ORIGINAL ARTICLE

# Perceptions and Willingness to Undertake Transvaginal Sonography by Women at the Sally Mugabe Central Hospital, Zimbabwe

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## ABSTRACT

***Introduction****:* The acceptability and willingness to undergo Transvaginal Sonography by the patients have generated mixed reactions in different healthcare settings. There is little that is known about Zimbabwean women's perceptions and willingness to undergo Transvaginal Sonography and there are no specific guidelines to guide its use.

***Aim:*** To evaluate the perception and willingness to undergo Transvaginal Sonography among women attending Obstetrics and Gynaecology clinic at Sally Mugabe Central Hospital in Harare, Zimbabwe.

***Methods:*** A cross-sectional survey using a structured questionnaire was conducted between 1 and 30 June 2022. A total of 170 women attending the obstetrics and gynaecology clinic at Sally Mugabe Central Hospital wereselected by consecutive sampling to participate in the study.

***Results:*** The majority of women (81.76%) had no previous TVS experience, with an equally large proportion (60.84%) not having seen a TVS probe before. Most of the women would prefer female sonographers (85.37%) to conduct the examination. In addition, about 58% of the participants concurred that a chaperone should be present. Less than half of the females (47.93%) were eager to have a TVS done on them. Equally, just 45% of the females said they would encourage others to have a TVS scan. The difference in willingness to undergo a TVS study stratified by employment status was statistically significant (chi-square 7.26, p = 0.03).

**Conclusion:** *Our study findings revealed that a large proportion of females had no previous TVS experience, with an equally large proportion not having seen a TVS probe before. Only a sizeable proportion of women were willing to accept TVS provided it is conducted by female sonographers and or in the presence of a chaperone.* The findings underscore the importance of education and awareness of the benefits of TVS in terms of diagnosis on maternal health outcomes, in the Zimbabwean population.

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***Keywords:*** Transvaginal ultrasound, perceptions, willingness, chaperone

This article is available online at: http://www.mjz.co.zm, http://ajol.info/index.php/mjz, doi: https://doi.org/10.55320/mjz.49.2.1093

The Medical Journal of Zambia, ISSN 0047-651X, is published by the Zambia Medical Association

## INTRODUCTION

Conventionally, ultrasound imaging of the pelvis is performed using the transabdominal transducers due to its safety and relative acceptability by the practitioners and patients.[1] However, Transvaginal Sonography (TVS) has beenproven by numerous studies to be more effective than Transabdominal Sonography (TAS), in the diagnosis and management of female pelvic pathology and conditions.[2]In TVS the pelvic organs are closer to the endovaginal probe and are better visualized. Additionally, the degradation of image quality by bowel gas, obesity, retroverted uterus and the mandatory uncomfortable full bladder requirement, all associated with the TAS, are eliminated. On the other hand, TVS is an intimate examination and there are a number of reasons for assuming that many patients may find it intrusive and they may feel anxious and vulnerable.[3]Research has shown that a signi?cant number of women ?nd vaginal examinations distressing and that, for some women, vaginal examinations may trigger post-traumatic stress symptoms. There have been reports that some women have found transvaginal scans very distressing, and the number of medico-legal cases involving transvaginal scans is increasing.[4,5]It is an extremely sensitive area of practice which places a great deal of responsibility on the clinicians to ensure that they not only protect their patients from psychological distress but also themselves, from the threat of litigation arising from such distress.[6]

Transvaginal Sonography may be desirable; however, its use will require soliciting patients' opinions to appreciate their feelings towards it. The acceptability and willingness to undergo TVS by the patients have generated mixed reactions in different settings, and these observations have been reported in the literature.[1,7,8,9,10]The willingness of the patients in the literature ranges from 43% to 99%, and this wide range in acceptance is said to be context specific.[1,9]Factors that predict willingness include the age of participants, parity, previous painful vaginal examination and sexual violence, embarrassment from undue exposure, and loss of control.[10,11] Other factors could also depend on the design of the study, the population of women used, religious and cultural background.[12]For instance, as per the Arab cultural norms, vaginal examination such as TVS should not be performed on unmarried women; in addition, any vaginal intrusion is construed as a violation of women's virginity, and loss of family honour.[13] On the other hand, in the Western world, compliance with TVS was high in two studies with 94–100% of respondents indicating that they would return for a TVS.[4,10]Obtaining patients' opinions about an examination is a vital aspect of developing guidelines to regulate its practice.[14,15]

