

Awareness & Acceptance of Transvaginal Ultrasound Scanning Among Ever Pregnant Women in Nigeria

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Abstract

Question: Are women in semi-urban city of Nigeria aware of alternative route of ultrasound scanning in early pregnancy aside trans-abdominal route(TAS) and what is the level of acceptance of trans-vaginal ultrasound scanning(TVS) among them?

Summary Answer: Only about one-fifth (16.4%) of women who have been pregnant ever are aware of TVS as an option in pregnancy assessment, among which only 52.6% of them know that TVS is preferred in some pregnancy conditions over TAS. Less than one-third (28.8%) will accept to have TVS done.

Known Already: Several studies in western world have looked at acceptability of TVS among women for various indications with a wide range acceptability of 43% to 96% depending on the content of questionnaire. Very few studies have looked at acceptability in Nigeria. Willingness to have TVS done was quoted by Atalabi et al. as 84%.

Study Design, Size and Duration: This was a cross-sectional study over 8-week period among unselected women who came for routine ante-natal clinic in two tertiary hospitals in Osogbo, Nigeria. The plan was to administer at least 300 questionnaires. Verbal consent was secured after due counselling by research assistant.

Participants, Settings, Method: Pregnant women attending booking clinics of Lautech teaching hospital and Asubiaro general hospital were approached as convenient to participate in the study using self-administered questionnaire though queries about questionnaire were answered on spot by research assistant. Verbal consent after due counsel was accepted. Descriptive and multivariate analysis done using SPSS Statistics version 20 software.

Main results: Total of 347 participants. Response rate was 94.3%. Two out of three participants (68%) had tertiary level of education. Of the participants 83.6% think ultrasound scanning is not harmful. Only about one-fifth (16.4%) of women who have been pregnant ever are aware of TVS as a tool in women assessment. Among those who are aware of TVS over 80% are unsure of conditions when TVS is preferred to TAS. The leading negative expected feeling among participants (74.7%) who responded if they were asked to do TVS was expectation of more pain compared to TAS 41.2% will consider giving consent only after discussing it with husband. Less than one-third (28.8%) of women who have ever been pregnant will accept to have TVS done.

Limitation: Participants are within semi-urban area even though two-third of them has tertiary level of education. The environment of study may be a strong factor in limiting exposure & thus awareness of TVS.

Wider Implications of Findings: There is urgent need to educate the populace including men via various media houses including social media on the safety & advantages of TVS in assessment of women either in pregnancy or outside of pregnancy.

Only about one-fifth (16.4%) of women who have been pregnant ever are aware of TVS as a tool in women assessment, Less than one-third (28.8%) of women who have ever been pregnant will accept to have TVS done.

Keywords: Awareness TVS, Pregnant Women

Introduction

Transvaginal ultrasound scanning (TVS) has been in use for both gynaecological and obstetric cases management for over two decades [1]. Peculiar advantages of TVS over trans abdominal scanning (TAS) being clearer images of the ovaries in follicular assessment, monitoring and retrieval in infertility management; earlier evaluation and

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management of first trimester pregnancies and its complications; earlier detailed anomaly scan at gestational age of 12-13 weeks compared to 16 to 18 weeks of TAS; Cervical length assessment/pre-term risk determination; low lie placentation assessment and post-menopausal screening for ovarian cancer risks [2-5]. TVS has been in use for nearly two decades in private fertility centres in Nigeria and increasingly over last decades in many of the Tertiary medical centres in Nigeria and rather slowly gradually being introduced to private medical centres which do not offer advanced fertility treatments.

Several studies in western world have looked at acceptability of TVS among women for various indications with a wide range acceptability of 43% to 96% depending on the content of questionnaire [5]. Very few studies have looked at acceptability in Nigeria, willingness to have TVS done was quoted by Atalabi et al. as 84%. This indigenous study however was conducted among women who never had TVS done before.

This study aims to determine TVS awareness level amongst ever pregnant women and also to determine acceptability to have repeat TVS among those who had TVS done before compared to those who never had TVS.

