



BREAST CONSERVING SURGERY AWARENESS AND ACCEPTANCE AMONG FEMALE NURSES IN IRRUA SPECIALIST TEACHING HOSPITAL

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ABSTRACT

Introduction: Breast Conserving Surgery (BCS) is oncologically safe for eligible patients with breast cancer and has enormous physical and psychological benefits. Despite this, the mastectomy rate in many centres is still very high. Nurses are frontline staff in healthcare settings and have great contact with the patients. The level of their awareness would have a great impact on patients eligible for breast conservation seeking expert opinion. This study explored the awareness, perception and acceptance of BCS among female nurses in a rural Nigeria tertiary hospital.

Methodology: A quasi-structured self-questionnaire was distributed to 235 nurses using a convenient sampling method. The responses on 219 adequately filled questionnaires were entered into an IBM SPSS Statistics Data Document (version 21.0) for analysis. Categorical variables were presented in counts and percentages. Association between the acceptance of BCS versus its awareness, equivalence to TM and years of nursing practice were tested using Chi-square probability test and a p-value of <0.05 was considered statistically significant.

Result: The 219 participants had a good representation of junior and senior nurses among whom 80.4% were at least 45 years old and 82.2% were married. The nurses were mostly general nursing practitioners (76.7%) and 49.3% of the nurses had practised for a duration not less than 10 years of age. The 126 (57.5%) nurses, who described BCS as the surgical removal of a cancerous breast lump short of mastectomy, were considered to be aware of BCS irrespective of their understanding of complementary treatment modalities, eligibilities, comparative advantages to TM and certainty of its oncologic safety. The lack of ready access to radiotherapy centres (54.3%) and delay/overcrowding of these facilities (42.5%) were recognised respectively as major local challenges to BCS practices. The equivalence of BCS to TM was affirmed in 44.3% of the nurses and 35.6% had participated in managing breast cancer patients using the conservative surgical approach. 57.1% were willing to accept BCS or recommend it for an eligible friend or relative and no statistically significant association was observed among those who accepted BCS when matched with the level of awareness or the duration of nursing practice. A higher and significant level of acceptance of BCS was noted among those aware of its oncologic equivalence to TM (p-value = 0.000)

Conclusion: This study demonstrated gaps in knowledge of BCS among nurses who are stakeholders in assisting patients make the right decision. This knowledge gap in the perception of BCS will interfere with the ability of the nurse to adequately counsel patients in need of their expert opinion. The awareness of the oncologic equivalence of BCS to TM increased its acceptance significantly. An increase in public awareness and education of nurses is required to improve the acceptance rate of BCS in our practice. Caregivers should also devise effective means of communication to encourage eligible patients for breast conservation

Keywords: Breast Cancer, Breast Conserving Surgery (BCS), Total Mastectomy (TM), Awareness, Perception

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INTRODUCTION

Globally, cancer of the breast is the most common tumour and the commonest cause of cancer death among women (Coleman *et al.*, 2008; Akram *et al.*, 2017). It is a global health challenge with a rising incidence and up to 100,000 new cases are reported to occur every year in Nigeria (Jedy-Agba *et al.*, 2012). The gold standard for treating localized and operable breast cancer worldwide is surgery – mastectomy or breast conserving surgery (BCS) (Biganzoli *et al.*, 2012). Total mastectomy (TM) refers to the removal of the entire breast, while BCS preserves a portion of it that is uninvolved. BCS is best defined as any surgical intervention in the breast short of TM that removes the primary tumour with an envelope of an adequate margin of grossly normal-appearing surrounding breast tissues (Dorval *et al.*, 1998). The other terms used to describe this operation are lumpectomy, wide local excision, quadrantectomy, segmental mastectomy (segmentectomy), partial mastectomy and tylectomy (Dorval *et al.*, 1998). It is usually followed by the assessment of the regional lymph node status and/or dissection/clearance through a separate incision in the axilla, adjuvant radiotherapy to the breast, chemotherapy (adjuvant or neoadjuvant), hormonal therapy or immune therapy when indicated (Fisher, 1998; Fisher *et al.*, 2002; Newton and Washington, 2003). BCS originated from an innate feminine desire to preserve the native breast and several meta-analyses that demonstrated its oncological equivalence to TM (no difference in overall survival and recurrence rates) in early-stage breast cancers (Arriagada *et al.*, 1996; van Dongen *et al.*, 2000; Fisher *et al.*, 2002; Morrow *et al.*, 2002; Mahmood *et al.*, 2012). Breast conservation has a huge psychological impact on the woman's body image, nude appearance, sexuality and significantly improves her quality of life (QOL) (Coleman *et al.*, 2008; Akram *et al.*, 2017).