The findings of earlier studies on the willingness to have TVS, which were mostly performed in developed or in West African countriesmay not apply to the Zimbabwean setting due to differences in culture, beliefs and religion. In Zimbabwe, TVS is mostly done in private centres, with very few examinations done at public hospitals despite the availability of equipment and qualified personnel. The Zimbabwe Patients Charter and tenets of patients-centred care, advocate for respect for the patient's values, preferences, and expressed needs.[16,17]There is little that is known about Zimbabwean women's perceptions and willingness to undergo TVS and there are no specific guidelines to regulate its use. Patients' opinions are an important facet of guideline development.[14]The purpose of this study is, therefore, to evaluate the perception and willingness to undergo TVS among women attending the Obstetrics and Gynecology clinic at Sally Mugabe Central Hospital in Harare, Zimbabwe. It is anticipated that the study results might inform the sonographer's best practice in performing a TVS examination in Zimbabwe.

## METHODS

### *Study Design*

A cross-sectional survey was conducted at Sally Mugabe Central Hospital between 1 and 30 June 2022. This particular design was suitable as it allowed the investigation of two variables[18]; i.e. the perceptions of women towards TVS and their willingness to undergo the procedure within a short period of time.

### *Research setting*

Sally Mugabe Central Hospital is the main referral center for patients and casualties from the Northern half of Zimbabwe and is also the main services hospital for greater Harare residents. The hospital has been the main teaching hospital for the University of Zimbabwe's Faculty of Medicine's practical lectures since 1966. It has full accreditation by the College of Surgeons for East-Central and Southern Africa status for the training of surgeons. The hospital is also a training hospital for nurses, theatre nurses, paediatric nurses, midwives, radiographers/sonographers, laboratory technicians and pharmacy technicians.[19]

### *Research instrument*

A structured self-administered questionnaire with three sections and 20 questions was used to solicit information. The questionnaire was adapted from previous studies found in the literature.[2,6,10,11] Two lecturers in The Department of Radiography at the Harare Institute of Technology were asked to evaluate the questionnaire and offer suggestions for improvement. The instrument was then pretested on 10 participants so that it could be further evaluated and refined. Additionally, pretesting was done to see how much time it takes to administer the questionnaire. Time estimates were required for informed consent purposes and for assessing participant burden.[20] Section A gathered demographic information. Section B consisted of five "yes" or "no" questions designed to solicit information on the perceptions of TVS from the respondent. Lastly, Section C also consisted of five "yes" or "no" questions aimed at evaluating the willingness or acceptability of TVS by the participants.

### *Sampling and sample size*

A total of 170 women attending Sally Mugabe Central Hospital Obstetrics and Gynaecology clinicwere recruited into the survey by consecutive sampling during the study period. This method of sampling involves recruiting all of the people from an accessible population who meet the eligibility criteria over a specific time interval, or for a specified sample size.[20] The questionnaires were self-administered but participants were allowed to ask the researcher questions where they sought clarification. The sample size was calculated using the formula for cross-sectional prevalence studies.[20]

### *Inclusion criteria*

- All women 18 years and above attending Sally Mugabe Central Hospital Obstetrics and Gynaecology clinic for various indications
- Women who consent to take part in the study

### *Exclusion criteria*

- Children below 18 years of age
- Women who do not consent to take part in the study

### *Data collection procedure*

The women were given information about the use and importance of TVS, shown the probe and the procedure was fully described to them as part of the study. The questionnaire was administered to those who consented to take part in the survey

### *Data analysis procedure*

Both descriptive and inferential statistics were used in the analysis. Data from questionnaires were entered into an excel spreadsheet. This data was then scanned for out-of-range values, cleaned and then uploaded to STATA 13 for analysis. Data were checked for out-of-range values using box and whisker plots. Normality tests for continuous data were done using the Shapiro-Wilk test. Normally distributed continuous data were presented as mean [SD] and median [IQR] if not normally distributed. Categorical data were presented as frequencies [Percentages]. Significance was set at $p \leq 0.05$.

### *Ethics*

The study was carried out according to the declaration of Helsinki. The study protocol was reviewed and approved by the Harare Institute of Technology Institutional Research Ethics Committee and the Sally Mugabe Research Ethics

Committee (SMCHEC160522/62). Participants were asked to provide written consent after being informed of their right to withdraw from the study at any point if the need arose. The participants were also assured that refusal to participate in the study did not jeopardize the quality of the service they were going to receive from the hospital. All information and data were to be kept strictly confidential. All questionnaires were coded to facilitate recording but no names were written on the questionnaires. The research data, questionnaires and any other confidential information will be kept for five years thereafter it will be deleted by the researcher.

