

Clinicians' Perceptions of Breast Ultrasound Reporting for Women Using the BI-RADS Lexicon at a Tertiary Hospital in Uganda: An Exploratory Qualitative Study

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Abstract: In the era of breast cancer which still remains a high cause of mortality among women in many parts of the world, the BI-RADS breast ultrasound reporting system has been recommended to standardize communication of breast findings and improve on the management of women with suspected breast cancer. This study aimed at exploring the perceptions of clinicians on the use of the BI-RADS system to report breast ultrasound findings. It was an exploratory qualitative study conducted at Mulago National Referral hospital, a tertiary hospital treating women with breast cancer in Uganda. Individual interviews were conducted with the clinicians (doctors) working in the breast clinic of the hospital. The responses were audio-recorded and transcribed. Thematic analysis was employed to develop the themes from the responses. Overall, the clinicians interviewed expressed a positive perception towards use of the BI-RADS system when reporting breast ultrasound findings. They reported that BI-RADS has positively influenced the management of women with breast masses who are identified quickly. Three key themes emerged from the responses namely: 1) Ease of interpretation of reports; 2) Positive impact on patient management and 3) Limited knowledge of BI-RADS. The study has demonstrated that the BI-RADS system eases the work of clinicians when making management decisions for women with suspected breast masses. Continued training on use of BI-RADS involving clinicians and radiologists is thus recommended.

Keywords: BI-RADS, Ultrasound, Clinicians, Uganda

1. Introduction

Breast cancer is a leading cause of mortality globally [1, 2]. However, the situation even gets worse in low income countries with limited resources, limited formal screening programmes and less accessibility to screening equipment [3-6]. The triple assessment of breast self-exam, clinical breast exam and mammography for detecting early onset have been recommended [7]. Specifically, mammography has been suggested as the gold standard for breast cancer screening in many parts of the world [8-11]. However, low income settings suffer the challenge of not only having limited mammography equipment, but also high costs involved for the few equipment available where few women can afford it [6]. In addition, the mammography equipment is only accessible in urban tertiary

hospitals at a cost [6]. This thus leaves a large proportion of the women in rural settings with no access to such screening services. Apart from the high costs involved with mammography and the potential effects of getting exposed to ionizing radiation, the sensitivity of mammography has been reported to reduce among women with dense breasts as in many parts of Sub-Saharan Africa [12].

As a result of the above challenges with mammography, breast ultrasound has been proposed as an adjunct investigative modality in low resource settings where ultrasound equipment is relatively available, more accessible and less expensive when compared to mammography [13, 14]. This then frees up and only allows those women that must do mammography to do it. In Uganda where this study was conducted from and indeed in many low income settings, there

have been drives by ministries of health to have ultrasound equipment available in many lower level health facilities. This therefore further promotes the utility of ultrasound in these facilities in having breast ultrasound scans to evaluate women with breast masses and identify those that may need immediate further investigations and management [14]. However, accurate breast ultrasound reporting presents another problem as ultrasound is operator dependent and the interpretation of one individual may considerably differ from another individual, an observation that has been reported in previous literature [15].

Despite this challenge however, studies have demonstrated that breast ultrasound can offer an alternative in settings where mammography is not available to assist in evaluating breast masses and studies reporting about its utility and accuracy have been documented [6]. Achieving this requires a standardized way of reporting breast ultrasound findings for clinicians to effect the most appropriate management. In order to standardize breast ultrasound reporting therefore, the use of the Breast Imaging Reporting and Data System (BI-RADS) classification has been widely advocated for [1, 4, 6, 13]. The BI-RADS reporting is a globally acknowledged system of characterizing and classifying breast masses as seen at ultrasound, and it is used by imaging professionals to structure breast ultrasound reports and ease communication of findings to the clinicians who manage the women with breast masses. The BI-RADS system comprises of seven categories and these categories have been reported to be efficient in identifying women with masses that just need follow up and those that need immediate further investigations (Table 1) [6]. This can play a crucial role in the management of women with breast masses.

Table 1. BI-RADS Breast Ultrasound Categorization.

Category	Description
BI-RADS 0	Incomplete (Needs further imaging)
BI-RADS 1	Normal
BI-RADS 2	Benign
BI-RADS 3	Probably Benign
BI-RADS 4	Suspicious
BI-RADS 5	Highly Suspicious
BI-RADS 6	Known Malignancy

There is a dearth of published literature, especially from low resource settings exploring what the clinicians feel and think of the BI-RADS breast ultrasound reporting system. In our previous study, we reported the experiences and perceptions of the radiologists and sonographers who perform the breast ultrasound towards use of BI-RADS to write reports [4]. In this present study, we set out to explore the perceptions of the clinicians who read the reports towards the BI-RADS reporting system at a tertiary hospital in Uganda.

