

Peer Reviewed **Original Article****SONOGRAPHERS' AWARENESS OF CHAPERONE POLICY AND IMPACT OF CHAPERONE USE ON TRANSVAGINAL SONOGRAPHY IN LAGOS STATE, SOUTHWEST NIGERIA****Cletus Eze BSc<sup>1</sup> MHPM, MSc, PhD | Ernest Upeh<sup>2</sup> BSc, PhD | Josephine Joshua<sup>3</sup> BSc, MSc | Ijeoma Anyanwu<sup>4</sup> BSc, MSc**<sup>1</sup>Department of Radiography, School of Health Technology, Federal University of Technology, Owerri, Imo State Nigeria.<sup>2</sup>Ultrasound Unit, North Cumbria Integrated Care NHS Foundation Trust, UK.<sup>3</sup>Department of Radiography, Faculty of Clinical Sciences, College of Medicine of the University of Lagos, 1-5 Taylor Drive, Yaba, Lagos Nigeria.<sup>4</sup>Glorious Diagnostic Center, Mile 12, Lagos, Nigeria.<https://doi.org/10.54450/saradio.2022.60.2.699>**ABSTRACT**

**Background:** Chaperone use during transvaginal sonography (TVS) is strongly recommended. Sonographers' awareness of this recommendation, their attitude to chaperone use, and the impact of chaperone use on service delivery have not been assessed in Lagos Nigeria.

**Methods:** A semi-structured questionnaire was distributed to 100 sonographers. Non-probability convenience sampling was used. Simple proportion, mean and standard deviation were calculated and used to determine awareness and frequency of chaperone use. Regression analysis was used to determine the relationship between chaperone use and improved service delivery; one-way ANOVA was used to test null hypotheses that said that sex and age had no significant impact on the use of chaperones among sonographers.

**Results:** The majority (74%) of the participants were men. Most (69%) of the participants 'always' use chaperones. The computed mean and standard deviation ( $\bar{x} = 3.9$ ;  $\sigma = 1.7$ , respectively) showed that 'sonographer protection' was rated the most critical role of a chaperone. More than half (57%) of the participants agreed that counselling reduces rejection of TVS. There was significant positive correlation between chaperone use and acceptance of TVS (regression coefficient = 0.9335;  $p = 0.0004$ ). ANOVA F-test value of 4.9349 ( $p = 0.0292$ ) and F-test value = 4.0821;  $p = 0.0096$  indicate that both gender and age positively impact chaperone use.

**Conclusion:** Most of the participants in Lagos state were aware of the recommendation that a chaperone should be used. Their attitude to chaperone use during TVS, however, seemed to be somewhat casual. Fear of litigation was the major motivator for chaperone use. A chaperone's presence during TVS positively impacted service delivery in Lagos state. Counselling is very useful in reducing the number of women who reject TVS. An association exists between sonographers' gender and chaperone use, older male sonographers in the study tended to use chaperones more often.

**Keywords:** sonography; transvaginal sonography; chaperone use; the impact of chaperone on service delivery.

**LAY ABSTRACT**

The study focused on the use of a chaperone when a patient has a transvaginal ultrasound examination.

**INTRODUCTION**

Transvaginal sonography (TVS) is requested in a female patient with abnormal pelvic or trans-abdominal scan, unexplained vaginal bleeding, pelvic pain, suspected ectopic pregnancy, infertility, checking for cysts or leiomyoma, verification of intrauterine device placement and during pregnancy. It provides a more detailed assessment of the pelvic structures when compared to a trans-abdominal scan. However, it raises more concern as it involves exposing a patient's pubic area and inserting a transducer into her vagina, making this examination a little embarrassing when a

man performs the procedure. Nigeria is essentially a conservative society where some religious and cultural beliefs do not permit most women to expose their private parts to a man even during medical examinations. Therefore, some women who fall into this category usually decline to undergo TVS. Aside from constraints due to religious/cultural beliefs, some naturally shy women also feel uncomfortable and often decline TVS.