The indications for BCS have been updated severally, enhanced by tumour response to neoadjuvant chemotherapy and the improved cosmetic outcomes of oncoplastic surgeries (Bajaj *et al.*, 2004; Chen *et al.*, 2004; Mieog *et al.*, 2007). The major indications now include the patient's choice and willingness (to undergo radiotherapy and postoperative surveillance protocol), oncological feasibility and absence of contraindications to radiation therapy. The contraindications are fewer and include the patient's refusal and a lack of motivation, unattainable free surgical margins (eg multifocal/multicentric tumours, extensive calcifications), increase likelihood of poor cosmesis after BCS (eg very large tumour compared to the size of the breast), known genetic susceptibility and when radiotherapy is contraindicated or not feasible (Morrow, 2005; Fajdic *et al.*, 2013). In developing countries as Nigeria, local challenges such as ignorance, rural location, lack of oncoplastic surgical expertise and issues with radiotherapy (availability, affordability, facility crowding and delays) are also considered during the decision making for breast conservation. Though BCS is less invasive than mastectomy, it is not without complications. The complications include reoperation for positive margins, poor cosmetic outcomes, breast deformities (volumetric, retraction, contour), chronic pain syndromes, increased risk of in-breast recurrence and anxieties over possible recurrence and remnant cancer (Singletary, 2002). Some of the aforementioned benefits of BCS do not apply to a pendulous breast (Singletary, 2002).

Despite the enormous advantages of BCS, its increasing eligibility and the innate feminine desire for breast preservation, the mastectomy rate is relatively high in many countries (Dragun *et al.*, 2012; Kummerow *et al.*, 2015). Evidence from local experience shows an overwhelmingly high mastectomy rate, and many women opt for mastectomy for the wrong reasons and are thus deprived of the advantages of breast preservation. Some of the factors contributing to the high mastectomy rates include misinformation, wrong beliefs, exaggerated fears and late

presentation which in itself lead to a more advanced disease pattern at presentation (Mac Bride *et al.*, 2013; Gu *et al.*, 2017).

In Nigeria, the majority of women with breast cancer are relatively young (Adesunkanmi *et al.*, 2006; Olasehinde *et al.*, 2019) and mastectomy which is the most commonly performed surgical treatment in Nigeria for breast cancer, will cause greater psychological concerns for these women (Adebamowo and Adekunle, 1999; Ogundiran *et al.*, 2013). Olasehinde *et al.* (2013) explored the experiences of young Nigerian women after mastectomy in a study and observed that many of the women who had mastectomy wished they had BCS or breast reconstruction after mastectomy. In another study in Singapore, nearly one-fifth of women regretted their decision to undergo mastectomy and felt that they would choose BCT if they had the opportunity to choose again (Lee *et al.*, 2018). These desires reflect the innate feminine satisfaction of having a breast or its semblance. For eligible females, the decision for BCS versus mastectomy involves several determinants such as age, personal beliefs, personal preference, education, comfort level, situational awareness, quality and appropriateness of available care, geographical location, ethnicity, religion as well as the influence of the managing team. Wrong perceptions often lead to wrong decision making. Some patients believe that TM is safer because it involves more extensive surgery. These patients presume BCS will result in a lower recurrence or enable them to avoid chemotherapy (Teh *et al.*, 2014; Gu *et al.*, 2017). In Nigeria, the non-acceptance of TM is a major cause of late presentation, delayed surgical treatment, defaults from follow up care and discharges against medical advice (Ajekigbe *et al.*, 1991; Elenwo and Ijah, 2020).