## RESULTS

### *Demographics*

Of 200 women approached, a total of 170 women agreed to take part in the study yielding an 85% response rate. The median [IQR] age of the participants was 32 [23; 39] years. The majority of the women (55.29%) had a tertiary-level education. A sizeable proportion of the participants (45.88%) were not employed. The median [IQR] gravida and parity were 2 [0; 4], 2 [0; 4] respectively. A summary of the demographic findings is presented in Table 1.

**Table 1: Demographic characteristics**

| Variable | N (%) |
|---|---|
| Age median [IQR] years | 32 [23; 39] |
| **Education level** | |
| None | 5 (2.94) |
| Primary | 21 (12.35) |
| Secondary | 50 (29.41) |
| Tertiary | 94 (55.29) |
| **Occupation** | |
| Formal | 53 (31.18) |
| Informal | 39 (22.94) |
| Not employed | 78 (45.88) |
| **Religion** | |
| Christianity | 151 (88.82) |
| African tradition | 4 (2.35) |
| None | 11 (6.47) |
| Islam | 4 (2.35) |
| **Gravidity median** [IQR] | 2 [0; 4] |
| **Parity median** [IQR] | 2 [0; 4] |

### *Perceptions about TVS*

A large proportion of females (81.76%) had no previous TVS experience, with an equally large proportion (60.84%) not having seen a TVS probe before. More than half of the participants (62.87%) believed that the TVS probe would be painful during the procedure. With respect to the gender of the operator, the majority of women preferred female sonographers (85.37%) to conduct the TVS examination. In addition, about 58% of the participants concurred that a chaperone should be present when the TVS probe is being inserted. This could be because 52.38% of the women felt that the TVS examination constitute an invasion of their privacy. These findings are summarized in Table 2

**Table 2: Perceptions about TVS**

| Variable | N (%) |
|---|---|
| **Previous TVS** | |
| Yes | 31 (18.24) |
| No | 139 (81.76) |
| **Sexually active** | |
| Yes | 118 (70.24) |
| No | 50 (29.76) |
| **Douching** | |
| Yes | 61 (37.20) |
| No | 103 (62.80) |
| **Sexual abuse** | |
| Yes | 23 (13.61) |
| No | 146 (86.39) |
| **Painful VE** | |
| Yes | 64 (37.65) |
| No | 67 (39.41) |
| Never had a vaginal examination | 39 (22.94) |
| **Seen TVS probe** | |
| Yes | 65 (39.16) |
| No | 101 (60.84) |
| **Painful** | |
| Yes | 105 (62.87) |
| No | 62 (37.13) |
| **Preference** | |
| Male sonographer | 24 (14.63) |
| Female sonographer | 140 (85.37) |
| **Chaperone** | |
| Yes | 97 (58.08) |
| No | 70 (41.92) |
| **Privacy** | |
| Yes | 88 (52.38) |
| No | 80 (47.62) |

### *Willingness to undergo TVS*

Less than half of the females (47.93%), who took part in the study, were eager to have a TVS done on them. Equally, just 45% of the females said they would encourage others to have a TVS in the future. Spousal permission was found to be a major hindrance in females undergoing a TVS examination as 70.95% of the participants confirmed that their spouses would not allow them to have the TVS examination because of the probe that is used. These findings are summarized in Table 3.

**Table 3: Willingness to undergo TVS**

| Variable | N(%) |
|---|---|
| **Willing to have TVS** | |
| Yes | 81 (47.93) |
| No | 88 (52.07) |
| Repeat TVS | |
| Yes | 48 (30.57) |
| No | 109 (69.43) |
| **Encourage others** | |
| Yes | 73 (45.34) |
| No | 88 (54.66) |
| **Spouse permission** | |
| Yes | 43 (29.05) |
| No | 105 (70.95) |

Willingness to have TVS was assessed using cross-tabulations. It was found that women who were formally employed constituted 40.74% of those who were willing to undergo a TVS study. On the other hand, 52.27% of the women who were not employed were not willing to undergo a TVS examination. The difference in willingness to undergo a TVS study stratified by employment status was statistically significant (chi-square 7.26, $p = 0.03$). There was no statistically significant difference in the willingness to undergo a TVS stratified by educational level, even though a higher proportion of females who were willing to undergo a TVS had a tertiary level education (62.96%) Findings of the cross-tabulations are presented in Table 3.The cross-tabulations also showed that there was a statistically significant difference between those who had a TVS before and those who had never had a TVS with respect to willingness to undergo a repeat TVS ($p = 0.00$). For the women who had undergone a TVS before, 58.62% of them were willing to have a repeat TVS as compared to 24.22% of women who had no previous TVS exposure.