According to the Society and College of Radiographers (SCoR), examinations or treatment of the genitalia, medical examinations or treatments of the female reproductive

system or urethra are intimate examinations.<sup>[1]</sup> TVS is an intimate ultrasound examination that requires women to expose their pubis and vagina. Women therefore need to be assured that a male sonographer must remain within ethical practice boundaries when performing the examination.<sup>[2]</sup> Consequently, sonographers must understand their codes of ethics that mandate them to maintain distinctively professional relationships with female patients. Sonographers should never forget that their relationship with patients must be based on trust, honor, confidentiality and mutual respect for the boundary between ethical relationships with their patients.<sup>[3-8]</sup> A part of the ethical practice for sonographers is to ensure that chaperones are present before they carry out TVS or any other intimate ultrasound examination.<sup>[1]</sup>

The presence of a chaperone (e.g., female nurse) is required for any medical examinations by males that affect a patient's chest, breasts, pelvis, genitalia, upper thigh, anus and rectum; these particularly intrusive medical examinations tend to make most patients uncomfortable and vulnerable if they are performed by a sonographer who is of opposite sex of a patient.<sup>[2,3]</sup> The presence of a chaperone when a man performs an intimate medical examinations/treatments, though not strictly a legal requirement, is recommended to reduce the vulnerability of both practitioner and patient.<sup>[9,10]</sup> For this reason, any intimate medical examination of a woman such as TVS performed by a man when a chaperone is not present is actionable professional misconduct.<sup>[3]</sup> It is an ethical obligation for healthcare practitioners (HCPs) to explain to a patient why a chaperone has to be present during intimate medical examinations such as TVS. A patient must be allowed to bring a support person of her choice during such examinations if a chaperone is not available. The presence of a chaperone makes a female patient feel comfortable when what is to occur in an intimate examination is being discussed.<sup>[11]</sup>

Among its advantages, the presence of a chaperone helps male HCPs to maintain professional boundaries when performing intimate medical examinations or treatments on women. The presence of a chaperone is important for women with history of sexual abuse and extreme anxiety/psychiatric disorders. A chaperone's presence is recommended for litigiously minded women and those undergoing pelvic examination, but it is also recommended for women who, for any reason, raise concerns in the physician.<sup>[2]</sup> The presence of a chaperone protects a HCP from litigation and comforts both a female patient and a male HCP.<sup>[3]</sup>

Per the code of ethics for health professionals,<sup>[2]</sup> recommendations regarding chaperone use vary from one country to the other, and also within jurisdictions in a given country.<sup>[8-11]</sup> It is known that locally relevant evidence on guidelines on chaperone use is desirable; it is equally known that HCPs must consider each intimate medical examination separately.<sup>[3,8,12]</sup> Unfortunately, there is lack of local guidelines on chaperone use in Nigeria. This study was carried out in Lagos state, Nigeria to assess sonographers' awareness of their ethical requirement regarding chaperone use. We also determined Lagos sonographers'

perspective on chaperones' role and the impact of chaperone use for intimate ultrasound services.

## SUBJECTS AND METHODS

A descriptive cross sectional study was carried out between August and October 2021. Convenience sampling was used to recruit 100 sonographers in Lagos state. Approval of ethics committee was not sought because the study population comprised sonographers. Each potential participant gave informed written consent in order to participate in the study. The inclusion criterion was sonographers who were registered by the Radiographers' Registration Board of Nigeria (RRBN), and licensed by the Lagos state Ministry of Health (LSMOH). We used LSMOH's register to identify 124 eligible sonographers to voluntary participate in the study. All were invited to participate in the study in view of the small study population:<sup>[13]</sup> a total of 100 agreed to participate in the study.

A published semi-structured questionnaire<sup>[14]</sup> was adapted for use in this study. The questionnaire had part A and B. Part A was used to obtain information on sonographers' awareness and attitude regarding chaperone use. Part B was used to obtain sonographers' views on the role of chaperones during TVS, their perception on the effect chaperones' presence on women's acceptance of TVS, and their assessment of the impact of chaperones' presence on ultrasound service delivery. Each participant (n=100) was provided with a questionnaire to complete.

## STATISTICAL METHODS

Before data analysis was carried out, Cramer-von Mises and Anderson-Darling tests were done to assess normality (or lack of it) of data collected because most variables in the study such as role of chaperone and the effect of chaperone use on service delivery were measured on an interval scale.<sup>[15]</sup> The p-value obtained in each test (0.0002 and 0.000, respectively) showed that data were not normally distributed. Data were entered into EXCEL spreadsheet and were analysed using Epi Info 3 software. Descriptive statistics (mean and standard deviation) were calculated for categories of responses and were used to determine the participants' awareness of the recommendation to use chaperones. Inferential statistics were used to determine their awareness/attitude to chaperone use empirically. In particular, simple regression analysis was used to determine whether the presence of a chaperone during TVS had any impact on ultrasound service delivery. Simple regression analysis and regression plot<sup>[16]</sup> were used to determine a relationship between the participants' gender and age on chaperone use. One-way ANOVA was thereafter used to test equality of means.