2. Methods

The aim of the study was to explore the perceptions of clinicians regarding use of BI-RADS in reporting breast ultrasound findings at a tertiary hospital in Uganda.

2.1. Study Design

It was an exploratory qualitative study conducted at Mulago National Referral Hospital in Uganda.

2.2. Participants

The study involved clinicians (doctors) who work in the breast clinic and routinely send women for breast ultrasound to the radiology department. These were purposively selected as they routinely receive breast ultrasound reports written using the BI-RADS system. In total, 12 clinicians were recruited into the study.

2.3. Data Collection and Analysis

In-depth individual interviews were utilized to collect data from the participants. Responses were audio-recorded and transcribed thereafter by a research assistant. Inductive thematic analysis was then used to generate themes that were used to report the findings.

2.4. Ethical Considerations

Approval to conduct the study was granted by the School of Health Sciences Research Ethics Committee at Makerere University (REC No: 2018-076). Informed consent was obtained from each participant prior to the interview and all responses were kept confidential.

3. Findings

Twelve (12) clinicians that work in the breast clinic of Mulago /hospital participated in the interviews. All were medical doctors who routinely manage women with breast cancer and receive ultrasound reports from the radiology department. From the interviews, three major themes emerged namely: 1) Ease of interpretation of reports; 2) Positive impact on patient management and 3) Limited knowledge of BI-RADS.

Theme 1: Ease of interpretation of reports

All the doctors interviewed showed that reporting of breast ultrasound findings using BI-RADS had eased the interpretation and understanding of radiology reports of women that are sent for breast ultrasound. From the responses, the doctors indicated that previously, interpretation of ultrasound findings from the radiology department would sometimes be difficult which would delay patient management. However, the BI-RADS system had eased this as it clearly showed a specific line of management for each woman that had been scanned. The following responses reflected this observation:

"Before radiologists started using BI-RADS to report breast scan findings, it would sometimes be difficult to understand what should be done for a particular patient as some of their reporting was difficult to interpret...but with BI-RADS, the reports are now well structured and easy to follow with a particular line of patient management also easy to determine."

"I used to find it a challenge to understand a number of the

breast scan reports and it would require me to call and consult further from the radiologist or sonographer who performed the scan.... however with BI-RADS, it is easier to follow the descriptions written down which has significantly eased our understanding of breast scan reports from radiology."

Theme 2: Positive impact on patient management

Besides easily understanding breast ultrasound reports, the doctors interviewed reported that using BI-RADS when communicating findings has had a positive influence and impact on managing women with breast masses. It was seen through most of the responses that since the BI-RADS system characterizes breast masses/findings into different categories, each with a specific recommendation, the clinicians found this useful. The BI-RADS categorization assisted them to identify women who were at high risk of breast malignancy and attend to them very fast either through further investigation or by starting treatment promptly. The BI-RADS system also assisted the clinicians to identify women who just needed follow up without wasting the limited resources for those who needed them most.

"The biggest advantage of the BI-RADS system for us is that it acts as a triage system which helps us to identify women who are at most risk of having breast malignancy and attend to them very quickly and also just follow up those who are not at risk without wasting resources.... this helps to concentrate management choices to those who need it most which greatly aids faster management and reduce the risk of metastatic spreads of breast cancer."

"In the era of limited resources in our context, it is better to provide a service to those who need it most. BI-RADS has helped us as clinicians to identify women with suspicious breast masses quickly, do further investigations like mammography and histology and treat them accordingly as quickly as possible. Before, we would almost request for biopsy for each and every mass.... this system has thus helped us to prioritize resources to women who need them most and need urgent attention and management."

The responses above do indicate that the use of BI-RADS positively impacted on management of women especially those with breast masses as those with suspicious masses were identified quickly from the BI-RADS characterization and managed quickly with minimal delay. At the same time, those with less likelihood of malignancy were just recommended for follow up without wasting limited resources.

Theme 3: Limited knowledge of BI-RADS

Although the BI-RADS system of reporting breast masses seemed to generally have a positive influence on management of women with breast masses, the doctors interviewed also reported some challenges with limited knowledge of the BI-RADS classification. All of them reported that this was new to them and needed some time to get acquainted with the terminology and descriptors to further ease their understanding. A number of them thus recommended professional development sessions around BI-RADS for them to understand the system even better.

"The system is good as it guides us on what to do with the women as regards management. However, it came somehow

abruptly without preparing us and many of us have learnt it along the way. We do have scanty knowledge about it and it would be better to have some CME sessions targeting all clinicians about it."

