MISCONCEPTION ABOUT ULTRASOUND AMONG NIGERIAN WOMEN ATTENDING SPECIALIST AND TERTIARY HEALTH INSTITUTIONS IN IBADAN

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ABSTRACT

Background: In women health, ultrasound is well established as a safe tool, and it is often the first imaging modality employed in the, screening, investigation and treatment of conditions in obstetrics and gynaecology. However, women's misconceptions about health issues, aetiology and treatment of diseases conditions may have negative impact on their health care seeking behaviour. Client's perspective of diagnosis including investigation process is therefore crucial in health care. This study aimed at finding out the misconceptions expressed by clients about ultrasound, and the potential predictors associated with this attitude among women in Nigeria.

Method: A **descriptive cross-sectional survey was conducted among** 3137 women who presented for transabdominal ultrasound scan between August and November 2010 in two referral hospitals in Nigeria. Data were obtained using a questionnaire. Descriptive and multivariate analysis was performed applying logistic regression analysis; predictors of misconceptions expressed by clients about ultrasound, and misconceptions among women in Nigeria were identified using SPSS Statistics (SPSS Inc, Chicago, IL) version 17 software.

Results: The mean age of the women was 33.8 years (standard deviation = 7.9), with 88.8% currently married. More than half of the responders had tertiary education (56.6%), followed by secondary school education (34.5%), primary education (7.8%) and no formal education (1.1%). There were 59 women who held the misconception that ultrasound was dangerous to health accounting for 1.9% of the study population. The reasons given by this group of women Included; 'ultrasound can kill or destroys the body cells' (35.6%); it can cause cancer (15.3%); 'the radiation is only dangerous to some organs of the body' (6.8%); it can harm or deform the fetus (6.7%); it is only dangerous when exposure is frequent (5.1%); and only dangerous when handled by unskilled medical personnel (1.7%).

Conclusion: This study provides insight to the wide range of issues about clients' perception and misconception regarding ultrasound safety. These issues have to be addressed to improve better compliance and patronage about ultrasound scans in Nigeria. We suggest that robust counseling session is imperative to address all the views and possible concerns of clients to improve better service delivery.

BACKGROUND

The introduction of ultrasound several decades ago has greatly revolutionized the field of medicine and medical care worldwide especially in the field of obstetrics and gynaecology[1-4]. Compared to earlier imaging modalities, it is safe, uses sound waves with no ionizing radiation, cheap, simple and widely available. The use of pulse wave colour Doppler sonography also confers additional advantage of vascular interrogation. Medical ultrasound is used for both diagnostic and therapeutic purposes on a wide variety of medical and surgical conditions in virtually all aspect of the body systems. All these have made its usage well accepted in the field of medicine especially in resource poor country like

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In women health, ultrasound is well established as a safe tool, and it is often the first imaging modality employed in the, screening, investigation and treatment of conditions in obstetrics and gynaecology. It has been used in the management of various gynaecological conditions[5] such as uterine, ovarian, and other pelvic diseases. In obstetrics practice, it has become part of the investigation for antenatal care[6-8]. Ultrasound is used for myriads of indications such as dating of pregnancy[5-10], fetal anomaly screening/prenatal diagnosis in early pregamncy[10-16], placental localization and as part of biophysical profile; And sometimes, some clinicians especially in developing countries routinely perform scan at designated gestational age as baseline especially for gestational age dating[5,717-19].

It is a known fact that misconceptions about health issues have long existed from time immemorial[20]. This fear from misconception has made many women to delay seeking medical attention even when the investigation does not have potential injurious effect on their bodies[21]. Misconceptions about breast-feeding, weaning, dietary habits, pregnancy, causes of diseases and other health related topics are common in developing countries[20, 22]. Umeora et al in a study conducted in eastern Nigeria stated that these health related misconceptions results from a mix of illiteracy, socio-cultural beliefs and/or factors. Misconceptions have significantly affected peoples' perception about health, aetiology of diseases and treatment of diseased conditions and their health care seeking behaviour. These false beliefs have negative impact on the health seeking behaviour of people especially those from low-socio economic class who due to poverty cannot afford specialized health care. They thereby turn to alternative sources of care including spiritual homes, quack health providers and herbal practitioners for solutions to their health problems[22].

Client's perspective of diagnosis including investigation process is therefore crucial in health care provider clientele communication and in general, the views expressed by either or both often set the tone for subsequent engagement and interaction at the health facility. When both are convinced about the investigation and diagnosis, compliance is better but where there is disconnect in communication or views, it is always associated with poor health seeking behaviour and non-compliance by the clients. In view of the overwhelming benefits of ultrasound in women, many women in our environment have not fully taken advantage of this imaging modality partly due to misconceptions they have or have heard discussed about the procedure elsewhere.

