

Peer Reviewed **Original Article****WILLINGNESS OF PATIENTS UNDERGOING HSG EXAMS TO ALLOW MALE STUDENT RADIOGRAPHERS TO PARTICIPATE IN THE INVESTIGATION: A SINGLE CENTRE STUDY**

Michael Promise Ogolodom¹ *PhD* | HU Chiegwu¹ *PhD* | Victor Ugbede Ali¹ *BSc* | Daniel C Ugwuanyi¹ *PhD* | Awajimi-jan Nathaniel Mbaba² *FWACS* | Michael Sunday Okpaleke¹ *PhD* | Elizabeth Amini Okankwu⁴ *PhD* | Efe Omita³ *MSc*

¹Department of Radiography and Radiological Sciences, Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria

²Department of Radiology, Rivers State University Teaching Hospital Port Harcourt, Nigeria

³Medical Department Nigeria Agip Oil Company Port Harcourt, Rivers State, Nigeria

⁴Department of Nursing Sciences, Faculty of Basic Medical Sciences, College of Medical Sciences, Rivers State University, Port Harcourt, Nigeria

<https://doi.org/10.54450/saradio.2022.60.2.711>

ABSTRACT

Background: Students' active participation in patient care has been shown to be important for students' learning. The aim of this study was to assess the willingness of patients undergoing hydrosalpingography (HSG) examinations to permit the participation of radiography students in the investigation and the factors influencing their views.

Materials and methods: This study was a prospective cross-sectional study conducted at Waves Medical Diagnostic and Research Centre, Nnewi, from October to November 2021. Forty (n=40) patients who gave their consent were conveniently sampled. A structured questionnaire developed in line with the objectives of this research was used to collect the data. The obtained data were analysed on SPSS version 21. Both descriptive statistics (frequency and percentages) and inferential statistics (Chi-square test) were used.

Results: The majority (n = 28/70%) of the patients would not allow a student (male or female) to examine them without the supervision of a radiographer. Most (n =32/80%) would not allow male students to examine them without a radiographer being present. There were statistically significant relationships between participants' willingness and parity ($\chi^2 = 37.8$, p =0.001), age ($\chi^2 = 69$, p = 0.000) and level of educational attainment ($\chi^2 = 46.6$, p = 0.002).

Conclusions: This study showed a non-acceptance of patients of male radiography students' involvement in their HSG examination. This is because, except for patients with previous child birth, the majority of the patients would feel embarrassed by the presence of the male radiography student.

Keywords: clinical placement, parity, radiography, student, willingness

INTRODUCTION

In the healthcare sector, healthcare services givers including clinical students always maintain close contact with healthcare services receivers called the patients.^[1] Clinical placements/posting is an important component in the education of students who are training in the healthcare professions. From the clinical postings clinical students begin to witness examinations of patients thereby gaining the required experience as it concerns the hospital environment.

Hysterosalpingography (HSG) (aka uterosalpingography) is a special radiological procedure that is used to assess the patency and the structure of the uterus and fallopian tube.^[2,3] It uses trans-cervical injected contrast medium to delineate and aid visualisation of the uterine cavity and evaluates tubal patency radiographically. The main role of HSG is to

image the fallopian tubes in infertile or sub-fertile women. It can be used in other cases such as pelvic pain, congenital or anatomical abnormalities of the uterus and fallopian tubes, anomalies of the menstrual cycle, the study of abnormal menstrual flow,^[4] women with recurrent and spontaneous abortions and the postoperative evaluation of women who have had surgical tubal ligation or reversal of the ligation.^[5] Another recent indication for HSG is the need to prove tubal occlusion after the insertion of trans-cervical sterilisation micro-inserts.^[6]

The willingness of patients and their consent to involve students in their care is important to clinical education.^[1] A radiography student's education includes learning through interaction and direct contact with patients. A typical example of this is an examination involving contrast media administration, for example a HSG, where students learn

more about the procedure by taking part in the radiological examination. It can therefore be inferred that in order for students to finally become competent in the practice of radiography after graduation, real-life sessions with patients are ultimate if this is to be achieved.

However, a key component of clinical education is a patient's willingness and comfort level with involvement of students in their examination.^[7] Patients have the right to confidentiality.^[8] A patient has every right to consideration of privacy especially in special procedures such as HSG that expose the genitalia. As long as it does not interfere with diagnostic procedures or treatment, a patient has the right to request that someone be present or not while the examination is being performed. It is therefore ethical practice to obtain patients' consent and if obtained have the capacity or will to decide whether students are to participate in their examination or not.