To determine whether sex had impact on the use of chaperones among sonographers, we tested the null hypothesis (Ho), namely, 'sex has no significant impact on the use of chaperones among sonographers. Here, sex was a categorical independent variable and use of chaperone an interval dependent variable. To perform the test of H0, the respons-

es on use of chaperones were cross-tabulated according to the sex of sonographers. One-way analysis of variance (ANOVA) was used to perform equality of mean test between two-level independent variable (male and female). The test was conducted at 5% significance level. The decision rule to reject  $H_0$  was if the p-value was less than 0.05; otherwise, the hypothesis would be maintained.

To determine whether age has impact on the use of chaperones among sonographers, we tested the null hypothesis ( $H_0$ ), namely, age has no significant impact on use of chaperones among sonographers'. Age was a categorical independent variable with four levels (below 35 years, 35-44 years, 45-54 years and above 54 years); chaperone use was an interval dependent variable. The responses on use of chaperones were cross-tabulated according to the age of sonographers; equality of mean test was performed for all four age ranges using one-way ANOVA. The test was conducted at 5% significance level. The  $H_0$  would be rejected if the computed p-value was less than 0.05; otherwise, the hypothesis would be maintained.

pothesis would be maintained. All results were considered statistically significant at  $p < 0.05$ .

**RESULTS**

The response rate of completed and returned questionnaires was 80% ( $n=80/n=100$ ). Male/female: 74%/26%. In terms of ages, 39% were within the 35 - 44 years age bracket, and 11% were < 35 years old (Figure 1). All participants (100%) said that they were aware of their ethical requirement to use a chaperone during intimate ultrasound examinations if performed by a sonographer who was a different sex than the patient. Only 69% 'always' use chaperones during TVS (Table 1); 3% use a chaperone only when 'one is available' or when a patient requests the presence of a chaperone (Figure 2). The majority (81%) of the participants document examination findings only in a patient's report (Figure 3); 11% and 8%, in addition to documenting examination findings, include the presence of a chaperone and also indicate if a patient declined a chaperone. None indi-

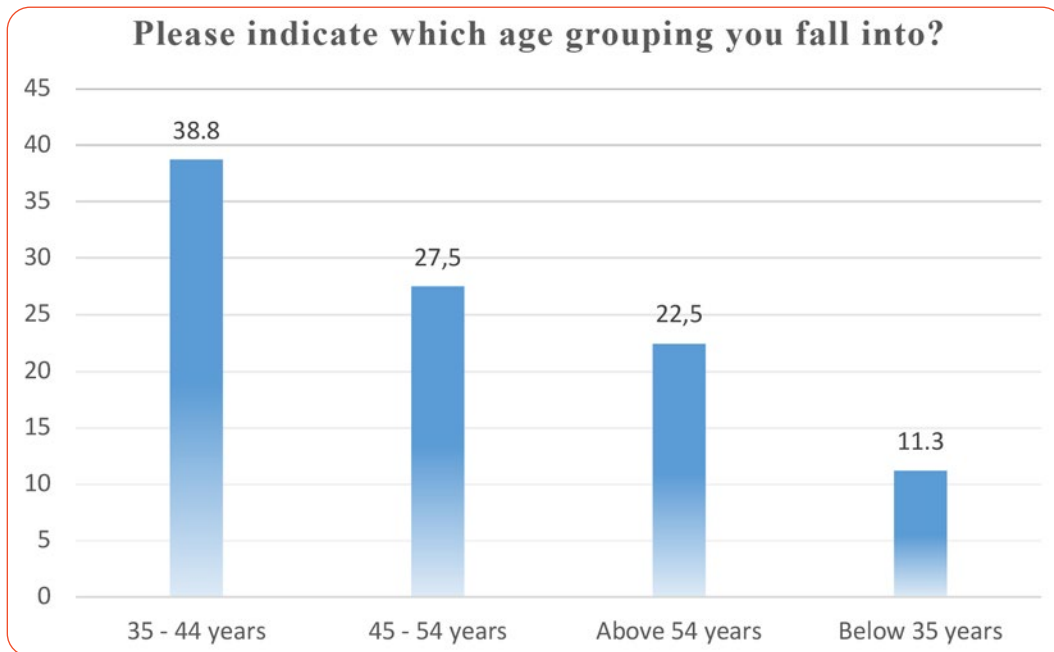


Figure 1. Participants' age demographics.