A Study carried out by Firth EA et al in Tanzania reported some misconceptions about antenatal USS to include; fears that USS reduces fetal gestational age, causes disability and has radiation; repeat in the same pregnancy could cause anaemia in the mothers. Others mentioned are; it reduces life expectancy of the mother and baby, and USS may change the colour of the skin it is applied to[23]. At the moment, there is dearth of literature about studies on ultrasound misconception among women in Africa and we are not aware of any similar study in Nigeria despite anecdotal reports of client refusal or stating their perspective about the effect of USS.

The purpose of this study is to assess the misconceptions expressed by clients about ultrasound, and to identify potential predictors associated with this attitude among women in Nigeria. Findings from this study will provide bases for health authorities to raise awareness among women about the usefulness of ultrasonography and its role in health care.

MATERIALS AND METHODS

Study population

This study was performed among Nigerian women referred by physicians for elective antenatal obstetric ultrasound scan and benign gynecological conditions two centers namely; University college Hospital (UCH), Ibadan - a foremost tertiary referral centre, and the St Gregory's specialist clinic, Yemetu- a secondary centre in Ibadan.

UCH is a foremost tertiary referral centre; patients are referred from private and public secondary health institutions within Nigeria, particularly the South West. It has 850 beds with bed occupancy rate of between 55% and 70%. St Gregory is a reputable diagnostic ultrasound clinic manned by qualified and well trained obstetrician and gynaecologist that scans an average of 150 clients per day with the 85% being women.

Study Design

This was a descriptive cross-sectional interviewer-administered questionnaire based survey conducted

from August to November 2010. Participants were informed in groups about the study, highlighting their confidentiality and voluntariness. Consent was then obtained individually after collection of their scan results. Each participant was then interviewed individually at a private room on their views and concerns about ultrasound.

Data Collection

Trained research assistants in the Ultrasound waiting rooms of both facilities administered a semi-structured questionnaire to consenting women. To ensure validity and reliability of the data collected, the questionnaire was reviewed for information quality every day. It was then pre-tested before the survey. The questionnaires were administered in English and the local languages by the trained research assistants on each item of the questionnaire and responses compiled.

Statistical Analysis

The data collected was coded and entered into SPSS Statistics (SPSS Inc, Chicago, IL) version 17 software. Bivariate analysis was done using chi-square test. Variables significant at 10% level were entered into the logistic regression model to identify likely socio-demographic predictors including, age ethnic groups, religion, occupation, and education on their misconception about Ultrasound. Level of statistical significance set at 95% confidence level.

RESULTS:

Socio-demographic outcome:

3200 women were approached for this study, 3137 women consented to participate, giving a response rate of 98%. About 80%of the women were recruited from the St Gregory ultrasound centre and the remainder from UCH. The largest proportion of the respondents was between the ages 25 to 34 years, accounting for 47.8% of the studied population. The mean age of those studied was 33.8 years with standard deviation of 7.9 years (Table 1). The distributions of socio-demographic variables are as shown in Table 1.

A significant number of the studied population was married (88. 8%), single or never married (9.3%), separated (1.1%) and widowed (0.9%).

More than half of the responders had tertiary education (56.6%), followed by secondary school education (34.5%), primary education (7.8%) and no formal education (1.1%).

The highest proportions of the women (79.8%) were from the Yoruba ethnic group which is the ethnic group of where the study was carried out.

Misconception outcome:

There were 59 women who held the misconception that ultrasound was dangerous to health accounting for 1.9% of the study population. The reasons given by the women who believed that Ultrasound is injurious to health included ; 'ultrasound can kill or destroys the body cells' (35.6%); it can cause cancer (15.3%); 'the radiation is only dangerous to some organs of the body' (6.8%); it can harm or deform the fetus (6.7%); it is only dangerous when exposure is frequent (5.1%); and only dangerous when handled by unskilled medical personnel (1.7%).

The socio-demographic characteristics and variable relating to centre of ultrasound scanning and if responders ever had an ultrasound examination before were investigated. Table 2 shows two sets of results from the analysis: (1) those from cross-tabulation of ultrasound misconception and selected variables and (2) odds ratios (ORs) and confidence intervals (CIs) from logistic regression of ultrasound misconceptions. There were significant association between ultrasound misconception and selected socio-demographic variables studied. The proportions reporting that ultasonography is dangerous were compared across categories of selected variables. The results (Table 2) show that a significantly higher level of misconception existed among women utilizing the UCH Ibadan compared with those at St Gregory ultrasound centre; women of higher education; and Christians compared to Muslims. On the multiple logistic regression analysis there remained a significantly higher odds of the misconception that ultrasound is dangerous among women attending the UCH ultrasound centre (OR = 0.44, 95% CI = 0.25 – 0.76). Percentage of responders who never had ultrasound examination and association with ultrasound misconceptions were 1.5 times more than those who had previously had ultrasound examination.

