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PERCEPTION AND ACCEPTABILITY OF TRANSVAGINAL ULTRASOUND SCAN (TVS) AMONG WOMEN ATTENDING GYNAECOLOGICAL CLINIC IN UDUTH, SOKOTO

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ABSTRACT: Background: Transvaginal ultrasonographic scan (TVS) remains an essential tool in gynecologic practice, with superior visualisation of the pelvic organs compared with transabdominal ultrasonography. However, privacy concerns, cultural beliefs, and sometimes misconceptions may affect the perception of women and, by extension, their acceptance of the procedure. Therefore, this study examined how women visiting a gynaecological clinic in Sokoto, Northern Nigeria, perceived and accepted TVS.

Methodology: This was a descriptive, cross-sectional study conducted at Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, among female patients seeking

gynaecological care. The respondents' information was collected using a structured questionnaire administered by an interviewer. SPSS version 20 was used to analyse the data.

Results: The study included 404 women, with a mean age of 26 years (SD = 9.6). More than half of 182 (54.3%) expressed a desire for TVS. 108 (57.3%) people thought TVS was safe. 80 people (42.6%) said that TVS has some negative consequences. 188 people (56.1%) acknowledged using TVS. More than 80% (275; 82.1%) stated that they would prefer a female HCW to perform TVS for them, and more than 90% (320; 95.5%) would insist that a chaperone be present during the procedure.

Conclusion: In Sokoto, most women are willing to adopt TVS and prefer female healthcare professionals. Most women believed TVS was safe, but only a modest number actually used it. We urge ongoing health education for women on the benefits and safety of TVS in the treatment of most gynecological disorders.

Keywords: *Transvaginal scan, UDUTH, Sokoto.*

INTRODUCTION

Ultrasonography is one of the most important radiological investigations, having significantly improved diagnostic quality and medical outcomes over the years. The wide acceptance of this technique is due to its safety, availability, and acceptability to practitioners and end users alike.[1,2] Traditional trans-abdominal ultrasound (TAS) has been the method of ultrasonographic evaluation of the pelvis and abdomen. Transvaginal ultrasonography (TVS) was introduced to medical practice almost three decades ago for gynaecological and obstetric evaluation.[3] This relatively invasive procedure was introduced to overcome the pitfall of TAS in the evaluation of the pelvic structures. Transvaginal ultrasonographic evaluation is now the preferred method worldwide for female pelvic ultrasonographic assessment, because pelvic organs are closer to the endocavitary vaginal probe and are better visualised**.** Moreover, the deterioration of image quality by bowel gas, obesity, retroverted uterus, and the mandatory discomforting full bladder requirement, all associated with the transabdominal method, are eliminated.[4] Peculiar advantages of TVS over TAS

include production of clear images of the ovaries in follicular assessment, monitoring and retrieval of follicles in infertility management; detailed evaluation of first trimester pregnancies and its complications; earlier detailed anomaly scan at gestational age of 12–13 weeks compared to 16–18 weeks for TAS; cervical length assessment for risk of pre-term deliveries; assessment of placenta location and post-menopausal screening for ovarian cancer risks.[5,6] The transvaginal or endovaginal transducer enables imaging of the cervix, uterus, ovaries, and adnexal regions with increased detail and resolution compared to trans-abdominal pelvic sonography, as TVS gives better and more detailed information on pelvic organs, including the endometrium.[5,6] Ultrasound was introduced to medical practice in Nigeria about thirty years ago. There are numerous indications for ultrasound as documented in the literature.[7,8] It was mainly the trans-abdominal ultrasonography that was being done then. About a decade later, the use of TVS in patient management began to gain popularity, mainly at specialised private fertility centres and tertiary health institutions, for follicular monitoring and oocyte retrieval. However, in recent times, this investigative modality has been widely used in non-fertility-oriented health facilities. Many studies documented from research done in the developed countries showed the acceptability of TVS among women for a myriad of indications, ranging from 43% to 96%.[9,10] There are few studies in the literature done to look at the acceptability of TVS in Nigeria, and all were within the same Ibadan axis in the South Western part of the Country. Bello et al. 11 reported a 99.7% acceptability rate, while Atalabi et al. 2 reported 84% willingness among women to undergo TVS One major advantage of TVS over TAS is the reduction in the delay in diagnosing some gynaecological emergencies, such as ectopic pregnancy, and in evaluating early pregnancies for congenital anomalies. This will lead to a reduction of complications, which could result in maternal mortality and ultimately promote maternal and child health.

