Original Article

Transvaginal ultrasound during pregnancy: Perception and acceptability of Antenatal Clinic Attendees at the University College Hospital, Ibadan

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ABSTRACT

Introduction: There has been a tremendous increase in the use of transvaginal ultrasound (TVS) in pregnancy. With the use of high-resolution transducers, the transvaginal probe has proved to be particularly useful for finding the location and dating of early pregnancies when compared with transabdominal sonography (TAS). It has also been shown to be a reliable method for confirming complete miscarriage. This study aims at determining the perception and acceptability of TVS in pregnancy.

Materials and Methods: This is a descriptive cross-sectional study of 424 consenting pregnant women attending the antenatal clinic at the University College Hospital, Ibadan. Using a self-administered questionnaire, we obtained information on their socio-demographic characteristics, awareness of ultrasound and TVS and opinion about TVS including acceptability and perceived complications.

Results: The mean age of the respondents was 31.6 ± 4.7 years. Majority (410; 96.7%) had heard about ultrasound scanning, and 395 (93.2%) had undergone at least one type. Approximately two-fifth (177; 41.7%) had heard about TVS, mostly from antenatal clinic, with two-third having a good knowledge. Only 90 (21.2%) had personal experiences, and 144 (34%) believed it is harmful; however, about three-fifths (256; 60.4%) were willing to do TVS if indicated. Perceived complications of TVS included abortion, infection and bleeding. Awareness and perception were strongly associated with acceptability of TVS but not with education or previous experience.

Conclusion: This study shows that the perception and acceptability of TVS by pregnant women is dependent on their level of awareness. There is an urgent need for proper information dissemination on the usefulness, safety and advantages of TVS in pregnancy.

Key words: Acceptability; antenatal clinic; perception; pregnancy; transvaginal ultrasound.

Introduction

Ultrasonography is an important radiological examination tool that has positively impacted the quality of medical practice in recent years. In the last two decades, there has been increasing use of transvaginal ultrasound (TVS) in a wide range of obstetric conditions as it has been offered to women with apparently normal pregnancies, either to screen for foetal abnormality or to assess the risk of pre-term delivery.[1] TVS was introduced to improve some of the drawbacks of trans-abdominal ultrasound (TAS) and to improve gynaecological outcomes, especially in

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terms of detailed evaluation and diagnosis of adnexal masses.[2-7]

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.[8-10] 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 detailed information on pelvic organs including the endometrium.[8-11]

The acceptability and willingness to undergo TVS by pregnant women have generated mixed reactions in different settings.[3,7,12,13] The awareness of TVS as a useful tool in the management of pregnant women and the willingness to have it done in pregnancy has been found to be very low in our environment,[12] even though Atalabi *et al*. reported an above average rate among some selected participants.[7] However, in an Indian study, majority of the women perceived TVS favourably irrespective of their previous knowledge or experience.[14]

Patient's perception of TVS hinges on their prior knowledge of what TVS is,[15] as well as on their personal opinion of what is acceptable.[1] Factors that predict willingness to accept TVS include parity, previous painful vaginal examination and sexual violence, embarrassment from undue exposure and loss of control.[1,13,15] As much as TVS is desirable, its introduction and acceptability requires censoring of clients' opinion to appreciate their feelings towards it. The overall aim of this study is to determine the perception and acceptability of TVS among pregnant women attending the antenatal clinic in Ibadan by assessing their awareness, determining their level of acceptability and associated factors.

Materials and Methods

This was a cross-sectional, questionnaire-based survey of consenting pregnant women attending the antenatal clinic of the University College Hospital (UCH), Ibadan. These pregnant women attended the clinic from various parts of Ibadan and neighbouring states. We adopted a total sampling technique excluding only unbooked and non-consenting women. Using a self-administered questionnaire, we obtained information on the respondents' sociodemographic characteristics such as age, marital status, education level, religion and ethnicity; information about previous births and previous ultrasound scans as well as information on their level of awareness, perception and acceptability of TVS. All respondents provided consent verbally and the confidentiality of their responses was ensured as no personal identifiers were used. Approval was obtained from the Oyo State Ethics Committee before commencement of the study.

Using a prevalence of 56.6% for awareness (Atalabi *et al*.), a minimum sample size was 378 which, with attrition set at 15%, was increased to 435, out of which 424 were analyzable. The data obtained from the respondents were cleaned, coded and entered into the computer. Analysis was done using the Statistical package for Social Sciences version 23.0 (SPSS, IBM Inc). Descriptive statistics and appropriate cross tabulation were done to determine the study objectives.