It has been observed from past studies that HSG patients feel uncomfortable when male students are present in the diagnostic room during HSG examinations. The discomfort causes a feeling of fear/anger, embarrassment; hence this makes a patient to hold back relevant information leading to poor quality of the radiographic procedure.^[7] Students mostly depend on clinical posting in order to have practical knowledge of radiographic procedures. A key factor determining radiography student excellence in clinical setting depends largely on willingness and cooperation of patients to permit students' participation during investigations. [8] Thus there is a need to find how willing HSG patients are to student 'participation in the procedure and the factors influencing the patients' views. The aim of this study was to assess the willingness of HSG patients to permit male radiography students in Nnewi Metropolis, Anambra State Nigeria to take part during HSG investigations.

METHODS

This was a prospective cross-sectional study, conducted at the X-ray unit of Waves Medical Diagnostic and Research Centre in Nnewi, Anambra State and involved patients that underwent HSG examinations between October and November 2021. Ethical clearance/permission (WMDRRC/148/Vol.3/2021) for this study was obtained from the Research Review Committee of the aforementioned Centre. Consent of the participant patients was requested and obtained using a written informed consent form. All the information that was obtained from the participants' records were treated with the utmost confidentiality and only used for the purpose of this study. The name, hospital number and address of the participants were not included in this study.

The sample size for this study was estimated using a formula for a known population by Yamane cited in Ogolodom et al.^[9] and Uka et al.^[10] studies as below:

$$n = N/1+N(e)^2$$

Where, n = desired sample size

$$N = \text{population for the study} = 44$$

$$e = \text{error margin} = 50\% (0.05)$$

$$1 = \text{constant}$$

$$n = 44/1+44(0.05)^2 = 44/(1+ (44 \times 0.0025)) = 44/1.11 = 39.6 \approx 40$$

Forty (n=40) patients were selected using convenience sampling. A questionnaire was developed by the researchers and was based on the study objectives for data collection. The questionnaire comprised Section A and B. Section A captured information on the participants' socio-demographic variables such as age, marital status and level of education. Section B contained questions that addressed the study objectives, which included a range of questions, such as previous a HSG and acceptance of a male student been allowed to examine the participants prior to their examination. There were 36 items in the questionnaire. The reliability and validity of the instrument were determined using methods used by Ogolodom et al.^[11] and Mbaba et al.^[12] in their studies.

Hard copies of the questionnaire were handed to the participants during their HSG examinations and collected immediately after completion. Obtained data were exported into Excel software version 2007 and the analysis was done with the computer software package, SPSS version 21.0 (IBM Corp, Armonk, NY, USA, 2012). Descriptive statistics showing the frequencies and percentages were used to explain the data as appropriate and inferential statistic (Chi-square test) was used to determine the relationship between each participant's willingness to allow male radiography student to observe their HSG procedures, their parity status, age and level of educational attainment. A p-value less than 0.05 was set as the level of statistical significance.

RESULTS

Demographics of the participants (n=40); twenty-three (57.5%) were between the ages of 25-34 years, eight (20%) were in the age group 35-44 years. Most 80% (n=32) were married and 20% (n=8) were single. In terms of education level the majority 62.5% (n=25) had a BSc degree as their highest level of educational qualification (Table 1).

The results of their previous knowledge/experience of HSG investigation and their parity status were captured in Table 2. Thirty-two (80%) did not have previous experience, and eight (20%) had done the examination before. Thirty-five (87.5%) had not given birth and five (12.5%) had given birth. Four (80%) had 1-2 children, and one (20%) had 3-5 children. All those who had children (100%, n=5) agreed that they would allow male radiography student to observe the procedures when they are undergoing HSG investigation (Table 2).

Table 3 shows the attitudes of the participants towards male radiography students' involvement in their HSG examination. The majority (n=32/80%) disagreed with male radiography student performing the examination on them without the supervision of a radiographer. The vast majority (n=36/90%) preferred a female radiography student to

observe their HSG examinations, and 35 (87.5%) said they would walk away if there was a male radiography student in the room (Table 3). In terms of factors that influence participants' attitude towards male radiography students taking part in the HSG examination, 50% perceived students to be rude, 18 (54%) believed students may not be careful, 30 (75%) believed students might discuss their conditions outside the investigation room, 30 (75%) said they would feel embarrassed if students were allowed to observe their HSG investigation, and 30 (75%) believed that students will

learn better if they are allowed to observe the procedures (Table 4).