OBJECTIVES OF THE STUDY

The study aims to assess the awareness, perception, and acceptability of TVS among women attending the gynaecological clinic in UDUTH, Sokoto.

MATERIALS AND METHODS

Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria, is a tertiary institution and teaching hospital for Usmanu Danfodiyo University, Sokoto. It serves Sokoto state and neighbouring Kebbi and Zamfara states. The gynaecological clinic is held four times a week. An average of 30-50 patients are seen in each clinic. A cross-sectional descriptive study design was used. A computer-generated random sampling technique was used, and the data collection instrument was a structured questionnaire. 20 random numbers were generated from the number of patients attending each gynaecological clinic. Participants with the generated numbers were contacted, and consent was obtained. A 26-question interviewer-administered questionnaire was administered to 404 women attending the gynaecological clinic at Usmanu Danfodiyo University Teaching Hospital, Sokoto. The data was collected within seven weeks.

The sample size was calculated based on a similar study by Akinmoladun JA and Oluwasola TAO, which reported an above-average acceptability of 60.4% among respondents. The sample size formula for cross-sectional studies/surveys was used.

$$\text{Sample size} = \frac{Z_{1-\alpha/2}^2 \, P \, (1-P)}{d^2}$$

Here

$Z_{1-\alpha/2}$= is a standard normal variate (at 5% type 1 error ($P< 0.05$), it is 1.96, and at 1% type 1 error ($P<0.01$), it is 2,58). As in most studies, P values are considered significant at 0.05 or lower, and 1.96 is used in the formula.

P = expected proportion in population based on previous studies or pilot studies.

d=Absolute error or precision- has to be decided by the researcher. It is most often set to 0.05 in studies.

$$\text{Sample size} = \frac{1.96^2 \times 0.604 \, (1-0.604)}{0.05^2} = 367$$

An attrition rate of 10% was added I.E 10% of 367 = 36.75, approximately 37.

Total sample size was 367 + 37 = 404.

The subjects' consent was obtained verbally, and they were duly informed of the study's purpose. Their confidentiality was maintained. The questionnaire was developed based on a literature search of similar studies on the perception and acceptability of transvaginal ultrasound scan among women attending antenatal and gynaecological clinics. Using a self-administered questionnaire (Appendix 1), we collected information on respondents' sociodemographic characteristics, including age, marital status, parity, education level, occupation, religion, and ethnicity. information about previous ultrasound scans, as well as information on their level of awareness, perception, and acceptability of TVS. The data obtained from the respondents were cleaned, coded, and entered into the computer. Data analysis was carried out using IBM SPSS Statistics version 20 (IBM Corp., Armonk, NY, USA). The chi-square test was used to assess associations between respondents' characteristics and their willingness to undergo TVS. The level of significance was set at $P < 0.05$, corresponding to a 95% confidence interval.

RESULTS

TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

Variable		Frequency	Percentage (%)
Age	15 – 24	113	28.0
	25 – 34	218	54.0
	35 – 44	69	17.1
	45 – 54	4	1.0
Marital status	Married	383	94.8
	Single	17	4.2
	Widow	4	1.0
	Total	404	100.0
Parity	0	112	27.7
	1	69	17.1
	2	77	19.1
	3	50	12.4
	≥4	92	23.8

Religion	Islam	361	89.4
	Christian	43	10.6
	Total	404	100.0
Education			
	Formal education	243	60.1
	Non-formal education	161	39.9
	Total	404	100.0
Occupation			
	Employed	238	58.9
	Unemployed	166	41.1
	Total	404	100.0
Tribe			
	Hausa	318	78.7
	Igbo	17	4.2
	Yoruba	52	12.9
	Others	17	4.2
	Total	404	100.0

Table 1 shows the socio-demographic characteristics of the respondents. The mean age of the women was 26 ± 5.2 years, with the majority (218, 54%) aged 25-34 years. Most of them (383, 94.8%) were married, and 96% had a formal education. A higher proportion, 288 (71.3%), were employed, but 166 (28.7%) were unemployed.

TABLE 2: AWARENESS, PERCEPTION, AND WILLINGNESS TO ACCEPT TRANSVAGINAL ULTRASOUND SCAN (TVS) AMONG THE RESPONDENTS.