Results

We interviewed a total of 424 consenting pregnant women with a mean age of 31.6 ± 4.7 years. Majority (410; 96.7%) had heard about ultrasound, 395 (93.2%) had undergone at least one type of ultrasound, 177 (41.7%) had heard about TVS with two-thirds having good knowledge and 90 (21.2%) had personal experiences [Table 1]. Only three-fifth (256;

Table 1: Sociodemographic characteristics of respondents

Variable	Frequency	Percentage
Age group (years)		
20 and less	5	1.2
21-25	32	7.5
26-30	152	35.8
31-35	155	36.6
36-40	66	15.6
41 and higher	14	3.3
Mean age (years): 31.6±4.7		
Marital status		
Married	419	98.8
Single	5	1.2
Parity		
0	155	36.6
1	121	28.5
2	101	23.8
3	35	8.3
≥4	12	2.8
Religion		
Christian	324	76.4
Muslim	100	23.6
Education		
No formal education	4	0.9
Primary	6	1.4
Junior Secondary	7	1.7
Senior Secondary	48	11.3
Tertiary	359	84.7

60.4%) were willing to undergo TVS if indicated. Perceived complications of TVS included abortion, infection, bleeding and pain [Table 2]. The main sources of information included antenatal clinic health talks, doctors, personal findings and media [Table 3].

Tables 4 and 5 depicts the factors associated with acceptability of TVS as well as other relationships. Awareness of TVS is significantly associated with education ($\chi^2 = 9.514$; $P = 0.049$) and the belief that it could be harmful ($\chi^2 = 27.453$; $P < 0.001$), whereas those who had heard were more than twice willing to accept ($\chi^2 = 15.773$, $P < 0.001$; OR = 2.27; 95% CI = 1.51–3.42). In addition, other significant associations found among those who had undergone TVS included education ($\chi^2 = 49.373$; $P < 0.001$); belief that it is harmful ($\chi^2 = 57.929$; $P < 0.001$) and willingness to have a repeat ($\chi^2 = 7.75$; $P < 0.005$; OR = 2.04; 95% CI = 1.23–3.40).

There is no difference between those who had ever heard about ultrasonography and willingness to accept TVS ($\chi^2 = 0.032$; $P > 0.005$; OR = 1.10; 95% CI = 0.38–3.33). Those who had only ever heard and those who had ever undergone any form of ultrasonography had divergent views about its safety ($\chi^2 = 6.225$, $P = 0.044$ and $\chi^2 = 2.659$; $P > 0.05$, respectively). Religion has no effect on the acceptability of TVS ($\chi^2 = 1.603$; $P = 0.206$, OR = 1.34; 95% CI = 0.85–2.10) [Table 5]. Associations and findings on logistic regression are presented in Table 6.

Table 2: Awareness and perception about transvaginal ultrasound

Variable	Frequency	Percentage
Ever heard about ultrasound		
Yes	410	96.7
No	14	3.3
Ever done ultrasound (Any type)		
Yes	395	93.2
No	29	6.8
Reasons for the ultrasound		
Pregnancy	325	82.3
Infertility	23	5.8
Others reasons unrelated to pregnancy	47	11.9
Ever heard about transvaginal scan		
Yes	177	41.7
No	247	58.3
Ever done transvaginal scan		
Yes	90	21.2
No	334	78.8
Will agree to do transvaginal scan		
Yes	256	60.4
No	168	39.6
Transvaginal scan could be harmful to pregnancy		
Yes	144	34.0
No	207	48.8
Not sure	73	17.2
Gender preference		
Male	15	3.5
Female	124	29.2
Any good sonologist	211	49.8
Not sure	74	17.5

Table 3: Sources of information about transvaginal ultrasound*

Variable	Frequency	Percentage
Antenatal clinic health talk	66	33.7
Doctor	42	21.5
Personal efforts	34	17.3
Media	31	15.8
Friends	14	7.1
Others	9	4.6

*Multiple sources

Discussion

Our study aimed to determine the perception and acceptability of TVS in pregnancy by women attending the antenatal clinic at UCH, Ibadan. We found an above-average level of acceptability (60.4%) among our respondents, which is within the range of 43–96% reported in the literature; only two-fifth of our study population were aware of TVS. When compared with previous studies conducted in this environment, the level of acceptance was higher than 28.8% reported by Komolafe *et al*.,[12] however, lower than 84% reported by Atalabi *et al*.[7] The higher figure in the study by Atalabi *et al*., which was conducted in the general population including women outside the reproductive age group, was attributed to the general receptive attitude of Africans to medical services even when they are associated with some discomfort – a theory supported by Clement *et al*.[1] Lower level of acceptability among patients interviewed by Komolafe *et al*. may be attributed to their lack of awareness because only 16.4% of the women knew about the procedure.