Table 1. Distribution of responses by type of examination chaperones are requested

DO YOU ALWAYS USE A CHAPERONE DURING THIS EXAMINATION?	FREQUENCY			TOTAL
	ALWAYS	SOMETIMES	*NA	
Pelvic	58 (73%)	12 (15%)	10 (12%)	80 (100%)
Obstetrics	54 (68%)	10 (12%)	16 (12%)	80 (100%)
<b>**TVS</b>	<b>69 (86%)</b>	<b>3 (4%)</b>	<b>8 (10%)</b>	<b>80 (100%)</b>
Breast	61 (76%)	7 (9%)	12 (15%)	80 (100%)
Prostate	50 (62%)	16 (20%)	14 (18%)	80 (100%)
Scrotal	63 (78%)	3 (4%)	14 (18%)	80 (100%)
Abdominal	56 (70%)	8 (10%)	16 (20%)	80 (100%)

\*NA = Not applicable; \*\*TVS = Transvaginal sonography

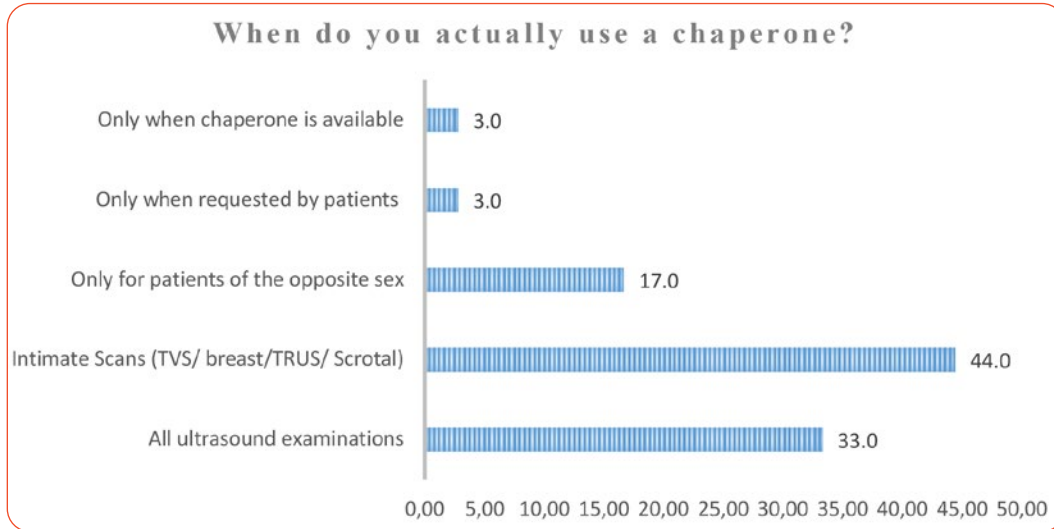


Figure 2. Percentage of participants in terms of when a chaperone is actually used.

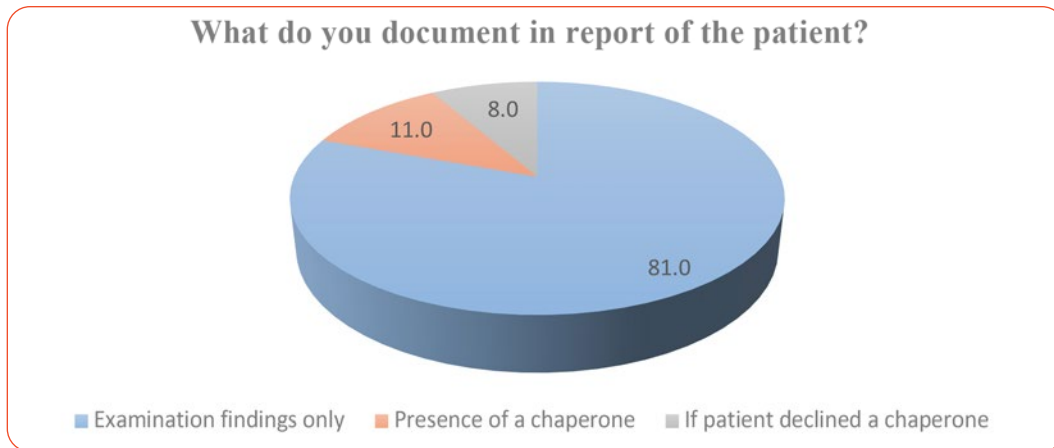


Figure 3. What the participants document in patients reports.