**Table 4: Cross tabulations**

| Variable | Willing to have TVS Yes | Willing to have TVS No | Chi-square | *p*-value |
|---|---|---|---|---|
| **Education** | | | | |
| None | 2 (2.47) | 3 (3.41) | 6.55 | 0.08 |
| Primary | 5 (6.17) | 16 (18.18) | | |
| Secondary | 23 (28.40) | 26 (29.55) | | |
| Tertiary | 51 (62.96) | 43 (48.86) | | |
| **Religion** | | | | |
| Christianity | 75 (92.59) | 76 (86.36) | 4.12 | 0.25 |
| African tradition | 2 (2.47) | 2 (2.27) | | |
| None | 4 (4.94) | 6 (6.82) | | |
| Islam | 0 (0.00) | 4 (4.55) | | |
| **Occupation** | | | | |
| Formal | 33 (40.74) | 19 (21.59) | 7.26 | 0.03 |
| Informal | 16 (19.75) | 23 (26.14) | | |
| Not employed | 32 (39.51) | 46 (52.27) | | |
| **Sexually active** | | | | |
| Yes | 56 (47.46) | 24 (48.98) | 0.03 | 0.86 |
| No | 62 (52.54) | 25 (51.02) | | |
| **Sexual abuse** | | | | |
| Yes | 11 (47.83) | 69 (47.59) | 0.00 | 0.98 |
| No | 12 (52.17) | 76 (52.41) | | |
| **Painful VE** | | | | |
| Yes | 32 (39.51) | 32 (36.36) | 2.54 | 0.28 |
| No | 32 (33.33) | 39 (44.32) | | |
| Never had a vaginal examination | 22 (27.16) | 17 (19.32) | | |
| **Age group** | | | | |
| . . . . | 38 (46.91) | 36 (40.91) | 5.02 | 0.17 |
| . . . . | 32 (39.51) | 28 (31.82) | | |
| . . . . | 8 (9.88) | 19 (21.59) | | |
| . . . | 3 (3.70) | 5 (5.68) | | |

## DISCUSSION

This study aimed to evaluate the perception and willingness to undergo TVS among women attending the Obstetrics and Gynecology clinic at Sally Mugabe Central Hospital in Harare, Zimbabwe. To the researcher's knowledge, this study is one of the first studies that document the opinions of Zimbabwean women toward TVS. Since there are no specific guidelines that regulate

the use of TVS, it is anticipated that results from this study might inform sonographers' best practices in performing a TVS examination in Zimbabwe.

In the current study, a large proportion of the participants (82%) had no previous TVS experience, with an equally large proportion (61%) not having seen a TVS probe before. This was consistent with other studies in the literature that also reported low knowledge and awareness of TVS in Africa. A study assessing the level of acceptance of TVS in women who came for routine ante-natal clinics in two tertiary hospitals in Nigeria reported that only 6% of them knew about the procedure.[21] Yet another study by Akintomide and Obasi, also reported low awareness of TVS with only 21% having prior knowledge.[3] However, a study by Atalabi *et al.*, reported higher knowledge levels about TVS, with 56% reporting prior knowledge. In the researchers' opinion, this could be attributed to the study population, which consisted of women who presented for elective obstetric and gynecologically indicated ultrasonography.[1] Elective examinations (from the Latin: *eligere*, meaning to choose) usually involve one choosing[22], and patients usually make a choice on a procedure that they have knowledge about or on what they have done research. In contrast, the current study population consisted of women who were attending an obstetrics and gynaecology clinic and not necessarily seeking ultrasound services at the time. It is, therefore, reasonable to conclude that awareness of TVS depends on the population being studied.

Despite ultrasound being vital for women's management in obstetrics and gynaecology, many studies in the literature have reported low awareness amongst African women.[23]Even at the level of some health facilities, midwives, who are most connected to women, show some level of ignorance ofits value to women.[24]Many factors such as level of education, cost of purchasing and training in ultrasound, low level of development, government policies, training of medical health care workers, and poor infrastructure, are all seen to influence the knowledge of women on ultrasound.[25]Zimbabwe is among Sub-Saharan African countries with high maternal mortality ratios (MMR), though the country's MMR has been gradually declining over the years.[26]It has been established that women's perceptionsand willingness to undergo antenatal ultrasonography is critical, and that it has an impact on their health outcomes.[23] This, therefore, underscores the need to increase awareness and knowledge about TVS and its advantages to women in Zimbabwe.