Nurses as frontline staff in the healthcare settings have great contact with the patients. They use the best available evidence in their judgements to influence key decisions within the healthcare team (Thomson *et al.*, 2004). Their level of awareness and perception of BCS would have a great impact on the patients who often ask them lots of questions. Therefore, this study aims to explore BCS awareness and perception among them.

MATERIALS AND METHODS

This was a questionnaire-based exploratory survey of female nurses in Irrua Specialist Teaching Hospital (ISTH) carried out in 2021 between April and August, following ethical approval by ISTH-Health Research and Ethics Committee (Protocol Number: ISTH/HREC /20210103/159).

STUDY DESIGN

Prospective exploratory study

STUDY LOCATION

ISTH is a major referral centre in Edo state and neighbouring states. It is located along the Benin-Abuja expressway in Irrua, the headquarters of Esan Central LGA in Edo Central Senatorial District, serving the Central, Northern and parts of the Southern District of the State.

STUDY DURATION

April and August 2021.

SAMPLE SIZE

214 female nurses.

SAMPLE SIZE CALCULATION

The sample size (n) for this study was calculated using Taro Yamane's method formula; $n = N / \{1 + N(e)^2\}$, where: 'N' represents the population of female nurses in ISTH (which is 462), and 'e' signifies error margin of 0.05 at 95% confidence interval. With 10% attrition added to compensate for missing and inappropriately filled questionnaires, the sample size was adjusted from 214 to 235.

SUBJECT ELIGIBILITY

All the female nurses were considered eligible for participation unless they decline consent.

INCLUSION

Nurses in the various departments of the hospital who are females.

EXCLUSION

Those who declined participation in the study.

PROCEDURE AND METHODOLOGY

We designed a quasi-structured self-questionnaire and performed face validity on it. The questionnaire had three (3) sections containing closed and open-ended questions. Section 1 contained information on the socio-demographic data of the nurses, current cadre and posting, area of specialization and the duration of practice. Section 2 explored the awareness and knowledge of the nurses on BCS, terminologies used to describe BCS, complementary treatment modalities, eligibilities, perceived advantages and disadvantages in comparison to TM, the nurse's participation in any patient managed with BCS and the attendant local challenges. Section 3 assessed the acceptance of BCS by the nurses as a treatment option for breast cancer and the factors that might influence an individual's choice of BCS viz-a-viz mastectomy. 235 questionnaires were distributed to the nurses using convenient sampling to cover the 3 duty shifts for 2 months. Seven (7) of the 226 questionnaires retrieved were excluded from the analysis as they were either blank or inadequately filled.

DATA COLLATION AND ANALYSIS

Data from 219 questionnaires were inputted into an IBM SPSS Statistics Data Document (version 21) and analysed. The categorical data were presented in counts and percentages. Association between the acceptance of BCS versus its awareness, equivalence to TM and years of nursing practice were tested using Chi-square probability test and a p-value of <0.05 was considered statistically significant.

RESULTS

DEMOGRAPHICS OF PARTICIPANTS

The demographic analysis of the participant nurses (table 1 and figure 1) shows that the majority of them were at least 45 years (80.4%), married (82.2%), Christians (92.7%), of Esan origin (55.3%), and there was a good representation of junior and senior nurses (NO 2 to CNO). Most participants were specialised in general nursing and there were only a handful of nurses in the other specialities. 49.3% of the nurses had practised for at least 10 years and 78.5% were spread across the departments of medicine, surgery, paediatric and O&G (table 2).