Methodology

This was a cross-sectional study over 8-week period among women who came for routine ante-natal clinic in two hospitals, namely Lautech Teaching Hospital (mixed group attendee-middle and low class are found) and Asubiaro General Hospital (low class attendee mainly) all in Osogbo, capital city of Osun State, Nigeria. Sample size was calculated to be 280 using acceptance levels of 84% in a previous study [5,6]. The plan was to administer at least 400 questionnaires. Women were approached and told about objectives of study, its anonymous nature and independence from care received. Verbal consent was accepted. The questionnaires were administered by a research assistant who visited the hospitals on different clinic days during the study periods. Women who had filled same questionnaire in previous clinics were exempted. The questionnaires were pre-tested in a private facility to validate it before administering it in this study. The questionnaires were self administered but participants were free to ask the research assistant questions on aspects they needed clarification. First part of survey contained questions about socio-demographic data of participants. Second aspect of survey asked questions about if participant ever had ultrasound scanning before and indications for such indicated by ticking of appropriate text box. The third aspect asked questions about knowledge of TVS and conditions when it is preferred over TAS by answering yes, no and not sure. They were asked to indicate their reactions if asked to do TVS and what fears they would anticipate if TVS were to be done on them. The final aspect were meant for those who have had both TAS and TVS in the past, they recalled their experiences of two procedures and indicated desire to have repeat TVS in future and to recommend TVS for a friend. Participants who never had TVS were to tick not applicable in the final section.

The data were analysed using SPSS version 20 (SPSS, Chicago, IL, USA). Multiple regression analysis was used to determine the relationship between the dependent variables and independent variables. The χ^2 test was used to analyse the categorical data. A p -value < 0.05 was considered to be statistically significant. Ethical committee approval was obtained from the two hospitals.

The data obtained were coded and entered into SPSS Statistics (SPSS Inc, Chicago, IL) version 20 software. Bivariate analysis was performed using the chi-square test. Using willingness to accept to do TVS and to recommend TVS as dependent variables, logistic regression was done against independent variables like age, ethnic group, religion, occupation, and education, knowledge of TAS/TVS and practice TAS/TVS etc. Level of statistical significance was set at 95% confidence levels.

Results

A total of three hundred and sixty eight pregnant women were approached to partake in this study in the two hospitals. Only 21(5.7%) declined partaking giving response rate of 94.3%. Sociodemographic data is as shown in Table 1. Pregnant women aged 20 to 40 years constitute 87.9% of the participants. The participants were predominantly Yoruba tribe and of Christian faith. About two out of three of the participants (68%) had tertiary level of education. Only eighteen (5.2%) of the participants have not had any form of ultrasound scanning done as at the time of this study ever in their life. While over two-third (87.6%) have had obstetric scanning via TAS route only nineteen (5.5%) of them have had TVS ever. Main indication for ultrasound done was to confirm pregnancy and ensure well being of pregnancy in 70.6% of times among those who have had ultrasound scanning done. Of the participants 83.6% think ultrasound scanning is not harmful. Among those who are aware that TVS exists as a diagnostic tool over 80% are unsure of conditions when TVS is preferred to TAS.

PARAMETERS	FREQUENCY	PERCENTAGE
AGE (YEARS)		
<20	14	4.0
20 - 29	157	45.2
30 - 39	148	42.7
>40	26	7.5
NOT INDICATED	2	0.6
TOTAL	347	100
RELIGION		
ISLAM	105	30.3
CHRISTIANITY	238	68.6
TRADITIONAL	1	0.3
NOT INDIATED	3	0.9
TOTAL	347	100
TRIBE		
YORUBA	314	90.5
HAUSA	8	2.3
IGBO	13	3.7
OTHERS	9	2.6
NOT INDICATED	3	0.9
TOTAL	347	100
LEVEL OF EDUCATION		
PRIMARY	14	4.0
SECONDARY	71	20.5
TERTIARY	236	68
NOT INDICATED	26	7.5
TOTAL	347	100

Table 1: Sociodemographic Data

The leading negative expected feeling among participants who responded if asked to do TVS was expectation of more pain compared to TAS (74.7%) followed closely by expectation of being scared by the thought to have TVS (62.9%). While 15% felt they will ask for time to think about having TVS 41.2% will consider giving consent only after discussing it with husband. Over half (51.5%) of participants are of the opinion that TVS will cause more vaginal bleeding in a woman who was bleeding in pregnancy while a third (32.2%) felt TVS may cause damage to growing fetus.

About a third (34.4%) of those who have had TVS were worried at the time of procedure while only a fifth (16.4%) felt tensed up. Of those who have had TVS 59.5% felt the attitude of the sinologist in requesting permission to do TVS was both friendly and reassuring.

