception of TVS is dependent on their educational background.

Conclusion:

This study has shown that a major percentage of women undergo TVS as a result of uterine bleeding. This study also reveals that most of the women that claim to know what the scan is all about does not really understand its concept. We found out that a reasonable percentage preferred the scan to be carried out by a female sonographer. The research went further to revealed that majority of the women accepted TVS and will undergo the procedure again if it was recommended by their doctor. This indicates that the reluctance in adopting this technique as a routine ultrasound procedure does not totally come from the women. Finally, we also concluded that the educational background of the women does not significantly affect their perception of the procedure.

Recommendations

1. More sonographers should be trained in the use of the transvaginal probe.
2. More female sonographers should be encouraged to use the transvaginal probe.
3. The use of chaperones during transvaginal sonography should be encouraged.
4. Transvaginal sonography awareness in the gynaecology and obstetrics units should be promoted to give women more knowledge of the procedure.

Declaration.

Ethics approval and consent to participate in accordance with the principles of the Declaration of Helsinki, the study protocol was reviewed and approved by an independent ethics committee of the Faculty of health sciences and Technology, College of Health Sciences Nnamdi Azikiwe University Nigeria. Data were collected and analyzed ensuring the confidentiality and privacy of the participants information.

Consent to participate: Written informed consent was obtained from the subjects before inclusion into the study.

Human rights statements and informed consent: Introduction/informed consent letter was obtained from Radiography department which was issued to all participants before being included in the study.

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Data availability: Available on reasonable



request from the corresponding author,
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