



## Perception, Willingness to Accept and Uptake of Transvaginal Ultrasonography among Women in Benin City, Nigeria

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### ABSTRACT

**Background:** Transvaginal ultrasonography (TVS) is now the emerging preferred method world over for female pelvic ultrasonographic assessment, because the pelvic organs are closer to the endocavity vaginal probe and are better visualised. This study assessed the perception, willingness to accept and uptake of TVS among women in Benin City, in Southern Nigeria.

**Methodology:** A descriptive, cross-sectional study was carried out among women who presented for ultrasonography in a secondary and a tertiary health care facility in Benin City, Southern Nigeria. A structured, interviewer-administered questionnaire was used to collect data from the respondents. The data was analysed using IBM SPSS version 20.

**Results:** A total of 318 women with a mean age of 35.1 (SD = 9.6) years participated in the study. More than half 181 (56.9%) expressed their willingness to have TVS. TVS was perceived to be safe by 95 (29.9%) while 45.6% were not sure of the safety of the procedure. Ninety-seven (30.5%) felt that TVS is associated with some adverse effects. The uptake of TVS was reported by only 56 (17.6%). More than half 182 (57.2%) expressed preference for a female HCW to perform TVS for them, but only 126 (39.6%) would insist on the presence of chaperon during the procedure.

**Conclusion:** Majority of women in Benin City are willing to accept TVS with preference for female health care worker. TVS was perceived to be safe by few of the women while the uptake of TVS was poor. We recommend that there should be continuous health education of women on the uses and safety of TVS in the management of most gynaecological conditions.

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## INTRODUCTION

Ultrasonography is one of the most important radiological investigations that have positively improved the quality of diagnosis and outcome of medical care over the years. The wide acceptance of this technique is due to its safety, availability and acceptability by

the practitioners as well as the end users.<sup>1</sup> Traditional trans-abdominal ultrasound (TAS) has been the method of ultrasonographic evaluation of the pelvis and abdomen. Transvaginal ultrasonography (TVS) was introduced into medical practice almost three decades ago for both gynaecological and obstetric evaluation of patients.<sup>2</sup> 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 emerging preferred method world over for female pelvic ultrasonographic assessment, because the pelvic organs are closer to the endocavity 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.<sup>3</sup>

The importance of transvaginal ultrasound in both gynaecological and obstetrics examination includes accurate monitoring of the follicles in cases of infertility, endometrial assessment, cervical length assessment, first trimester diagnosis of pregnancy and foetal anatomy scan, ectopic gestation and molar gestation.<sup>4, 5</sup> Ultrasound was introduced to medical practice in Nigeria about thirty years ago. There are numerous indications for ultrasound as documented in literature.<sup>6,7</sup> It was mainly the trans-abdominal ultrasonography that was being done then. About a decade later, the use of TVS in the management of patients started gaining popularity mainly at specialised private fertility centres and tertiary health institutions, for follicular monitoring and ovum retrieval. However, in recent times there is wide spread use of this investigating modality in other non-fertility oriented health facilities.

Many studies documented from research done in the developed countries, showed acceptability of TVS among women for myriad of indications to range from 43% to 96%.<sup>8,9</sup> There are few studies in the literature done to look at acceptability of TVS in Nigeria, and all were within the same Ibadan axis in the South Western part of the Country. Bello

et al<sup>10</sup> documented 99.7% acceptability rate, while Atalabi et al<sup>1</sup> documented 84% willingness of women to do TVS. One major advantage of TVS over TAS is the reduction in the delay in diagnosis of some gynaecological emergencies like ectopic pregnancy and evaluation of early pregnancies for congenital anomalies. This will lead to reduction of complications which could result in maternal mortality and ultimately promote maternal and child health. Therefore, the aim of this study was to assess the perception, willingness to accept and uptake of TVS among women in Benin City, in Southern Nigeria.

## METHODOLOGY

This descriptive cross-sectional study was carried out in Benin City, the capital of Edo State, Nigeria from 1<sup>st</sup> of February to 31<sup>st</sup> of March, 2017. The Department of Radiology, University of Benin Teaching Hospital (UBTH) a tertiary health facility and the Ultrasound Unit of St Philomena Catholic Hospital, a secondary health facility were the sites used for the study. Permission was obtained from the management of the two health institution before the commencement of the study.

