



# Breast fibroadenoma patients' satisfaction of vacuum-assisted breast biopsy based on UNS-BsQ8: A qualitative study

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## ABSTRACT

An estimated 67%–94% of breast tumors are breast fibroadenoma or fibroadenoma mammae (FAM). Vacuum-assisted breast biopsy (VABB) provides a less-invasive surgical approach for tissue extraction with small scars without breast cosmetic distortion compared to conventional lumpectomy. This study aimed to observe patient satisfaction toward ultrasonography (USG)-guided VABB surgical outcome according to Universitas Sebelas Maret Breast Satisfaction Questionnaire 8 (UNS-BsQ8). This general qualitative exploratory study was performed from 2019 to 2022. A number of 57 FAM patients participated in this study three days after the surgery. A structured one-time interview was conducted to gain personalized, in-depth VABB satisfaction. Peer-reviewed and psychological thematic analyses were also conducted to determine several factors causing satisfaction and dissatisfaction from each question's score of UNS-BsQ8. Using thematic psychological analysis, we discovered three main issues that contributed to feeling satisfied: having accountable surgeons, taking time to communicate, and trustworthiness. Altogether, only question-2 (Q2) of UNS-BsQ8 showed unfavorable and dissatisfied outcomes ( $2.824 \pm 0.889$  of the maximum score of 5.00). Taking time to communicate and trustworthiness indirectly contributes to the highest VABB satisfaction level (Q1 to Q8, except Q3). The Q1, Q2, Q5 to Q8 of UNS-BsQ8 resulted in a satisfaction score of  $>4.00$ , except for Q4 ( $3.385 \pm 1.292$ ). USG-guided VABB for FAM can be a safe and effective alternative to conventional surgical excision and has better patient satisfaction regarding post-surgical pain and discomfort, wound healing progress, and cosmetic and esthetic preservation based on UNS-BsQ8.

## INTRODUCTION

Fibroadenoma mammae (FAM) or breast fibroadenoma is a unilateral, painless, and benign neoplasm that appears as a firm lump [1]. It usually happens in a 14 to 35 years old female, though it can be found at any age. Approximately 10% of female suffers from FAM once in a lifetime [2]. Moreover, FAM accounts for 67%–94% of all breast tumors under 20 [2]. FAM usually shrinks and vanishes over time in most cases [3]. However, they must be removed if they get larger and compress adjacent tissue. Unfortunately, many women choose against the

surgery because breast shape distortion and scars besides FAM are benign and have no risk of malignancy [4]. There is a need to look into minimally invasive and minimally cosmetic changes in surgical approaches for FAM removal over conventional lumpectomy or excisional biopsy.

Vacuum-assisted breast biopsy (VABB) is a minimally invasive surgical approach in which only abnormal breast tissue is removed. It is an alternate approach to the surgical approach. By a small incision, using a vacuum-powered tool, abnormal tissues are aspirated by a 14 G needle [5]. VABB provides the abnormal tissue to be precisely situated under ultrasonography (USG) guidance. Moreover, it can be performed as a bedside surgical procedure under local anesthetic [6]. VABB causes only minor discomfort, scars, and breast distortion. In 2002, the US Food and Drug Administration approved using VABB for the therapeutic excision of a benign breast lump [7]. VABB has gained worldwide acceptance and is now considered a safe and

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effective alternative to open surgery by clinicians and patients, given its comparable efficacy in complete lesion removal, better cosmetic appearance, and one-day care procedure [8].

Universitas Sebelas Maret Breast Satisfaction Questionnaire 8 (UNS-BsQ8) is a standardized, valid, and reliable questionnaire measuring patients' satisfaction with their breast surgical outcomes [9]. The utilization of UNS-BsQ8 has already provided useful data serving as a reference point for evaluating FAM surgical outcomes. It consists of eight questions (Q1–Q8), including postsurgical condition, wound healing progress, surgical cost affordability, breast shape change, pain frequency in the surgical site, pain frequency in the shoulder, the scar appearance, and scar inconvenience [9].

Because there is still little use of VABB in Indonesia and a promising potential for effectiveness accompanies it, this study aims to objectively determine the efficacy and safety of USG-guided VABB in FAM patients according to the evaluation of UNS-BsQ8.

**METHODS**

**Study design and participants**

This general qualitative explorative study was conducted in secondary care hospital in Indonesia from 2019 to 2022. This design was selected to achieve in-depth satisfaction directly from FAM patients treated in our outpatient hospital oncology clinic. All FAM-suspected female patients were included in this study based on several clinical features. These included mobile, painless, solitary, and rapidly growing solid breast lumps with regular borders and rubbery consistency. However, we may need mammograms and USG in women above and below 35. Fine needle aspiration biopsy may be performed if necessary. All participants must understand the risks and disadvantages of the VABB so that they will provide an objective satisfaction score. Thus, participants were excluded when they could not give written informed consent independently.