Options	**Frequency**	**(%)**
Have you ever heard about an ultrasound scan?		
Yes	400	99.0
No	4	1.0
Have you ever done an ultrasound?		
Yes	331	82.75
No	69	17.25
If yes, what was the reason for the ultrasound?		
Obstetrics	245	74.0
Gynaecological	73	21.7
Others	14	4.3

Have you ever heard about a transvaginal ultrasound (TVS)?		
Yes	335	83.8
No	65	16.3
Have you ever done a transvaginal scan?		
Yes	188	56.1
No	147	43.9
If yes, did the doctor explain the procedure to you?		
Yes	103	54.7
No	85	45.3
Did the sonologist explain the procedure to you?		
Yes	188	100.0
No	0	0.0
Do you think TVS is safe?		
Yes	108	57.4
No	80	42.6
Do you think TVS has an adverse effect?		
Yes	80	42.6
No	108	57.4
Are you comfortable doing TVS if asked?		
Yes	182	54.3
No	153	45.7
Would you need a chaperone?		
Yes	320	95.5
No	15	4.5
Would you recommend TVS to others?		
Yes	202	70.1
No	86	29.9
Was the TVS helpful in aiding your diagnosis and management?		
Yes	267	92.7

No	21	7.3
What is your perception if called to do TVS?		
Positive	251	74.9
Negative	84	25.1
Are you aware of the reason why a transvaginal scan is preferred over a transabdominal scan?		
Yes	162	86.2
No	26	13.8
Who do you prefer to do the TVS for you?		
Male	13	3.9
Female	275	82.1
Any good sinologist	40	11.9
Not sure	7	2.1
Would you agree to do a transvaginal scan?		
Yes	182	54.3
No	153	45.6
If not, what could be the reason?		
I'm not comfortable	29	
It may introduce infection into my vagina	15	
It is painful	20	
I would like to seek my spouse's consent	23	

The respondents' awareness, perception, and willingness to accept TVS are shown in Table 2.

The majority, 400 (99%), had heard of ultrasound; 331 (82.7%) had undergone at least one type of ultrasound; 335 (83.8%) had heard of TVS; and 188 (56.1%) had personal experience. TVS was perceived as safe by 108 (57.4%) of the women, while 42.6% felt that TVS is associated with adverse effects. About 202 (71.1%) of the respondents would recommend TVS to other women; 275 (82.1%) preferred a female HCW to perform TVS for them; and almost all participants, 320 (95.5%), would insist on the presence of a chaperone during the procedure. About 306 respondents (91.3%) expressed willingness to have TVS.

TABLE 3: SOURCES OF INFORMATION ABOUT TRANSVAGINAL ULTRASOUND SCAN

Variable	Yes (%)	No (%)
Antenatal clinic health talk	261(77.9)	74(22.1)
Personal efforts	27(8.1)	308(91.9)
Friends	18(5.4)	317(94.6)
Doctor	208(62.1)	127(37.9)
Media	16(4.8)	319(95.2)
Others	27(8.1)	308(91.9)

The main sources of information included antenatal clinic health talks, doctors, personal findings, and the media.

TABLE 4: SOME CHARACTERISTICS OF THE RESPONDENTS AND THEIR WILLINGNESS TO HAVE TVS.

Variable		**Yes(%)**	**No(%)**	X^2 **and P**
Age	15 – 24	83(90.2)	9(9.8)	
	25 – 34	170(92.4)	14(7.6)	0.987
	35 – 44	50(89.3)	6(10.7)	0.804
	45 – 54	3(100.0)	0(0.0)	
Marital Status				
	Married	289(91.2)	28(8.8)	0.372
	Single	14(93.3)	1(6.7)	0.830
	Widow	3(100.0)	0(0.0)	
Education				
	Formal education	294(91.6)	27(8.4)	0.585
	Non-formal education	12(85.7)	2(14.3)	0.444
Have you ever done a transvaginal scan	Yes	263(91.3)	25(8.7)	0.001
	No	43(91.5)	4(8.5)	0.969

Do you think TVS is safe	Yes	212(93.4)	15(6.6)	5.808
	No	51(83.6)	10(16.4)	0.016
Do you think TVS has adverse effects	Yes	51(83.6)	10(16.4)	5.808
	No	212(93.4)	15(6.6)	0.016
Are you comfortable doing TVS if asked to do	Yes	79(87.8)	11(12.2)	1.947
	No	226(92.6)	18(7.4)	0.163
What is your perception if called to do TVS	Positive	236(94.0)	15(6.0)	9.097
	Negative	70(83.3)	14(16.7)	0.003
Who do you prefer to do the TVS for you	Male	11(84.6)	2(15.4)	3.726
	Female	255(92.7)	20(7.3)	0.293
	Any good sinologist	34(85.0)	6(15.0)	
	Not sure	6(85.7)	1(14.3)	

Table 4 shows the characteristics of the respondents and their willingness to have TVS.