Table 2. Distribution of responses in terms of perception of the role of the chaperone (\*alpha reliability coefficient = 0.72)

WHAT IS A CHAPERONE'S ROLE?	PERCENT DISTRIBUTION					BASIC STATISTIC		REMARK
	STRONGLY DISAGREE	DISAGREE	INDIFFERENT	AGREE	STRONGLY AGREE	$\chi$	$\sigma$	
To assist the sonographer	8.70	34.78	13.04	26.09	17.39	3.08	1.23	Indifferent
To assist patient	-	9.09	27.27	27.27	36.36	2.20	1.44	Disagree
For the protection of patients	17.39	8.70	26.09	26.09	21.74	3.26	0.94	Indifferent
For the protection of sonographer	16.00	-	8.00	32.00	44.00	3.9	1.7	Agree
To comfort the patient	16.00	16.00	32.00	-	28.00	1.92	1.07	Disagree
For legality	27.00	9.00	6.00	12.00	45.00	3.39	2.26	Indifferent
Composite						2.96	1.44	Indifferent

\*Alpha reliability coefficient = 0.72 implies acceptable internal consistency of multiple questions asked.

**Table 3.** Distribution of responses in terms of what to do when a patient declines a chaperone (alpha reliability coefficient = 0.78)

STATEMENT ITEM	PERCENT DISTRIBUTION					BASIC STATISTIC		REMARK
	STRONGLY DISAGREE	DISAGREE	INDIFFERENT	AGREE	STRONGLY AGREE	$\chi$	$\sigma$	
Examination should be Discontinued immediately	22.00	56.00	11.00	11.00	-	2.11	2.60	Disagree
Patient feels that their privacy would be compromised	26.00	7.00	19.00	41.00	7.00	2.96	1.79	Indifferent
Examination can continue without a chaperone	24.00	14.00	10.00	45.00	7.00	2.97	2.02	Indifferent
Service delivery would be ineffective	14.00	36.00	23.00	23.00	5.00	2.68	1.38	Indifferent
Patient needs to be counseled	14.00	14.00	14.00	21.00	36.00	3.50	1.33	Agree
Composite						2.84	1.82	Indifferent

Source: Output from Excel based on survey data

**Table 4.** Distribution of responses with respect to whether the presence of a chaperone enhances service delivery (\*alpha reliability coefficient = 0.78)

STATEMENT ITEM	PERCENT DISTRIBUTION					BASIC STATISTIC		REMARK
	STRONGLY DISAGREE	DISAGREE	INDIFFERENT	AGREE	STRONGLY AGREE	$\chi$	$\sigma$	
When a chaperone is present, TVS patients were more relaxed and cooperated better	14.0	14.0	14.0	21.0	36.0	3.5	1.3	Agree
Most patients who declined TVS do accept it after undergoing counselling	14.00	14.00	14.00	21.00	36.00	3.5	1.3	Agree
Presence of a chaperone during TVS is improves ultrasound services	14.00	14.00	14.00	23.00	35	3.6	1.4	Agree

Alpha reliability coefficient = 0.78 is acceptable internal consistency of multiple questions asked.

cated the inclusion of the name of a chaperone in a patient's examination report.

Concerning a chaperone's role during TVS, as presented in Table 2, the computed mean and standard deviation ( $\bar{x}_3 = 3.9$ ;  $\sigma = 1.7$ , respectively) showed 'sonographer protection' is one of the most critical roles of chaperone use. On what should be done when a patient declines a chaperone, 21% agreed and 36% strongly agreed that such women should be counseled (Table 3). The participants indicated that the presence of chaperones during TVS makes patients more relaxed and safer, and that counselling helps to reduce the number of women who decline TVS. Table 4 shows the computed mean and standard deviation ( $\bar{x}_3 = 3.5$ ;  $\sigma = 1.3$  and

$\bar{x}_3 = 3.5$ ;  $\sigma = 1.3$  and  $\bar{x}_3 = 3.6$ ;  $\sigma = 1.4$ , respectively). On empirical evaluation, simple regression coefficient ( $b = 0.9335$ ;  $p = 0.0004$ ) and regression residual plot (Figure 4) shows a significant positive correlation between presence of a chaperone and women's acceptance to undergo TVS.