Women who presented for Trans-abdominal or Trans-vaginal Scan in both centres were consecutively recruited to participate in the study. The participants were informed in group about uses and limitations of TVS prior to them having their ultrasound scan done. Those who consented to be part of the study were given the questionnaire to complete at the time of collecting their results. The sample size for the study was calculated using the formula for studying proportions.<sup>11</sup> Using 84% acceptance of TVS gotten from a previous study in Ibadan, Nigeria<sup>1</sup> and after correcting for non-response at a rate of 10%, the

calculated minimum sample size required for the study was 280.

A structured, pretested, interviewer administered questionnaire was the tool for data collection in this study. The questionnaire was comprised of four sections. The first sections contained questions regarding socio-demographic characteristics. The second section of the questionnaire had question on history of painful sexual intercourse, sexual abuse, vaginal injuries and douching. The third section dealt with respondents' perception, willingness to have TVS and uptake of TVS by the respondent while the fourth section assessed their choices of the preferred sex of the health professional to carry out a TVS on them and if they will insist on the presence of a chaperon for the procedure.

Data analysis was carried out using IBM SPSS Statistics version 20 Statistical Software Programme (IBM Corp, Armonk, NY, USA). Chi-square test was used to test for associations between some characteristics of the respondents and their willingness to have TVS. The level of significance was set at  $P < 0.05$  which corresponds to the 95% confidence interval.

## RESULTS

A total of 318 women who presented for USS in the Radiology Departments of UBTH, 237 (74.5%) and St. Philomena Catholic Hospital, in Benin City, 81 (25.5%) participated in the study. Table 1 shows the socio-demographic characteristics of the respondents. The mean age of the women was 35.1 (SD = 9.6) years with majority 253 (79.6%) aged between 25 and 44 years. Most of them 275 (86.5%) were married while 67.6% had tertiary level of education. A higher proportion 132 (41.5%) belong to the occupational class of skilled level 3, but 48 (15.1%) were unemployed.

**Table1: Socio-demographic characteristics of the respondents**

Variables	Frequency (n = 318)	Percent
<b>Age group in years</b>		
15 - 24	22	6.9
25 - 34	153	48.1
35 - 44	100	31.5
45 - 54	30	9.4
≥ 55	13	4.1
<i>Mean age = 35.1 ± 9.6 years</i>		
<b>Marital status</b>		
Single	36	16.3
Married	275	86.5
Widowed	7	2.2
<b>Education</b>		
None	6	1.9
Primary	22	6.9
Secondary	75	23.6
Tertiary	215	67.6
<b>Occupation</b>		
Unemployed	48	15.1
Skilled level 1	7	2.2
Skilled level 2	56	17.6
Skilled level 3	132	41.5
Skilled level 4	75	23.6

Some gynaecological history from the respondents revealed that one quarter of them 80 (25.2%) had experienced painful sexual intercourse, 11 (3.5%) had been abused sexually while 92 (28.9%) have had vaginal injuries. The practice of vaginal douching was reported by 68 (21.4%) of them (Table 2).

The perception, willingness to accept and uptake TVS by the respondents is shown in Table 3. TVS was perceived to be safe by 95 (29.9%) of the women while 45.6% were not sure of the safety of the procedure. Ninety-seven (30.5%) felt that TVS is associated with some adverse effects. Some of the adverse effects mentioned by these respondents were medical 71 (73.2%), psychological 22 (22.7%) and social 4 (4.1%). A slightly more than half 173 (54.4%) of the respondents would recommend TVS to other women, 182 (57.2%) expressed preference for a female HCW to

perform TVS for them, but only 126 (39.6%) would insist on the presence of chaperon during the procedure. Only slightly more than half of them 181 (56.9%) expressed their willingness to have TVS while the uptake of TVS was reported by only 56 (17.6%) of the respondents. Most 268 (84.3%) have had one form of USS or the other prior to this study.

**Table 2: Painful sexual intercourse, sexual abuse, douching and vaginal injury among the respondents**

Variables	Frequency (n = 318)	Percent
<b>Painful sexual intercourse</b>		
Yes	80	25.2
No	238	74.8
<b>Sexual abuse</b>		
Yes	11	3.5
No	307	96.5
<b>Douching</b>		
Yes	68	21.4
No	250	78.6
<b>Vaginal injury</b>		
Yes	92	28.9
No	226	71.1

Table 4 shows the cross tabulation of some characteristics of the respondents and their willingness to have TVS. A higher proportion of single respondents, those aged 35 - 44 years, those with no formal education and those in occupational skilled level 4 were more willing to have TVS. However, there was no statistically significant association between the socio-demographic characteristics and their willingness to have TVS. Among the respondents who have had painful sexual intercourse, a higher proportion of them were more willing to have TVS.