The relationship between participants' willingness and parity, age and level of educational attainment is in Table 5. There were statistically significant relationships between their willingness and parity ($\chi^2 = 37.8$, $p = 0.001$), age ($\chi^2 = 69$, $p = 0.000$) and level of educational attainment ($\chi^2 = 46.6$, $p = 0.002$) (Table 5).

Table 1. Socio-demographic data of the participants

Age (Years)	Variable (freq)	Percentage (%)
15-24 years	7	17.5
25-34 years	23	57.5
35-44 years	8	20
45-54years	2	5
Total	40	100
Marital status	Variable (freq)	Percentage (%)
Married	32	80
Single	8	20
Total	40	100
Educational level	Variable (freq)	Percentage (%)
Primary school	3	7.5
SSCE	10	25
BSC	25	62.5
MSC	2	2.5
Total	40	100

Key: SSCE: Senior Secondary Certificate Examination, BSC: Bachelor of Science, MSC: Master of Science

Table 2. Participants' knowledge of HSG investigation

Question	Responses	Frequency	Percentage
Have you done HSG before?	Yes	8	20
	No	32	80
	Total	40	100
Have you given birth to any child before?	Yes	5	12.5
	No	35	87.5
	Total	40	100
If yes, how many?	1-2	4	80
	3-5	1	20
	5-9	Nil	Nil
	Total	5	100
I have given birth, and I will allow a male student stay during my HSG examination.	Yes	4	80
	No	1	20
	Total	5	100

Table 3. Participants' attitude towards male student involvements in their HSG investigation

Question	Class	Frequency	Percentage
Would you be unhappy if a male student examines you prior to the examination?	Yes	28	70
	No	12	30
	Total	40	100
Would you allow a male student examine you without supervision?	Yes	8	20
	No	32	80
Would you allow a female patient stay during the HSG examination?	Yes	36	90
	No	4	10
	Total	100	100
Would you ask the male patient to leave before the examination starts?	Yes	35	87.5
	No	5	12.5
	Total	40	100

Table 4. Factors/reasons influencing the overall view of the participants

Students are meant to be guided	Yes	4	10
	No	20	50
	No response	16	40
	Total	40	100
Students will be rude	Yes	20	50
	No response	20	50
	Total	40	100
Students may not be careful	Yes	18	45
	No	10	25
	No response	12	30
	Total	40	100
Student may not know much about my condition	Yes	25	62.5
	No response	15	37.5
	Total	40	100
Students will discuss me later	Yes	30	75
	No response	10	25
	Total	40	100
Students will listen to me better	Yes	5	25
	No	35	75
	No response	0	0
	Total	40	100
Students will assist me during the exam	Yes	20	50
	No	20	50
	No response	0	0
	Total	40	100
Students will be kind	Yes	15	37.5
	No	15	37.5
	No response	10	25
	Total	40	100

Students will not be harsh	Yes	8	20
	No	12	30
	No response	20	50
	Total	40	100
Students will learn better when they are present for the examination	Yes	30	50
	No	5	25
	No response	5	25
	Total	40	100
Because I feel embarrassed	Yes	30	75
	No	10	25
	No response	0	0
	Total	40	100
Because of my religious beliefs	Yes	8	20
	No	22	55
	No response	10	25
	Total	40	100
Because of my socio-economic status	Yes	30	75
	No	10	25
	No response	0	0
	Total	40	100
Because I know I have a right to privacy	Yes	15	37.5
	No	20	50
	No response	5	12.5
	Total	40	100
I am afraid of the radiographer/radiologist	Yes	3	7.5
	No	17	42.5
	No response	20	50
	Total	40	100
The student will learn more	Yes	35	90
	No	5	10
	No response	0	0
	Total	40	100
It is not important for me	Yes	10	25
	No	30	75
	No response	0	0
	Total	40	100

Table 5. The relationship between participants' willingness, parity, age and level of educational attainment

DEPENDENT VARIABLE	PARITY		AGE		LEVEL OF EDUCATION	
	χ^2	<i>p-value</i>	χ^2	<i>p-value</i>	χ^2	<i>p-value</i>
Willingness of the participants	24.3	0.001	69	0.000	43.6	0.002