Concerning the impact of gender on chaperone use, the mean values and standard deviations (Table 5), ANOVA F-test value of 4.9349 ( $p = 0.0292$ ) indicates that male participants in Lagos state are more inclined to use a chaperone compared to females. Regarding chaperone use by age, the mean responses (Table 6) and equality of mean test result (ANOVA F-test value = 4.0821;  $p = 0.0096$ ) both show unequal use of chaperons across different age groups of the

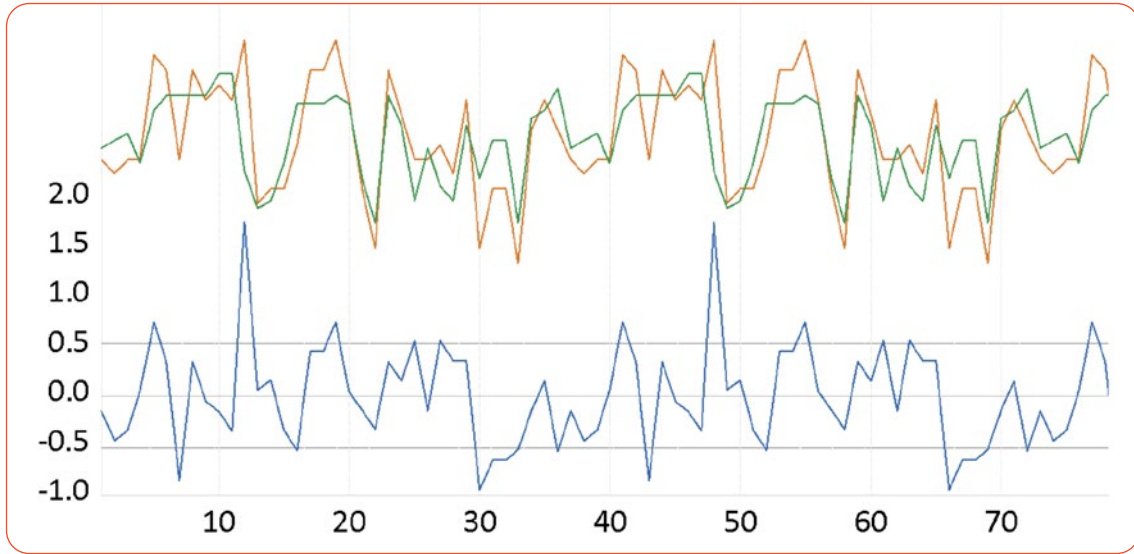


Figure 4. Regression residual plot showing a significant positive correlation between presence of a chaperone and women's acceptance to undergo TVS.

Table 5. Male vs female participants' responses on use of chaperones

GENDER	MEAN	STD. DEV.	OBS(%)
Male	3.40	0.88	59 (73.75)
Female	2.88	1.02	21 (26.25)

Table 6. Responses on use of chaperones by age

AGE	MEAN	STD. DEV.	OBS(%)
35 - 44 years	2.94	0.71	31 (39.0)
45 - 54 years	3.12	1.20	22 (28.0)
Above 54 years	3.79	0.70	18 (22.0)
Below 35 years	3.50	1.03	9 (11.0)

participants. This is evidenced further by the highest mean value (3.79): use of chaperones was highest among the participants older than 54 years.

**DISCUSSION**

The recommendation that physicians should use chaperones during intimate medical examinations has been well reported.<sup>[11,17,18]</sup> Half of adult women who were to undergo TVS preferred that chaperones should be present if a sonographer is a man; women who undergo TVS generally do not consider the presence of a chaperone necessary if a sonographer is a woman.<sup>[19]</sup> It is recommended that male pediatricians (by extension also male sonographers) must ensure that chaperones are present before performing TVS on adolescent female patients.<sup>[20]</sup> While chaperones often act as neutral observers, their presence during intimate medical examinations such as TVS assures women that male sonographers cannot engage in unethical practices when performing the investigation.<sup>[14]</sup>

The participants in this study were asked whether they always use a chaperone during intimate ultrasound examinations. They all confirmed they did. This means that participants in Lagos state have 'excellent' knowledge and, therefore, are aware of the need for them to use chaperones during TVS. Their presumably 'excellent' awareness level suggests that they did know the ethical and legal implications of performing intimate ultrasound examinations such as TVS without a chaperone. This finding aligns with that of Moores, Metcalfe and Pring<sup>[11]</sup> who found that 97% of their sampled consultants used chaperones for all intimate cases.