**Table 3: Perception, willingness to accept and uptake of TVS among the respondents**

Variables	Frequency (n = 318)	Percent
<b>TVS is safe</b>		
Yes	95	29.9
No	78	24.5
Not sure	145	45.6
<b>TVS have adverse effects</b>		
Yes	97	30.5
No	221	69.5
<b>Recommend TVS to others</b>		
Yes	173	54.4
No	145	45.6
<b>Sex of preferred HCW</b>		
Female	182	57.2
Male	19	6.0
Indifferent	117	36.8
<b>Insist on chaperon</b>		
Yes	126	39.6
No	131	41.2
Indifferent	61	19.2
<b>Willingness to have TVS</b>		
Yes	181	56.9
No	137	43.1
<b>Ever had TVS</b>		
Yes	56	17.6
No	262	82.4
<b>Previous USS</b>		
Yes	268	84.3
No	50	15.7

This association was statistically significant ( $p = 0.014$ ). In addition, previous TVS ( $p < 0.001$ ) and perception of TVS as safe ( $p < 0.001$ ) were significantly associated with willingness to have TVS. There was a statistically significant association between those who felt TVS did not have adverse effects and their willingness to have TVS ( $p < 0.001$ ).

## DISCUSSION

Our study which showed a mean age of the participant to be 35.1 (SD=9.6) years is similar to the findings by Atalabi et al<sup>1</sup> [33.8 (SD=7.9) years] in Ibadan, South Western Nigeria. Most of our participants were married 86.5%.

**Table 4: Some characteristics of the respondents and their willingness to have TVS**

Variable	Willingness to have TVS		X <sup>2</sup>	p-value
	Yes (%)	No (%)		
<b>Age group in years</b>				
15 - 24	12 (54.5)	69 (45.5)	3.685	0.450
25 - 34	84 (54.9)	69 (45.1)		
35 - 44	64 (64.0)	36 (36.0)		
45 - 54	14 (46.7)	16 (53.3)		
≥ 55	7 (53.8)	6 (46.2)		
<b>Marital status</b>				
Single	25 (69.4)	11 (30.6)	2.607	0.272
Married	152 (6.8)	123 (44.7)		
Widowed	4 (57.1)	3 (42.9)		
<b>Education</b>				
None	4 (66.7)	2 (33.3)	5.866	0.117
Primary	8 (36.4)	14 (63.6)		
Secondary	39 (52.0)	36 (48.0)		
Tertiary	130 (60.5)	85 (39.5)		
<b>Occupation</b>				
Unemployed	25 (52.1)	23 (47.9)	4.997	0.291
Skilled level 1	4 (57.1)	3 (42.9)		
Skilled level 2	30 (53.6)	26 (46.4)		
Skilled level 3	71 (53.8)	61 (46.2)		
Skilled level 4	51 (68.0)	34 (32.0)		
<b>Painful sexual intercourse</b>				
Yes	55 (68.8)	25 (31.2)	6.102	<b>0.014*</b>
No	126 (52.9)	112 (47.1)		
<b>Sexual abuse</b>				
Yes	6 (54.5)	5 (45.5)	0.026	0.553
No	175 (57.0)	132 (43.0)		
<b>Vaginal injury</b>				
Yes	54 (58.7)	38 (41.3)	0.167	0.683
No	127 (56.2)	99 (43.8)		
<b>Ever had TVS</b>				
Yes	45 (80.4)	11 (19.6)	15.228	<b>&lt; 0.001*</b>
No	136 (51.9)	126 (48.1)		
<b>TVS is safe</b>				
Yes	78 (82.1)	17 (17.9)	58.359	<b>&lt; 0.001*</b>
No	19 (24.4)	59 (75.6)		
Not sure	84 (57.9)	61 (42.1)		
<b>TVS have adverse effects</b>				
Yes	28 (28.9)	69 (71.1)	44.792	<b>&lt; 0.001*</b>
No	153 (69.2)	68 (30.8)		
<b>Ever had USS</b>				
Yes	157 (58.6)	111 (41.4)	1.924	0.165
No	24 (48.0)	26 (52.0)		

\*Statistically significant

About 67.6% had tertiary education. This result was similar to the finding of Komolafe et al 68%<sup>8</sup> and higher than that found by Atalabi et al 56.6%<sup>1</sup>. This lower value may be due to the recruitment pattern of the participants. While about 75% of the respondents in our study were from a tertiary centre only about 20% were from a tertiary centre in their study.