Women with tertiary level (39.3% of times) and primary level (50% of times) of education are more likely to refuse TVS in future compared to those with secondary level of education (18.2% of times). The observed difference is statistically significant ($X^2=36.813$, $p=0.000$). Religion and tribe do not have significant influence on acceptance to do TVS in future compared to age which has direct proportional and significant relationship to acceptance and recommendation of TVS for others in future.

Women who had done any form of ultrasound scanning are likely to be aware of TVS ($X^2=33.677$, $p=0.000$) as diagnostic tool and are more likely to accept to do TVS ($X^2=33.434$, $p=0.000$). Women who have had both TAS and TVS are five times (72.7% versus 13.2%) to be aware of specific reason for performing TVS ($X^2=104.630$, $p=0.000$), would twice (71.4% versus 48%) more likely to accept TVS in future or recommend TVS for women in whom TVS may be indicated ($X^2=54.685$, $p=0.000$, $X^2=4.828$, $p=0.000$) compared to women who only ever had TAS done.

Table 2 show logistic regression outcomes with knowledge of specific indication for TVS being significantly associated with willingness to accept to do TVS and to recommend TVS for other women. Increasing age is significantly associated only with willingness to recommend TVS for others while participants who did not expect to feel afraid if asked to do TVS are significantly more like accept to do TVS in future. Educational level or having ever done ultrasound scanning and having done combined TVS and TAS compared to only TAS were not retained as significantly associated to acceptance of TVS or willingness to recommend TVS in future.

Discussion

The study showed that participants of Christian faith (68.6%) were twice as much as those that practised Islam of (30.3%). This may be a reflection of utilisation of public health facilities rather than demographic distribution. The difference in proportion is much higher than 52.3% versus 47.7% found in a descriptive study of pattern of infertility presentation in Lautech Teaching Hospital [7]. Participants with tertiary level of education constituted 68% in this study. This is higher than 56.6% found by Atalabi et al. in Ibadan, Nigeria [5]. This may mean there may be more alternative health facilities in urban town of Ibadan compared to semi-urban town of Osogbo from which the better educated may choose from in order to avoid bureaucratic bottlenecks of public health facilities. It also means that the educated

Variables	Agree to using TVS OR (95% CI)	Recommend TVS OR (95% CI)
Age		
< 20 yrs	1	1
20 – 29yrs	1.21(0.30, 4.87)	11.77(1.33, 104.48)*
30 – 39 yrs	1.29(0.32, 5.24)	13.67(1.53, 122.13)*
≥ 40 yrs	2.08(0.42, 10.32)	25.75(2.50, 265.58)*
Educational Level		
Primary	1	1
Secondary	2.08(0.62, 6.94)	3.12(0.88, 11.03)
Tertiary	0.74(0.23, 2.33)	1.33(0.40, 4.38)
Others	0.14(0.01, 1.51)	1.22(0.24, 6.14)
Tribe		
Yoruba	1	1
Hausa	1.20(0.22, 6.41)	0.40(0.065, 2.50)
Igbo	1.05(0.25, 4.37)	0.64(0.17, 2.41)
Others	1.26(0.22, 7.11)	1.47(0.32, 6.81)
Religion		
Islam	1	1
Christianity	0.73(0.41, 1.30)	0.72(0.42, 1.24)
Ever had Ultrasound done?		
No	1	1
Yes	5.63(0.66, 48.09)	2.13(0.51, 8.97)
Attitude towards last TAS		
Good	1	1
Poor	0.71(0.42, 1.20)	0.85(0.52, 1.39)
Aware of specific reason for TVS		
No	1	1
Yes	3.11(1.36, 7.15)*	2.29(1.03, 5.12)*
Expression of fear for TVS		
Fear	1	1
No Fear	1.85(1.06, 3.25)*	1.38(0.82, 2.33)
Perception, if called to do TVS		
Positive	1	1
Negative	0.78(0.43, 1.43)	1.50(0.85, 2.66)
Aware of reason TVS is preferred over TAS?		
No	1	1
Yes	0.78(0.29, 2.13)	1.59(0.61, 4.12)
Ultrasound scanning harmful		
No	1	1
Yes	0.98(0.40, 2.41)	0.54(0.22, 1.33)

*Significant at $P<0.05$

Table 2: Logistic regression of factors affecting respondents' recommendation and use of TVS in the future.

pregnant women obviously use health facilities more compared to less educated mothers since 2013 Nigeria demographic and health survey showed that only 9% of women aged 15 -49 had more than secondary level of education [8,9].