Table 1: Socio-demographic Characteristics of the Participants

Characteristics	Number (n =219)	Percentage (%)	Cumulative Percentage (%)
Age Group			
21-25	14	6.4	6.4
26-30	25	11.4	17.8
31-35	61	27.9	45.7
36-40	46	21.0	66.7
41-45	30	13.7	80.4
46 above	43	19.6	100.0
Marital Status			
Single	37	16.9	16.9
Married	180	82.2	99.1
Widowed/Divorced	2	0.9	100.0
Religion			
Christianity	203	92.7	92.7
Islam	15	6.8	99.5
Others	1	0.5	100.0
Tribe			
Esan	121	55.3	55.3
Bini	19	8.7	64.0
Afemai	21	9.6	73.6
Ibo	27	12.3	85.9
Yoruba	13	5.9	91.8
Others	13	5.9	97.7
Unspecified	5	2.3	100.0

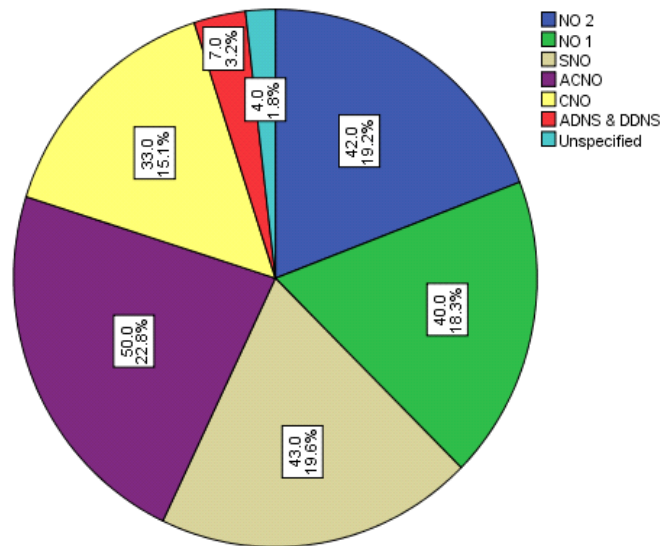


Figure 1: Cadre of Participant Nurses

Table 2: Specialization, Years of Practice and Current Posting

Characteristics	Number (n =219)	Percentage (%)	Cumulative Percentage (%)
Area of Specialization			
General	168	76.7	76.7
Nursing	13	5.9	82.6
Paediatric	10	4.6	87.2
Peri-Op.	9	4.1	91.3
Nursing	15	6.8	98.1
O&G	4	1.8	100.0
Others			
Unspecified			
Years of Practice			
1-3	32	14.6	14.6
4-6	44	20.1	34.7
7-9	35	16.0	50.7
10 above	108	49.3	100.0
Current Posting			
Medicine	54	24.7	24.7
Surgery	51	23.3	47.9
Paediatric	36	16.4	64.3
O&G	31	14.2	78.5
Theatre	10	4.6	83.1
Others	35	16.0	99.1
Unspecified	2	0.9	100.0

PERCEPTION (AWARENESS AND KNOWLEDGE) OF BCS VERSUS MASTECTOMY

Table 3 x-rayed the perception of the nurses on BCS viz-a-viz total mastectomy (TM). More than two-thirds of the participants were familiar with the terminology 'BCS' and aware of its use as a surgical treatment option for the management of breast cancer. 126 (57.5%) nurses described BCS as the surgical removal of a cancerous breast lump short of mastectomy. This category was considered to be aware of BCS irrespective of their understanding of the complementary treatment modalities, eligibilities, advantages and oncologic safety. BCS was also called lumpectomy, partial mastectomy, WLE, excision biopsy, quadrantectomy and segmental mastectomy in 42%, 34.2%, 26%, 21%, 20.1% and 17.8% of participants respectively. Chemotherapy (55.7%) and radiotherapy (48.9%) were recognised by most of the participants as additional treatment modalities after a BCS; followed by axillary surgery/dissection (16.4%), hormonal therapy (10%) and immune therapy (3.2%).