There are some gynaecological past experiences that may affect the perception and uptake of TVS. This study revealed that 28.9% of the respondents have had vaginal injuries, 25.2% had experienced painful sexual intercourse, and the practice of vaginal douching was reported by 21.4% while 3.5% had been abused sexually. A reasonable proportion of those who had a history of

painful sexual intercourse however showed a higher willingness to do a TVS. This finding differs from Atalabi et al where they reported that sexual abuse and painful sexual experiences reduce willingness to have a TVS. The reasons for our findings may be related to the fact that Africans are more receptive to medical care, even in the face of some discomfort due to poverty and the fact that these services are not readily available. Clements et al<sup>2</sup> in a similar research also propounded a similar theory that the high acceptance rate in Africans may be due to their lack of confidence to refuse treatment compared with the Caucasians.

Our study showed TVS acceptability rate of 56.9%. Although, this falls within the range of 43%-96% documented in the previous literature,<sup>8</sup> This is much lower than 84% found by Atalabi et al.<sup>1</sup> This difference may be due to a reflection of awareness of TVS in Benin City. About 84% of the participants have had one form of ultrasound done in the past, of these figure only 17.6% have done a TVS previously. This is less than the results obtained from the study by Bennett et al (30%).<sup>9</sup> This lower uptake can be explained on the basis of 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 to be safe by only 29.9% of the women while 30.5% felt that TVS is associated with some adverse effects. These perceptions may have also contributed to the acceptance rate of 56.9%. This study showed that 57.2% of the respondents expressed preference for a female health care worker to perform TVS for them. This is lower than the 83% found by Sharma et al.<sup>12</sup> This finding may be due to a lower tendency of women to express an opinion on choice in Nigeria when compared to the developed

countries of the world. In some parts of Nigeria women are required to seek the consent of the husband before assessing health care or undergoing certain procedures especially if the procedures are invasive. However, this contrasted the study by Atalabi et al<sup>1</sup> and Basama et al<sup>13</sup> where they found majority of the respondents showing indifference to the gender of the TVS operator.

The presence or absence of a chaperon during minimally invasive procedure has generated a lot of controversy and medico legal issues within the health sector. Chaperones are advocated by policy makers for TVS examinations to reassure the patients and legally protect the examiner. Though there are no specific guidelines on the use of chaperones in Nigeria, however, the United Kingdom professional guidelines on intimate studies recommends the use of chaperones.<sup>14</sup> In this study 39.6% of the respondent said they would insist on the presence of chaperon during the procedure. This is in contrast to the findings of Gentry-Muharaj et al<sup>3</sup> in the United Kingdom where only 5% of the women insisted on the presence of a chaperon. This difference can be explained, as the examiners in their studies were of the same sex with the respondents. In another study 89% of women preferred not to have a chaperone when undergoing intimate examinations being performed by the same sex.<sup>15</sup>

In this study there was no statistically significant association between the socio-demographic data and willingness to do a TVS. This finding is in tandem with some previously documented reports.<sup>1,11</sup> 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.<sup>8</sup> This finding demonstrates that even women who earlier

had fears and worries about TVS have the capability to be accept the procedure when their fears are allayed after the procedure. This group of women can serve as veritable agents of change to educate other women about TVS and the need to embrace the procedure in their community. This will ultimately improve prevention, early diagnosis and management of many gynaecological conditions among women and consequently improve the overall health status of the community.

In conclusion, this study revealed that majority of women in Benin City, southern Nigeria are willing to accept TVS and with preference for female health care worker. TVS was perceived to be safe by few of the women while the uptake of TVS was poor. However, perception of safety of the TVS and previous uptake were significant factors contributing to willing to undergo TVS. Therefore, we recommend that there should be continuous health education of women on the uses and safety of TVS in the management of most gynaecological conditions. This health promotion activity will go a long way in promoting the health and prolonging the life of women in Benin City and Nigeria at large.

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