Only one out of twenty (5.2%) of the participants who have had any form of ultrasound scanning examination before had TVS compared to 30% in Cowan Bennett's study [2]. This may be an indirect expression of acceptability cum availability of the procedure in Nigeria a developing country compared to United State of America.

Only 5.5% of participants who had obstetric related ultrasound scanning in the past had TVS done. This is much lower to 33% found in the Cowan Bennett's study [2]. This reflects the level of usage of TVS in Obstetrics and Gynaecology by health facilities of the two countries i.e. usage low in Nigeria but relatively higher in Florida. That over 80% of participants are unsure of conditions when TVS is preferred to TAS still underscore the low level of awareness and use of TVS in Nigeria which indirectly points

invariably to poor knowledge and usage of TVS among health professionals concerned with requesting for gynaecological/obstetrics related ultrasound scanning.

Three quarter of participants (74.7%) expected TVS to be painful, 64.6% expected high level of anxiety when they do TVS, 51.5% think TVS will cause more vaginal bleeding while 32.2% actually think TVS will damage the growing fetus. Only 17.3% of participants in Atalabi's study thought TVS will be painful. This is low compared to our findings. The level of exposure of participants (in urban centre of Ibadan, Nigeria) in the Atalabi study may explain in part this marked difference. Usually one would expect women who are asked to imagine experience associated with TVS to report more anticipated pain than women who have had TVS done. Clement study among women who have had TVS showed that just a little over a third had mild discomfort. Even though it appears women tend to prefer TAS to TVS in terms of discomfort generally [2], Rosati found that women preferred TVS to TAS especially in early pregnancy where full bladder is a prerequisite for TAS [10]. While many of the respondents thought TVS may be adversely related to pregnancy, over half of the women in Dutta's study that had TVS done in early pregnancy unit were on account of vaginal bleeding [6]. It is also important to note that over forty percent of the women would discuss with their husbands before consenting to TVS hence underscoring importance of involving men in health matters where women are involved.

Clement noted some level of anxiety before and during performance of TVS in their study [1] though Dutta found 77% of participants indicated ≤ 3 in a score of 10 with regard to pain, discomfort and embarrassment [6]. The attitude of Sonologist/doctor that made a request of women for TVS was found to be friendly and reassuring in almost 60% of the cases. This is not unexpected as this is important when introducing a new and culturally unacceptable procedure. It is however important that health providers should continue to treat clients with utmost respect and counsel adequately even when TVS becomes more acceptable.

This study showed that women with secondary level of education are more likely to accept to do TVS and recommend TVS compared to those with tertiary and primary level of education, this was not however significant after logistic regression. Those with tertiary level of education by virtue of education might be more cautious in accepting new untested measures. Those who had secondary education with increased risk of exposure to and starting sexual relationship early might be indifferent to having TVS. It should be noted however that Atalabi did not find any association between educational level and acceptance of TVS.

Parity, tribe and religion were not found to significantly affect willingness to do TVS in this study and are consistent with Atalabi's finding. Age was significantly related to both acceptances to do TVS and to recommend TVS to others. This is similar to the findings of Clement who found desire to do TVS to be directly proportional to age with adolescents most unwilling to have TVS done. This may be explained that increasing age gives an increasing chance of being exposed to sex. Past history of coital

activity has been found to increase willingness to do TVS [5].

This study also noted that women who ever did any form of ultrasound scanning and more so those who have had previous TVS are more likely to be willing to accept TVS in future and recommend it for others. It also showed that women who have knowledge of indications for TVS are more likely to accept TVS and recommend TVS for others. This is consistent with findings of Braithwaite who found that all (100%) of women who had TVS in the past accepted TVS in current pregnancy and experienced significantly less concern than those who never had TVS [3]. This was not the experience of Basama et al who found that women perception of TVS was favourable whether they had prior knowledge and previous experience of it or not [9].

Overall the study clearly shows that level of use of transvaginal route for ultrasound scanning among women folks in Nigeria is low and this also informed the reason while negative perception of TVS appear to be on the high side here compared to communities in the Western world.

Conclusion

Awareness of TVS as a useful tool in the management of pregnant women is low. Willingness to have TVS done in pregnancy is also equally low. There is need to disseminate information on usefulness and safety of TVS in pregnancy among health practitioners, general public and ministry of health officers.

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