On the superiority of BCS compared to TM, 62.1% believe it will improve psychological well-being and QOL of the patient, 33.3% believed it will preserve the woman's nude appearance or beauty and 26.9% believed it preserves the native breast. On the contrary, 70.3% believed TM will lower the local recurrence rate compared to BCS and 12.8% erroneously agreed there is no need for further treatment after a TM. Early-stage and small size breast cancers were considered by many (71.2% and 54.8%) as eligibility criteria for BCS. 55.3%, 52.5% and 8.2 % respectively attributed their fears for BCS to fear of recurrence, undue anxieties over recurrence and poor cosmesis. A lack of ready access to radiotherapy centres (54.3%) and delay/overcrowding of these facilities (42.5%) were considered the major local challenges to BCS practice while delayed presentation and ignorance were implicated in 25.5% and 14.6% of the participants.

The equivalence of BCS to TM was affirmed by 44.3% of the nurses; while 41.6% did not and 8.7% were unsure. 35.6% of the nurses had participated in the management of patients who had BCS while 3 in 5 nurses had not. 65.3% of the participants believed there is a paucity of information to make an informed decision for BCS. The major determinants for choosing between BCS and TM were believed to be personal opinion and preference (82.6%), income and finance (70.8%), surgical expertise (69.8%), level of education (64.4%), previous experiences (63.9%), social status (58.9%), age (58.9%) and traditional belief (50.7%).

BC: Breast Cancer; NR: No Response; ExB: Excision Biopsy; L: Lumpectomy; WLE: Wide Local Excision, Quad: Quadrantectomy; SM: Segmental Mastectomy; PM: Partial Mastectomy; Os: Others; ASD: Axillary sampling/ dissection; RT: Radiotherapy; Chemo: Chemotherapy; HT: Hormonal therapy; IT: Immune therapy; TM: Total Mastectomy; PNB: Preserve native breast; PNAB: Preservation of a woman's nude appearance and beauty; IPWQL: Improved psychological wellbeing and quality of life; LRR: Local Recurrence Risk; POP: Personal Opinion and Preference; TNE: Traditional Belief and Ethnicity RB: Religious Believe; LE: Level of Education; PE: Previous Experience; GL: Geographical Location; SE: Surgical Expertise; SS: Social Status; IF: Income/Finance

ACCEPTABILITY OF BCS AND ASSOCIATION WITH ITS AWARENESS

More than half of the participants (57.1%) will accept BCS or recommend it to eligible friends or relatives as shown in Figure 2. Table 4 shows no statistical association between those who accepted BCS as a treatment option and their awareness (as defined) or duration of nursing practice. However, a significant correlation was observed between acceptance of BCS as a treatment option and awareness of its oncologic equivalence to TM. The knowledge and awareness of its oncologic equivalence to TM increased its acceptance among the nurses. Improved psychological satisfaction and QOL is top of the reasons for acceptance of BCS while recurrence is top of the reasons for non-acceptance. (Table 5)