The major concern in approximately one-third of our respondents was regarding the harm to the baby rather than the procedure itself. They believed it could cause abortion, abnormal babies and bleeding during pregnancy. This finding agreed with that of Dutta *et al*. where many of the respondents thought TVS may be adversely related to pregnancy,[16] unlike the findings of Komolafe *et al.* who reported pain as the major worry of their study participants.[12]

Several factors have been reported to affect the acceptability of TVS among pregnant women. In corroboration with Shetty *et al.*, our study found out that, although a previous experience of ultrasonography and prior knowledge of TVS are important,

Table 4: Associations between selected variables

Variable	Chi-square	*P*	Odds ratio	95% confidence interval
Ever heard of ultrasound versus				
Education	4.686	0.321		
Believe that transvaginal scan is harmful	6.225	>0.05		
Willingness to accept transvaginal scan	0.032	>0.05	1.10	0.38-3.33
Awareness of transvaginal scan versus				
Education	9.514	0.049		
Believe it's harmful	27.453	<0.001		
Willingness to accept transvaginal scan	15.773	<0.001	2.27	1.51-3.42
Ever done transvaginal scan versus				
Education	49.373	<0.001		
Believe it's harmful	57.929	<0.001		
Willingness to repeat transvaginal scan	7.75	<0.005	2.04	1.23-3.40

Table 5: Factors associated with awareness and acceptability of transvaginal ultrasound

Variable	Chi-square	*P*
Factors associated with awareness of transvaginal ultrasound		
Age	6.65	0.248
Marital Status	0.693	0.405
Education	9.514	0.049
Religion	1.486	0.223
Ever heard about USS	7.128	0.008
Ever done USS	1.468	0.226
Factors associated with acceptance of transvaginal ultrasound		
Age	5.949	0.311
Marital Status	0.01	0.979
Education	5.418	0.247
Religion	1.603	0.206
Ever heard about USS	0.032	0.859
Ever done USS	0.767	0.381
Ever heard about TVS	15.773	<0.001
Ever done TVS	7.75	0.005
Belief TVS is not harmful	57.929	<0.001

Table 6: Logistic regression of factors associated with acceptance of transvaginal ultrasound

Variable	Beta coefficient	Test statistic	*P*	95% confidence interval
Ever heard about TVS	0.227	3.785	<0.001	0.11-0.349
Belief TVS is not harmful	0.18	3.004	0.003	0.043-0.207

awareness and perception played a significant role in the acceptability of the procedure than previous experience.[14] However, Onderi *et al.* reported that patients' perception of TVS was a function of their prior knowledge of the procedure.[15] It is noted that, because perception is dependent on organization, identification and interpretation of stimuli and an unfamiliar stimulus will generate negative perception especially when there is interference with privacy, endocavitary examinations are expected to be dependent on patient's prior knowledge of the procedure for it to be acceptable.[1] Patients' knowledge regarding TVS needs to be maintained in an organized and meaningful manner with a stable, comprehensive view of the entire procedure in ways that are acceptable both culturally and environmentally.[1] These were corroborated in this study where there is a high level of acceptance with more than three-fifths of the study participants accepting to do TVS if indicated in pregnancy and those with a prior knowledge about TVS being more than twice more likely to accept than those who never heard about it. In the cross-sectional study by Komolafe *et al.*,[12] awareness and acceptance were proportionally low unlike the findings of Atalabi *et al.* where the level of acceptability was quite high because of series of lectures and visual aids provided regarding the procedure before the interview,[7] thus implying that acceptability is influenced more by awareness rather than previous experience, a finding also corroborated in this study.

Similarly, in tandem with previous reports, it was noted that sociodemographic characteristics have no significant effect on the participants' acceptability of TVS,[4,7] even though Komolafe *et al.* and Clement *et al.* reported a linear relationship between willingness for TVS and some characteristics such as age and parity,[1,12] which was attributed to the contribution of increasing age and maturity to reduction in anxiety about sexual issues but more interest on pregnancy outcome. In contrast to our findings, Komolafe *et al.*,[12] reported that participants with secondary education tend to accept TVS more than those with tertiary education, and this was believed to result from the perception that participants with tertiary education might be more cautious in accepting new, untested measures.

Expertise in TVS, rather than gender, is important when offering TVS to any pregnant woman. This is because TVS is a relatively recent advancement in ultrasonography and in inexperienced hands it can cause more harm than good to the mother and/or the foetus. Approximately half of our respondents did not have any gender preference if they needed to undergo a TVS. TVS has become a routine procedure in the developed world for pregnancy assessment and complications in the first trimester,[9,10] also in the evaluation of cervical length in middle and late pregnancy for risk of pre-term delivery, even though it is a new development in developing countries like Nigeria.[17] From our study, approximately one-third of those who had heard about TVS received information from antenatal clinic health talk whereas only one-fifth heard from their doctors. It is, therefore, important to identify potential means of

disseminating information about the usefulness, safety and advantages of TVS in pregnancy and integrate this into our regular practice.

Conclusion

Findings from this study showed that awareness of pregnant women about TVS strongly determine their perception and level of acceptability. Therefore, there is a need to disseminate information on the usefulness, safety and advantages of TVS in pregnancy among health practitioners, patients, general public and ministry of health officers to increase the level of acceptability of the procedure.

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Conflicts of interest

There are no conflicts of interest.

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