There was no statistically significant association between the socio-demographic characteristics and their willingness to have TVS. There was a statistically significant association between those who perceived TVS as safe ($p < 0.016$) and their willingness to have TVS. There was also a statistically significant association between those who felt TVS did not have adverse effects and their willingness to have TVS ($p < 0.016$).

DISCUSSION

The study reported a mean age of 26 years (SD = 9.6 years). This is not like the findings by Atalabi et al[2] [33.8 (SD=7.9) years] in Ibadan, South Western Nigeria. Most of our participants were married (94.8%). About 60.1% had formal education. This result was like the finding of Komolafe et al. (68%) and higher than that found

by Atalabi et al. (56.6%).[2] While about 100% of the respondents in my study were from a tertiary centre, only about 20% were from a tertiary centre in their study.

The study showed the TVS acceptability rate of 54.3%. Although this falls within the range of 43%-96% documented in the previous literature,[9] this is much lower than the 84% found by Atalabi et al.2 This difference may reflect differences in awareness of TVS in Sokoto. About 82.7% of participants have had one form of ultrasound performed in the past; of these, only 56.1% have had a TVS. This is more than the results obtained from the study by Bennett et al (30%).[10] This uptake can be explained based on acceptability, availability, accessibility, and uses of TVS by women in a developing country like Nigeria when compared to the United States.

In this study, TVS was perceived as safe by 57.4% of the women, while 42.6% felt it was associated with adverse effects. These perceptions may have also contributed to the acceptance rate of 54.3%. This study found that 82.1% of respondents preferred a female health care worker to perform TVS for them. This is almost the same as the 83% reported by Sharma et al.[12] This finding may be due to a lower tendency among women in Nigeria to express an opinion on choice compared with developed countries. In some parts of Nigeria, women are required to seek the consent of their husbands before accessing health care or undergoing certain procedures, especially if the procedures are invasive. However, this differs from the study by Atalabi et al[2] and Basama et al[13] where they found most of the respondents showing indifference to the gender of the TVS operator.

The presence or absence of a chaperone during a minimally invasive procedure has generated significant controversy and medico-legal issues within the health sector. Policymakers advocate the use of chaperones for TVS examinations to reassure patients and legally protect examiners. Although there are no specific guidelines on the use of chaperones in Nigeria, the United Kingdom's professional guidelines on intimate studies recommend their use.[14] In this study, 95.5% said they would insist on the presence of a chaperone during the procedure. This is in contrast to the findings of Gentry-Muharaj et al[4] in the United Kingdom, where only 5% of women insisted on a chaperone's presence. This difference can be explained by the fact that the examiners in their studies were of the same sex as the respondents. In another

study, 89% of women preferred not to have a chaperone when undergoing intimate examinations being performed by the same sex.[15]

In this study, there was no statistically significant association between socio-demographic variables and willingness to undergo TVS. This finding aligns with previously documented reports.[1,16] There was, however, a statistically significant association between previous uptake of TVS and willingness to do a TVS. This is similar to the findings of Komolafe et al.[9] This finding demonstrates that even women who earlier had fears and worries about TVS can accept the procedure when their fears are allayed after the procedure. This group of women can serve as veritable agents of change, educating other women about TVS and the need to embrace the procedure in their community. This will ultimately improve the prevention, early diagnosis, and management of many gynaecological conditions among women, thereby improving the overall health status of the community.

In conclusion, this study revealed that the majority of women in Sokoto, northern Nigeria, are willing to accept TVS and prefer female health care workers. TVS was perceived as safe by the majority of women, though uptake was moderate. However, perceptions of TVS safety and prior uptake were significant factors contributing to willingness to undergo TVS. Therefore, we recommend continuous health education for women on the uses and safety of TVS in the management of most gynaecological conditions. This health promotion activity will go a long way toward improving the health and prolonging the lives of women in Sokoto and across Nigeria.

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