Table 3: Perception (Awareness and Knowledge) of BCS versus Mastectomy

Familiarity with the Term “BCS”		Yes	No	NR								
Frequency		158	52	8								
Percentage (%)		72.1	24.2	3.7								
Awareness of BCS as Treatment for BC		Yes	No	Don't know	NR							
Frequency		161	35	14	9							
Percentage (%)		73.5	16.0	6.4	4.1							
Definition of BCS		Right	Wrong	No idea	NR							
Frequency		126	41	7	45							
Percentage (%)		57.5	18.7	3.2	20.5							
Other Names for BCS		Ex.B	L	WLE	Quad	SM	PM	Os				
Frequency		46	92	57	44	39	75	8				
Percentage (%)		21	42	26	20.1	17.8	34.2	3.7				
Added Modalities to BCS		ASD	RT	Chemo	HT	IT	None	Os				
Frequency		36	107	122	22	7	3					
Percentage (%)		16.4	48.9	55.7	10.0	3.2	1.4					
Advantages of BCS over TM		PNB	PNAB	IPWQL	None	Os						
Frequency		59	73	136	8	2						
Percentage (%)		26.9	33.3	62.1	3.7	0.9						
Advantages of TM over BCS		Lower LRR	No Further treatment	None	Os							
Frequency		154	28	21	2							
Percentage (%)		70.3	12.8	9.6	0.9							
Eligibilities for BCS		Early stage	All stages	Small tumour	Big tumour	Small breast	Large breast	Os				
Frequency		156	4	120	4	6	6	2				
Percentage (%)		71.2	1.8	54.8	1.8	2.7	2.7	0.9				
Fears with Practice of BCS		Recurrence	Undue anxieties for recurrence	Poor cosmesis	Os							
Frequency		121	115	18	2							
Percentage (%)		55.3	52.5	8.2	0.9							
Local Challenges with Practice of BCS in Nigeria		No ready access to RT	Delays/ overcrowded RT centres	Ignorance	Delayed presentation	Os						
Frequency		119	93	32	55	4						
Percentage (%)		54.3	42.5	14.6	25.5	1.8						
Equivalence of BCS to M		Yes	No	Unsure	NR							
Frequency		97	91	19	12							
Percentage (%)		44.3	41.6	8.7	5.5							
Participation in BCS Cases		Yes	No	NR								
Frequency		78	132	9								
Percentage (%)		35.6	60.3	4.1								
Adequate BCS Information for Informed Decision		Yes	No	NR								
Frequency		64	143	12								
Percentage (%)		29.2	65.3	5.5								
Choice of BCS/TM		POP	TNE	RB	Age	LE	PE	GL	SE	SS	IF	Os
Yes		181	111	95	129	141	140	81	153	129	155	7
No		14	67	80	51	40	34	89	28	52	29	
NR		24	41	44	39	38	45	49	38	38	35	

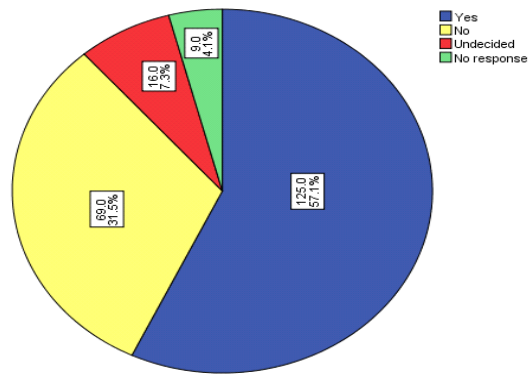


Figure 2: Acceptance of Breast Conservative Surgery

Table 4: Acceptance of BCS versus its Awareness, Years of Practice and Equivalence to TM

	Acceptance of BCS			Total	X ² P-value Inference
	Yes	No	Undecided/ No response		
Awareness of BCS					
Aware	79	34	13	126	3.882
Not Aware	46	35	12	93	0.114
Total	125	69	25	219	Not significant
Years of Practice					
1-3	21	10	1	32	6.531
4-6	27	14	3	44	0.366
7-9	19	9	7	35	Not significant
10 above	58	36	14	108	
Total	125	69	25	219	
Equivalence to TM					
Yes	66	23	8	97	22.733
No	49	35	7	91	0.000
Unaware/no response	10	11	10	31	Significant
Total	125	69	25	219	

Table 5: Reason for Acceptance and Non-acceptance of BCS as Treatment Option

Acceptance	Frequency	Percent
Preserve/conservate breast	19	8.7
Beauty/cosmesis/nude appearance	21	9.6
Improve psychology/satisfaction/quality of life	23	10.5
Safe oncologic equivalence to mastectomy	11	5.0
No specific reason	44	20.1
Non-applicable	94	42.9
Others	7	3.2
Non-acceptance		
Recurrence	43	19.6
Uncertainty of its oncologic safety	8	3.7
Undue anxiety	4	1.8
No specific reason	12	5.5
Non-applicable	149	68.0
Others	3	1.4