The use of a chaperone when a male sonographer performs intimate ultrasound examination in general, and TVS in particular, is recommended as a part of 'good/ethical practice'.<sup>[1,21]</sup> Therefore, not only should sonographers be aware of this recommendation<sup>[1]</sup> they are obliged to adhere to it during practice. Despite all the participants (100%) seemingly 'excellent' awareness of the recommendation to use chaperones during intimate ultrasound examinations, only 69% (Table 1) said they 'always' use a chaperone during TVS. It is important to reiterate that 3% of participants would use a chaperone 'only when one is available', and 3% would only use a chaperone when a patient requests one (Figure 2). These two results suggest that there are many sonographers in Lagos state who seem not to know that the use of chaperones during TVS is a recommendation: it is beneficial not only to female patients but also to them as practitioners. The rather casual attitude of a significant number of participants regarding chaperone use is at odds with 'good practice and ethics' that require sonographers to 'not only ensure that a chaperone is present, that the chaperone should be introduced to the patient before TVS or any intimate ultrasound examination commences.<sup>[20,1]</sup> It is not unreasonable to argue that since 81% of the participants admitted that they do not say anything about chaperone

use in their respective reports (Figure 3) means that their knowledge/attitude regarding chaperone is below par despite their professed awareness about the need for chaperone use. Since chaperone use is not mentioned in their reports it can be argued that many sonographers in Lagos state have a poor knowledge/attitude to chaperone use. Put differently those that failed to use a chaperone during TVS appear to have unwittingly denied themselves the benefit of protection from possible medico-legal consequences that the presence of chaperones is known to offer health practitioners'.<sup>[14]</sup>

We found that while most participants were aware of the need to use chaperones during TVS, their understanding of the role of a chaperone (Table 2) was poor. It would seem that the majority of participants were of the opinion that protecting themselves from possible legal issues was the most important role of chaperones during TVS (Table 2). This is in keeping with literature in terms of doctor protection, patient protection, and legality are the leading roles of a chaperone.<sup>[12]</sup> The findings in this study can be aligned with literature because the participants that stated they always use chaperones during sensitive examinations like TVS seem to be practicing what has been described as 'safe and responsible care' of patients.<sup>[17]</sup> A significant proportion of the participants did assert that one of the roles of a chaperone during TVS is to 'protect sonographers'; however, we are of the view that being indifferent to other roles of the chaperone (see Table 2) could be interpreted that the participants and peers in Lagos state do not have good understanding of chaperone use.

The study addressed knowledge/awareness of the role of a chaperone, as well as patient's rights during TVS. The majority of participants (78%) disagreed/strongly disagreed that a TVS should be discontinued immediately if there was no chaperone, and 52% 'agreed/strongly agreed' that the TVS can continue without a chaperone (Table 3). Literature suggests that use of chaperones has a significant influence on service delivery. Therefore, it is not a surprise that most of the participants agreed/strongly agreed (combined proportion = 57%; Table 5) that patients who decline chaperones should be counselled to accept them. Counselling women to accept chaperones during TVS was a factor that improved service delivery in this study (Table 6). The positive relationship between chaperone use and improved service delivery as evidenced by the regression coefficient (0.6054) and the computed p-value ( $p = 0.0000$ ) also demonstrated a significant positive impact of use of chaperone on service delivery. Furthermore, the regression residual plot (Figure 4) shows that chaperone use positively impacts service delivery: fitted plots showed that the difference between the mean and actual observations was not significant. These results suggest that the participants who 'always' used chaperones during TVS and during other intimate ultrasound examinations (Table 4) were of the opinion that chaperone use is beneficial. It would be reasonable to argue, based on these results, that the study may be aligned with the view that using chaperones helps to reduce the risks associated with intimate examinations.<sup>[22]</sup>

The results also support the opinion that use of chaperones and other escorts while in after-hours-house-call duty is largely beneficial to service delivery.<sup>[23]</sup>