Level of statistical significance is $p < 0.05$

DISCUSSION

Physicians have always had a duty to keep their patients' confidences. In essence, this duty means that any medical information of a patient is meant solely for the physician. The AMA's code of medical ethics has backed up this issue of confidentiality, the purpose of which is to ensure full and frank disclosure of information by the patient.^[13] This in turn enables a full and more complete diagnosis to be made and proper treatment, administered. The Law of Patient Rights, which was enacted in by the Israeli parliament, highlight extensively six areas of importance concerning patient confidentiality, consent and record keeping.^[14] The areas of importance include right of the patient refusal, provision of complete and accurate information, proper identification, presence of senior medical staff, the right of a disabled patient and patient's right to request the presence of a third party (might be a student in this case).^[15]

From our study we found that majority of the participants (most of whom had previously experienced the presence of students during the procedure) would not permit male radiography students to either examine them even with the supervision of a radiographer or even stay in the investigation room while the HSG procedures was going on. This implies that the participants valued their privacy at all times, even at the point of medical check/care. This finding is in harmony with the finding of similar study done by Choudhury et al.^[16] which reported that patients with prior experience with medical student presence were more likely to be uneasy with respect to future students' involvement in their clinical investigations and would demand that no student participate in their medical procedures. According to Choudhury et al.^[16] 13% of patients who had previous contacts with a student, and 22% who did not, would be worried if a physical examination were to be repeated on them by either a resident doctor or a student, and 31% and 42% respectively would be uncomfortable if a student of the opposite sex examined them. Choudhury et al.^[16] also noted that patients who have had previous contact with students in the course of their medical procedures, will not always want subsequent student involvement in their procedures. They^[16] attributed their observations to a student-based factor, which is the behaviour of students predominantly and that the patients might perceive the presence of students during their medical investigations to be less confident. Additionally, a lack of sympathy perceived by a patient can also contribute to a future reluctance to participate or co-operate towards a student's involvement in examinations.^[17] This attitude by patients is in keeping with the findings of a study by Lyne et al.^[18] in terms of patients' attitudes are predominantly a result of past experiences.

In our study the major factors that influenced the participants' attitudes towards the presence of male radiography students during HSG investigation were: 50% perceived students to be rude, 54% believed students may not be careful, 75% believed students might discuss their conditions outside the investigation room later, and 75% said they would feel embarrassed if students were allowed to observe their

HSG investigation. Nonetheless, 75% believed that students would learn better if they were allowed to observe the procedures. These findings could be attributed to the different level of educational attainment of the participants as well as their need to maintain their privacy especially if they were to be attended to by a student of the opposite sex. Favourable previous experiences with students might increase willingness to cooperate, but although patients may seem happy about it, it frequently depends on certain conditions.^[19] These conditions may be student and patient based: sex of the student and level of training of the student: and patient based conditions includes their sex, previous experiences with students, understanding role of students and nature of medical problem.^[20] According to Youssef et al.^[21] if it only involved reading patients' files, observing doctors performing examination by students, then patients were quick to give consent.

There were statistically significant relationships between their participants' willingness and parity, age and level of educational attainment. These imply that the willingness of their participants to either accept or reject a male radiography student's participation in their HSG investigation varied with their parity status, age and level of educational attainment. We believe that patients with higher educational qualifications would be in a better position to understand and appreciate the need for proper training of student radiographers. For a student to become competent in the practice of radiography after graduation, requires real life sessions with patients; a key component of clinical education is a patient's willingness and comfort level with involving a student in their examination.^[7]

LIMITATIONS

The generalisation of these findings may be limited due to the small sample size and the use of convenience sampling. The reasons for female students' preference by the participants were not explored in this study. Future studies on this subject should be done to evaluate the aforementioned limitations.

CONCLUSIONS

The majority of the participant patients indicated they would not permit the participation of student radiographers, especially the males, to take part in examining them. The few that indicated that they would permit students preferred female students. The willingness to permit students' participation was significantly related to age, parity and educational background of the participants. This finding calls for more education and enlightenment of patients since the students being rejected are the ones to become radiographers tomorrow and without their participation during their studentship, they will not be able to work effectively as radiographers. In the same way students have to be seriously educated on professional ethics to ensure that the fears of the patients are allayed.

DECLARATION**• Ethical approval and consent to participate**

An approval (WMDRRC/148/Vol.3/2021) was obtained from Research Review Committee of Waves Medical Diagnostic and Research Centre in Nnewi, Anambra State. All participants gave their written informed consent.

• Consent for publication

This was also appropriately obtained

• Availability of data and material

The datasets used or analysed during the current study are available from the corresponding author upon reasonable request.

• Competing of interest

There is none declared among the authors

• Funding: Not applicable**AUTHORS' CONTRIBUTIONS**

All contributed in the study and in writing the manuscript.