DISCUSSIONS

BCS was endorsed by the National Institutes of Health Consensus Conference in 1990 and has since then become the standard of excellence in breast cancer management (NIH Consensus Conference, 1991). In the US, accredited breast centres are measured using the rate of performance of BCS for early breast cancers (National Accreditation Program for Breast Centres, 2013; Kummerow *et al.*, 2015). The practice of BCS in Nigeria is low and is beset by various challenges peculiar to resource-limited settings including inadequate and inappropriate knowledge/awareness, limitations posed by eligibility criteria and radiotherapy requirements, low demands, limitations of oncoplastic surgery and breast reconstruction (Olasehinde *et al.*, 2019).

This study explored the knowledge of BCS among 219 nurses in a rural teaching hospital in the southwest of Nigeria and their willingness to accept or recommend it as a safe oncological treatment for early-stage breast cancer. Participants consisted of nurses mostly 45 years and below corresponding to the age where the concept of breast preservation is expectedly an interesting consideration. Nearly a half (49.3%) of the nurses have been practising for a duration not less than 10 years – a period reasonable to allow each nurse to participate in the management of a breast cancer woman with breast conservation modalities.

Despite claims of more than two-thirds of the participants to have heard the term “BCS” and were aware of its use as an alternative to mastectomy, only 57.5% of nurses could define or describe the concept in proper perspective. This was the category of nurses considered to be aware of BCS in the context of this discussion. Other terms used to describe BCS were lumpectomy, wide local excision, quadrantectomy, segmental resection, partial mastectomy and tylectomy (Dorval *et al.*, 1998). In this study, lumpectomy and partial mastectomy were the most recognised terminologies for BCS. To prevent a recurrence of breast cancer, BCS is complemented by other treatment modalities such as axillary surgeries (sentinel lymph node biopsy, axillary sampling or dissection), radiotherapy, chemotherapy, hormonal therapy and target or immune therapy (Arriagada *et al.*, 1996; van Dongen *et al.*, 2000; Mahmood *et al.*, 2012). 48.9% of participants in the study recognised the role of radiotherapy while only 16.4% acknowledged axillary surgery as an important component of breast conserving therapy. Fewer numbers recognised the role of hormonal and immune therapy. These knowledge gaps in the definition/description of BCS and its

complementary treatment modalities may in part be due to inadequate clinical exposure of the nurses, deficient classroom education, failure of continued medical education and in-practice training/updates, low hospital BCS practice rate or a lack of engagement of nurses in clinical decision making in the hospital.

Osime *et al.* (2008) in a KAP study on breast cancer among 385 female civil servants in Benin city, among whom 72% were educated up to the tertiary level, found that only 49 (12.7%) have heard of BCS. A poor perception of BCS was similarly demonstrated among Chinese breast cancer patients (CBCP) in a study in West China by Zhang Li *et al.* (2019) The study showed that only 2.42% of 1,324 patients had a greater perception of BCS, 12.69% had never heard of BCS, and 51.06% had only heard of BCS but did not have specific knowledge. There was no known similar research performed in nurses to compare the findings of this study. A feminine approach to counselling by informed female nurses is vital to assist patients to make the right decision. Without a proper understanding and a clear conviction by the nurses, the counselling of patients with early breast cancer for BCS will be an uphill task.