To test the impact of sex on chaperone among sonographers in Lagos state, we hypothesised that sex has no significant impact on chaperone use. Interestingly, the results in this study showed that sex significantly impacted chaperone use as evidenced by the computed means and standard deviations for both males and female participants (Table 5). ANOVA showed statistically significant difference in chaperone use between sex in favour of men as evidenced by ANOVA F-test value of 4.9349 ( $p\text{-value} = 0.0292$ ). Based on these results, our null hypothesis was rejected. This finding is not in keeping with the findings of Onyiaorah et al<sup>[24]</sup> as they stated that the use of chaperones does not correlate with physicians' sex. The current study is in keeping with other authors<sup>[25,14]</sup> who reported that there is a significant difference in the pattern of chaperone use between male and female residents. In terms of the current study it is important to underscore that the results could be biased as 74% of the participants were males hence we caution interpreting the data as reflecting both sexes equally in terms of the significant impact of sex on use of chaperones. In addition, the finding that gender variation on chaperone use was associated with low variance implies consistency in the attitude of male and female sonographers' regarding chaperone use. Since women generally prefer female sonographers to perform TVS on them,<sup>[19]</sup> we think that male participants in the current study may be using chaperones due to the choice of their female patients and not necessarily because they endorse and routinely implement the recommendation of the use chaperones.

Age has been reported as an important factor in using chaperones among health practitioners.<sup>[14,25,26]</sup> In this study, we hypothesised that age has no significant impact on sonographers use of chaperones during TVS. The findings did not support this hypothesis. Age had a highly significant impact on the participants use of chaperones as evidenced by the ANOVA F-test value of 4.0821 and the p-value of 0.0096. Both clearly showed that age had a significant impact on use of chaperone in this study. Our finding is consistent with the view of Onyiaorah et al<sup>[25]</sup> as they stated that the "use of chaperones significantly correlates with physicians' age". In addition, the findings in the study are in keeping with those of Rosenthal et al<sup>[27]</sup> because they reported that increasing age is correlated with increasing use of chaperones: compared to the younger participants, as shown in Figure 1, the participants who were older than 54 years (23%) tended to make use of chaperones. On the other hand, according to Jones<sup>[22]</sup> older practitioners tend to use chaperones less often.

## LIMITATIONS

Ethics approval was not obtained hence may be a limitation in terms of the scientific integrity of this study. A significant limitation of this cross-sectional survey is that it focused only on sonographers. The inputs from patients who are among the major stakeholders in ultrasound practice were not obtained. Some findings are based only on descriptive

summaries which we believe may significantly affect the generalisation of the reported findings: such findings may lack empirical validation. Use of simple ANOVA and classical regression in our empirical analysis of some of the objectives was a limitation. Simple ANOVA and classical regression could probably have omitted other factors that equally play significant roles in influencing use of chaperones and the impact of chaperone use on service delivery. For instance, the participants' level of education, experience and years of practice was not considered in the study. Some of the reported findings cannot therefore be regarded as totally reflective of reality. Despite these limitations, the well-fit regression model in Figure 4 showed that results obtained in this study were not spurious. Moreover, alpha reliability coefficients (Tables 2, 3 and 4) showed acceptable internal consistency of multiple questions asked. Non-probability convenience sampling, as used in this study, means that the findings cannot be generalised to reflect the opinions of all sonographers in Lagos.

## CONCLUSION

It could be said that the participants were highly aware of their ethical obligation to use chaperones in Lagos state. However, their overall attitude to chaperone use during TVS and other intimate ultrasound examinations was not excellent. Regarding motivating factors, the fear of medico-legal issues appeared to be the main motivator for chaperone use by the participants. Although not entirely a new finding,

the participants did consider the presence of chaperones during TVS and other intimate ultrasound examination as an effective way to improve service delivery significantly. They therefore used 'counselling' to assure patients and to convince more women to accept TVS. Although this submission needs to be investigated further, the sex and age of the participant sonographers appeared to play a very significant role in the use of chaperones during TVS: older males were likely to use chaperones more often.

Nigeria does not have a policy document regarding guidelines for chaperone use. It is thus recommended that a policy document for medical chaperone use for intimate examinations in the country should be developed.

## CONFLICT OF INTEREST

We authors do not declare any conflict of interest.

## CONTRIBUTIONS OF AUTHORS

CU (Federal University of Technology, Owerri Nigeria) supervised the research and drafted the manuscript; EU (Ultrasound Unit, North Cumbria Integrated Care NHS Foundation Trust, UK) provided critical comments and recommendations regarding literature review; JJ (University of Lagos) assisted with interpretation of the results; IA (Glorius Diagnostic Center, Lagos) was responsible for data capturing and presentation of the results.

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