"BI-RADS seemed to have eased our decisions on how to manage women with breast masses. However, we still have limited understanding of the various descriptors used in each BI-RADS category for example. I know the radiology people understand it, but I think the clinicians also need some basic understanding of the descriptors used to place the masses in the various categories. This way, it will make our grasp of the system even better which will further improve on the management of suspected breast cancers quickly."

From the above responses, one can generally infer that although the clinicians actually do appreciate the BI-RADS system, their basic understanding of the various BI-RADS categories still needs to be improved and thus the suggestion of CMEs.

4. Discussion

This study aimed at exploring the perceptions of clinicians regarding breast ultrasound reporting using the BI-RADS categorization. The clinicians were specifically targeted because they are the ones that request breast ultrasound scans, receive the ultrasound reports and subsequently make management decisions based on the ultrasound reports. Therefore, it is important to understand how they feel about the breast ultrasound reports using the BI-RADS system. Findings from the study generally reflect that the clinicians find the use of the BI-RADS system when reporting breast ultrasound findings, a positive practice. Specifically, the use of the BI-RADS system has led to an understanding of the reported findings and has informed decisions to quickly manage women with especially suspected breast malignancy. This observation generally resonates with has been reported in previous literature on the importance of the BI-RADS breast reporting system in quickly aiding patient management [6, 13]. In a previous study, we explored perceptions of the radiologists and sonographers who perform the breast ultrasound scans and report on the images [4]. In this study, the imaging professionals similarly reported positive perceptions of using BI-RADS which has also been reflected from the side of the clinicians who are the consumers of the ultrasound reports. This has a positive impact in that both the imaging personnel and the referring clinicians do agree that BI-RADS can actually positively influence management of women with breast masses.

The positive influence on patient management is of particular importance. Often, health facilities especially in low resource settings have limited equipment and resources yet patient numbers are very high. It is thus important to prioritize the available resources to assist those patients that need them the most. In this study, the BI-RADS system seemed to assist the clinicians to identify those women with suspicious breast masses that need urgent attention, further investigations and immediate clinical management. At the same time, women

who were not at high risk were also identified for further follow up without necessarily subjecting them to other investigations. This is important in that women that need urgent attention are identified and those that just require follow up are also identified. In a way, the BI-RADS was playing a triaging role for the doctors. It has previously been reported that using BI-RADS indeed helps to identify women who need immediate attention while weeding out those who may not need additional investigations [1].

Cognizant of the perceived impact and positive influence on managing women with breast masses as a result of the BI-RADS reporting system, there were some challenges noted. The biggest challenge related to limited knowledge of the BI-RADS system which was expressed by all the twelve clinicians who participated. The BI-RADS breast ultrasound reporting system is well known to many radiologists and sonographers, however, knowledge of BI-RADS is still limited among clinicians [15]. This observation was reflected in this study. There was limited knowledge among the clinicians on the various descriptors and terminology used to classify the breast masses under the various BI-RADS categories. Although it is not mandatory for the clinicians to know the radiological details of describing breast masses, there needs to be a system through which they are educated about what each BI-RADS category means and what the recommendation means for each category. This would ease further the understanding of the ultrasound reports. One way that was also suggested is through continued professional development sessions through which radiology personnel can educate other clinicians about BI-RADS, its purpose and what the various categorizations actually mean. Another possible way of achieving this could be through grand rounds involving cases of women that have undergone breast ultrasound scanning and reporting using the BI-RADS system.

Despite the limited knowledge however, the clinicians were positive about the use of BI-RADS in reporting breast ultrasound findings as it eased their understanding of the findings as well as quickly informed clinical management decisions. As previously reported, BI-RADS helps to standardize breast ultrasound reporting [6, 13]. A previous study with radiologists and sonographers reported positive experiences with the use of BI-RADS. This study among clinicians also reveals generally positive perceptions. These combined can be an entry point into the full adoption of BI-RADS reporting of breast ultrasound scans. We do recommend continued training sessions involving both radiologists, sonographers and other clinicians who receive the reports on the BI-RADS system to further accelerate its acceptability among the users. This was a qualitative study conducted in one hospital which thus limits the generalizability of our findings. We thus recommend further inquiries on the use of BI-RADS in many other settings.

5. Conclusion

This study has demonstrated that clinicians who read the breast ultrasound reports do appreciate the use of the

BI-RADS system when reporting breast findings. The BI-RADS reporting system particularly assists the clinicians to quickly identify women that need urgent attention and prioritize resources to those that need it most. Continued training on BI-RADS and what the various categories mean is recommended to further accelerate its use and acceptability across many clinicians.

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