The advantages of BCS such as - improved psychological well-being and quality of life (QOL), preservation of nude appearance/beauty and preservation of native breast; were respectively recognised by 62.1%, 33.3% and 26.9% of the nurses in this study. Earlier studies observed a significant difference in mastectomized and breast conserved women in their perception of body image/configuration, nude appearance and sexual function with the spouse, leisure time activities especially activities that necessitate exposure of the body (eg athletics or swimming) and social isolation. However, the long-term frequency of mental/psychic dysfunction was not remedied by breast preservation (Meyer and Aspegren, 1989; Howes *et al.*, 2016). Fear of recurrence (55.3%) and undue anxieties over recurrence (52.5%) were the major concerns given by participants about the practice of BCS in this study. In a Singaporean study, an exploration of the reasons given by women who were eligible for BCS but choose to undergo mastectomy revealed that the fear of recurrence was a major deterrent in 74% of the cases. Conceptually, many believed that TM (which is more radical than BCS) should offer patients a better guarantee to achieve a cure, a greater sense of security from recurrence and provide greater opportunity to avoid chemotherapy (Teh *et al.*, 2014; Gu *et al.*, 2017). This may explain why 70.3% believed TM lowers local recurrence rate compared to BCS in this study and 12.8% even considered there may be no need for further treatment after a TM. In reality, the survival and recurrence rates are equivalent in BCS and TM (Arriagada *et al.*, 1996; van Dongen *et al.*, 2000; Mahmood *et al.*, 2012).

The major eligibility criteria for BCS in this study were early-stage breast cancer and small tumour size. Improvement in oncological surgical techniques and good response to neoadjuvant chemotherapy has made feasible many cases that formerly were traditionally excluded from breast conservation. Currently, the contraindications to BCS are the patient's refusal and lack of motivation, unattainable free surgical margins, increase likelihood of poor cosmesis after BCS, known genetic susceptibility and instances when radiotherapy is contraindicated or not feasible (Morrow, 2005; Fajdic *et al.*, 2013). Out of several limitations to BCS practices in Nigeria, radiotherapy challenges including a lack of access (54.3%) and overcrowding of radiotherapy facilities (42.5%) were top on the list followed by late presentation (25.5%) and ignorance (14.6%). Radiotherapy services, a critical component in breast-conserving therapy, are not readily available to a large number of patients in Nigeria - the most populated nation in Africa (Bajaj *et al.*, 2004; Nwankwo *et al.*, 2013). According to the International Atomic Energy Agency, Nigeria has the biggest gap between radiotherapy availability and its demand (Abdel-Wahab *et al.*, 2013). Few radiotherapy centres in Nigeria

leads to long travel distance for patients in rural locations, overcrowding of these centres and repeated damages to the machines.

This study observed that 57.1% of participants agree to accept BCS as a treatment option and this was statistically unrelated to the awareness of BCS in general. The finding buttresses an observation in several studies of the complexities involved in the decision-making process between BCS and TM (Teh *et al.*, 2014; Bellavance and Kesmodel, 2016). The common determining factors are the patients' education status, personal beliefs, personal preferences, concerns about body image, sexuality and recurrence, partner's opinion and surgeon's recommendation (Teh *et al.*, 2014). Shared decision-making that will accommodate the patients' concerns and autonomy with the expert medical opinion, is considered as the ideal (Bellavance and Kesmodel, 2016). The finding of a significant acceptance among those aware of their oncologic equivalence in this study suggests that a low BCS acceptance rate could result from a lack of awareness of an equivalent treatment option amongst patients, their providers and family members. This is supported by studies demonstrating a higher BCS acceptance among the younger and more literate women (Agrawal *et al.*, 2012). With adequate knowledge, the likelihood of choosing BCS by an eligible patient is expected to rise. Patient pamphlets, interactive educational classes, interactive websites, audio booklets and media apps are useful decision aids that can enhance the shared decision-making process (Nicholas *et al.*, 2016; Si *et al.*, 2020).

CONCLUSION

This study demonstrated gaps in the knowledge of BCS among nurses who are stakeholders in assisting patients make the right decision. This knowledge gap in the perception of BCS will interfere with the ability of a nurse to adequately counsel patients in need of their expert opinion. Though there was no significant association between its awareness and acceptance in generality, a significantly higher level of acceptance of BCS was noted among those aware of its oncologic equivalence to TM. Drawing from these findings, an increase in public awareness and education of nurses on breast conservation for early breast cancer is required to improve the acceptance rate of BCS in our practice. Caregivers should also devise effective means of communication to encourage eligible patients for breast conservation.

CONFLICTS OF INTEREST

The authors declare that there are conflicts of interest in the participation and undertaking of this research

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