DISCUSSION

This study showed that most women in this study population believed Ultrasound is safe. Only Fifty-nine women representing 1.9% of the studied population felt that ultrasound was dangerous to health. The high level of awareness is probably due to the fact that Ultrasound investigation is widely available, cheap and the first line medical

investigation requested for by the obstetrician and gynecologist[7-16] and other physicians who would have educated and counseled their clients on the need for USS to investigate their conditions.

Among the women population with the misconception that ultrasound is associated with some risks, about one-third, 35.6% believed ultrasound kills or destroys the body cells, and 15.3% thought it causes cancer. Almost equal number of responders felt that radiation is dangerous to some organs of the body or it can harm or deform the fetus and accounts for 6.8% and 6.7% respectively. 5.1% believed it is only dangerous when exposure is frequent while 1.7% said USS is only dangerous when handled by unskilled medical personnel. Some of the misconceptions, such as ultrasound cause cancer and that it is harmful to the fetus, discovered in this study were also documented by Firth et al in their study[23.] These misconceptions are all effects of ionizing radiation, and since ultrasound is one of the radiological imaging modalities, these misconceptions may have arisen from the belief that ultrasound also use ionizing radiation. All these suggest that some women are not well informed about the basic principles of ultrasounds and these opinions has a potential to discourage compliance to physician instructions.

There is significantly higher level of misconception among women utilizing the UCH compared to St Gregory centre on multivariate analysis and this finding may be due to any of the following reasons. First, St Gregory offered a more robust counseling to women prior to their procedure including allaying fears about any misconception mentioned compared to UCH. Second, St Gregory has information leaflet which contained information about the procedure, uses and some possible misconceptions, which could have been read by the clients.

Education, religion, marital status, ethnicity and whether they have done ultrasound before did not significantly predict misconception about USS. This suggests that correct information would need to be disseminated across all socio-demographic status of women presenting for USS procedure. It may also be counterproductive to assume that women with higher education may have correct knowledge of ultrasound safety. However, a recent article by Bello and Ekelle showed that ultrasound practice may not be completely free of adverse effect although human studies are equivocal at the moment[24] and this may be a likely reason for the slightly high level of misconception among the educated.

This study provides wide range of issues that clients think about regarding ultrasound safety which has to be addressed to improve better compliance and patronage in Nigeria.

This study showed that although large populations of women are quite knowledgeable about USS procedures. Surprisingly, some clients still express wide range of misconceptions that bothers on the effect of ionizing radiation. We suggest that robust counseling session is imperative to address all the views and possible concerns of clients to improve better service delivery. Regular feedback from clients should shape the content of the counseling to dispel any misconception. Community health awareness on ultrasound safety will further improve correct knowledge of USS use in medical practice in Nigeria.

The small proportion of women that had misconception about ultrasound, and the study design used to elicit the information limits the interpretation of this study. Use of qualitative design may have provided better insight into the views expressed by the participants compared to the quantitative method used

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DISCLOSURE

The Authors declared no conflict of interest in this work.

Table 1: Percentage distribution of respondents' characteristics*

Variable	Frequency	%
Location		
UCH	631	20.1
Ultrasound centre	2506	79.9
Total	3137	100
Age (years)		
Less than 25	263	8.4
25-34	1492	47.8
35-44	1096	35.1
45+	270	8.7
Total	3121	100
Education		
None	34	1.1
Primary	241	7.8
Secondary	1066	34.5
Tertiary	1748	56.6
Total	3089	100
Marital status		
Single	291	9.3
Married	2777	88.8
Separated/Widowed	61	1.9
Total	3129	100
Religion		
Christianity	2073	66.3
Islam	1054	33.7
Total	3127	100
Ethnicity		
Yoruba	2489	79.8
Others	632	20.2
Total	3121	100

Table 2: Associations between the perceptions that ultrasound is dangerous and selected variables and multiple logistic regression findings

	Bivariate analysis Think ultrasonography is dangerous			Logistic regression analysis	
Variable	%	N	Chi square (p value)	Odds ratio	95% CI OR
Location					
Ultrasound centre	1.5	2506	11.036	0.44	0.25- 0.76
UCH	3.5	631	(0.001)	1	
Age					
Less than 25	1.1	263	3.040		
25-34	2.3	1492	(0.385)		
35-44	1.7	1096			
45+	1.1	270			
Level of education					
Primary/ None	0.7	275	9.127	0.32	0.07- 1.34
Secondary	1.1	1066	(0.010)	0.53	0.27 - 1.02
Tertiary	2.5	1748		1	
Marital status					
Single	3.4	291	4.419		
Currently married			(0.110)		
Widowed/separated	1.7	2777			
	1.6	61			
Religion					
Christianity	2.3	2073	5.747	1.64	0.82- 3.25
Islam	1.0	1054	(0.017)	1	
Ethnicity					
Yoruba	1.9	2489	0.617		
Others	1.4	632	(0.432)		
Ever had an ultrasound					
Yes	1.8	2670	0.670		
No	2.4	467	(0.413)		

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