With respect to the gender of the operator, the majority of women preferred female sonographers (85%) to conduct the TVS examination.This could be because 52% of the women felt that TVS examination constitutes aninvasion of their privacy. This was similar to other studies done globally that also showed that females preferred female practitioners to carry out TVS.[7,10,11,27]From women's perspectives, TVS examinations have the potential for embarrassment, anxiety and discomfort.[3] Sonographers also have anxieties with regard to TVS, including a lack of confidence in their clinical findings, the fear of allegations of misconduct and, ultimately, the potential for litigation or prosecution.[6] Sonographers may use the view that women do not like TVS examinations as a justification for not doing them. This, however, compromises the women's health by not taking advantage of the diagnostic opportunities provided by TVS. Thomson and Moloney[5], suggest that effective communication with the patient should, therefore, be an essential and key part of the process of obtaining informed consent and patients should be encouraged to say if they feel uncomfortable about anything or want the sonographer to stop during the examination itself. Consent issues during radiology examinations are, however, still a grey area in Zimbabwe and further studies may focus on this area, especially with regard to TVS. Also, the perceptions of Sonographers on TVS will need to be explored so that they can be compared to findings from this study.

Allegations of sexual assault against sonographers are likely to rise in future due to improved public

awareness, and the increased number and complexity of ultrasound examinations being performed.[5] The issue of chaperones has become the focus of much of the debate surrounding intimate examinations such as TVS.[28]This prompted The Society and College of Radiographers[29] to publish a chaperone policy that is particularly relevant for sonographers. In the current study 58% of the participants concurred that in the absence of a female sonographer, a chaperone should be present when the TVS examination is done. This is also in sync with the majority of studies that show that women prefer chaperones to be present during TVS. In the study by about 50% wanted a third person in the room during the TVS and the majority preferred their husbands (44%) to a chaperone (35%).[3] In yet another study 47% felt that a chaperone was needed.[7]Additionally,in works by 95% of women indicated their preference for no chaperone provided the examination was done by a female practitioner.[27] The latter was also confirmed by where respondents were significantly more likely to prefer a chaperone if their sonographer was male than if their sonographer was female.[11] This emphasizes the need to have trained chaperones in Zimbabwean radiology departments and the sonographers should be aware of their availability. Ensuring the chaperone policy is fit for purpose and applied, is the best protection for both patients and sonographers.[5]

Regarding willingness to undergo TVS, findings show that more than half of women attending the Obstetrics and Gynecology clinics at the Sally Mugabe Central Hospital were not willing to undergo TVS. Equally, just 45% of the females said they would encourage others to have a TVS in the future. However, spousal permission was found to be a major hindrance in females' willingness to accept TVS examination as 70.95% of the participants confirmed that their spouses would not allow them to have the TVS examination because of the type of probe that is used. Spousal permission was an interesting finding that sheds light on the influence of spouses on their willingness to undergo intimate examinations. Nevertheless, more studies are needed to address this finding. The findings of this study are in contradiction with the literature which reports that more than 50% showed a willingness to undergo TVS.[2,3,8] This could be attributed to a lack of awareness of the potential benefits of undertaking TVS, amongst the study participants. This highlights the importance of education and awareness of the benefits in terms of diagnosis that TVS can have on maternal health outcomes in the Zimbabwean population. Awareness plays a key role in the approach to improving access to healthcare. It empowers communities, medical professionals and patients with appropriate tools, information and skills so that they can make high-quality, informed decisions on prevention, diagnosis, treatment, care, and support.

**Limitations and Recommendations for future research**

Due to resource constraints, this study was restricted to a single centre, a much bigger sample would have been obtained if multiple hospitals were selected. However, since the Sally Mugabe Central Hospital is a referral hospital, the researchers believe that the sample was representative of the northern half of Zimbabwe and the greater part of Harare.

Consent issues during radiology examinations are still a grey area in Zimbabwe and further studies may focus on this area, especially with regard to TVS.

Spousal permission was an interesting finding that sheds light on the influence of husbands on willingness to undergo TVS examinations. More work is needed to address this finding.

Lastly, this study evaluates the perceptions of TVS from the patients' perspective, another study that documents the views of Sonographers is needed so that a comparison can be made.

**CONCLUSION**

This study is one of the first studies that document the opinions of Zimbabwean women toward TVS. The study determined that most women had no

previous experience with TVS and the majority were not eager to undergo the examination. This could be attributed to low awareness of the potential benefits of this procedure on maternal health outcomes. A female sonographer was preferred by those women who were willing to undergo the examination. However, in the absence of a female sonographer, then a chaperone was desirable. The findings underscore the need to empower women through education and awareness of the benefits of TVS on maternal health outcomes.

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