ACKNOWLEDGEMENT

Not applicable.

REFERENCES

- Rima MS, Hyöm NB, Abir YK. Patient attitudes towards medical students at Damascus University Teaching Hospitals. *Bio Med Central Medical Education*. 2012; 12:13
- Danfulani M, Haruna YG, Mohammed MS, Ahmed SS. Hysterosalpingographic findings in women with infertility in Sokoto North Western Nigeria. *African J Med Health Sci*. 2014; 13(1):19. doi: 10.4103/2384-5589.139438.
- Ogolodom M P, Bakre A K, Egbeyemi O O, Akhigbe R O. Patterns of abnormal findings in females referred for hysterosalpingography at private diagnostic center, Lagos Nigeria. *Inter Annals of Med*. 20182(11). doi:10.24087/IAM.2018.2.11.620.
- Chalazonitis A, Tzovara I, Laspas F, Porfyridis P, Ptohis N, Tsimitselis G. Hysterosalpingography: technique and applications. *Curr Probl Diagn Radiol*. 2009; 38(5): 199-205.
- Simpson WL; Beitia, Mester J. Hysterosalpingography: a reemerging study. *RadioGraphics*, 2006; 26(2): 419-431.
- Lazarus E, Ana P L, Susan C, Rebecca H A. Necessity of hysterosalpingography after essure micro insert placement for contraception. *American J Roengenology*. 2012; 198(6): 1460-1463.
- Simons RJ, Imboden E, Martel JK. Patient attitudes toward medical student participation in a general internal medicine clinic. *J General Internal Med*. 1995; 10(5): 251-254
- King D, Elizabeth J, Benbow SJ, Lye M. Attitude of elderly patients to medical students' *Medical Education*. 1992; 26: 360-363
- Ogolodom MP, Ugwu AC, Akosile CO. Pattern of magnetic resonance imaging findings in lumbar spine pathologies and its correlation with demographic variables in Rivers State. *JCDR*. 2021; 15(6): TC5-TC9
- Ukaji N F, Ohagwu CC, Ogolodom MP. Effects of variations in imaging parameters on image quality of non-contrast computed tomography scans of brain: a cross-sectional study. *JCDR*. 2021; 15(10): TC13-TC15
- Ogolodom MP, Mbaba AN, Alazigha N, Erundu OF, Egbe NO, et al. Knowledge, attitudes and fears of healthcare workers towards the corona virus disease (COVID-19) pandemic in South-South, Nigeria. *Health Sci J*. 2020; 1:002. doi:10.36648/1791-809X.S1.002
- Mbaba AN, Ogolodom MP, Abam R, Akram M, Alazigha N et al. Willingness of health care workers to respond to Covid-19 pandemic in Port Harcourt, Nigeria. *Health Sci J*. 2021; 15(2): 1-8. doi:10.36648/1791-809X.15.2.802
- American Medical Association (AMA)(1995-2013). Patient confidentiality.
- Israel book of laws: Law of patient rights. part 5:17A. 1996, 327-36
- Shlomo MM, Simon Z, Eliezer K, Orli C, Shlomo V. patients' attitudes towards the presence of medical students in family practice consultations. *Israel Med Asso J*. 2001; 3:903-906.
- Choudhury TR, Moosa AA, Cushing A, Bestwick J. Patients' attitudes towards the presence of medical students during consultations. *Med Teach*. 2006; 28 (7): 198-203. doi: 10.1080/01421590600834336.
- Walters K, Buszewicz M, Russel J, Humphrey C. Teaching as therapy: cross sectional and qualitative evaluation of patients' experiences of undergraduate psychiatry teaching in the community. *British Med J*. 2003; 326: 740-750.
- Haffling A, Hakansson A. Patients consulting with students in general practice: Survey of patient satisfaction and their role in teaching, *Medical Teacher*. 2008; 30: 622-629.
- Lynne N, Sandland M, Duchek M, Westberg K. Informed consent in clinical training-patient experiences and motivation for participating. *Medical Education*. 1998; 32: 465-71
- Adams DS, Adams LJ, Anderson RJ. The effect of patients' races on their attitudes towards medical students' participation in ambulatory care visits. *Academic Medicine*. 1999, 74(12): 1323-6. doi: 10.1097/0001888-199912000-00016
- Marwan Y, Al-Saddique M, Hassan A, Karim J, Al-Saleh M. Are medical students accepted by patients in teaching hospitals? *Med Educ Online*. 2012; 17: 17172. doi: 10.3402/meo.v17i0.17172