**Data collection**

We used UNS-BsQ8 (Table 1) to evaluate the satisfaction with VABB results three days after the surgery. Results were presented as a descriptive percentage and mean ± SD table. Moreover, we also presented study demographic data, including age (≥ 35 years or <35 years), marital status, number of lesions (>2 or ≤ 2), site of lesion, size of lesion

**Table 1.** UNS-BsQ8.

No.	The questions of UNS-BsQ8	Score
Q1	How would you classify your condition after surgery?	
	Excellent	5
	Very good	4
	Good	3
	Fair	2
	Poor	1

No.	The questions of UNS-BsQ8	Score
Q2	How would you classify your wound healing progress?	
	Excellent	5
	Very good	4
	Good	3
	Fair	2
Q3	Poor	1
	The cost of surgery is affordable	
	Strongly agree	5
	Agree	4
	Neutral	3
Q4	Disagree	2
	Strongly disagree	1
	There is no change of your breast shape	
	Strongly agree	5
	Agree	4
Q5	Neutral	3
	Disagree	2
	Strongly disagree	1
	How frequent do you feel pain in the wound surgical site?	
	Never	5
Q6	Seldom	4
	Neutral	3
	Often	2
	Always	1
	How frequent do you feel pain in the shoulder?	
Q7	Never	5
	Seldom	4
	Neutral	3
	Often	2
	Always	1
Q8	How would you classify the appearance your scar after surgery?	
	Excellent	5
	Very good	4
	Good	3
	Fair	2
Q8	Poor	1
	Scar after surgery makes me uncomfortable	
	Never	5
	Seldom	4
	Neutral	3
Q8	Often	2
	Always	1

UNS-BsQ8, Universitas Sebelas Maret Breast Satisfaction Questionnaire 8; Q1, Question-1.

(>2 or  $\leq 2$  cm), and the presence of bleeding complication. Author 1 performed structured one-time interviews to achieve personalized, in-depth satisfaction results in a private room at the outpatient oncology clinic. An opening question for each question number is, “Can you tell your both satisfaction and dissatisfaction regarding this question of interest?” This was purposed to let the participants express their satisfaction with VABB based on the UNS-BsQ8 assessment and provide us the personalized testimony to address any dissatisfaction. Those results were peer-reviewed by Author 2 and Author 3 to ensure the completeness of the strength and weaknesses of VABB from all eight (Q1 to Q8) UNS-BsQ8 questions.

### Data analysis

We used UNS-BsQ8 (Table 1) to evaluate the satisfaction over VABB results three days after surgery. The data were presented as percentages, and all the dissatisfaction of UNS-BsQ8 from Q1 to Q8 was analyzed based on the thematic analysis in psychology by Braun and Clarke [10]. The thematic analysis was selected as the breast is related to sex in long-term relationships and female esthetic appearance. All authors’ triangulation during peer review and data analysis validated the credibility of the data.

### Ethical approval

This study is ethically approved by the Research Ethics Committee of FK UNS (No: 71/UN27.06.11/KEP/EC/2023). All patients were informed regarding the study aims and methods. They gave written consent to participate in this study.

## RESULTS AND DISCUSSION

We obtained 57 FAM patients who agreed to participate. The performance of VABB for FAM in our center was shown in Figure 1. The baseline characteristics of patients are presented in Table 2. The main study of VABB satisfaction results is presented in Table 3. Most FAM patients feel satisfied with the surgical outcomes of VABB based on the UNS-BsQ8 assessment. Three main issues contributed to feeling satisfied: having accountable surgeons, taking time to communicate, and trustworthiness. According to Braun and Clarke’s [10] psychological thematic analysis, those three issues of satisfaction analyses of UNS-BsQ8 are summarized in Figure 2.

### Having accountable surgeons

Frequently, the surgeons and nurses came to FAM patients giving direction to the nurses and advice-education for the patients. This caused patients to feel satisfied due to there was always a supervising surgeon for each nurse who bore the final act to the patient following VABB surgery. This first main possible factor of having accountable surgeons cause high satisfaction score in Q5, Q6, and Q8 of UNS-BsQ8 (Mean  $\pm$  SD: 4.105  $\pm$  0.880, 4.473  $\pm$  0.888, and 4.350  $\pm$  0.743, respectively). Moreover, a FAM patient liked that surgeons communicated with the nurses and patients to discuss the best educational advice for her.

“The surgeon gives instruction. He (Author 1) allows the nurses to perform routine small wound medication and



**Figure 1.** USG-guided VABB performance in our center. Serial ultrasound images showing complete initial excision with no recurrence on follow-up in a patient who underwent VABB. Several pictures show the USG-guided needle insertion procedure of VABB with the extracted breast fibroadenoma tissues.

**Table 2.** Study demographic data ( $N = 57$ ) includes age, marital status, lesion number, lesion site, size, and hematoma complication.

Variables	<i>n</i> (%)
Age (years)	
1.1.1 $\geq 35$	19 (33.33%)
1.1.2 $< 35$	38 (66.67%)
Marital status	
1.1.3 Not married	25 (43.85%)
1.1.4 Married	32 (56.15%)
Number of lesions	
1.1.5 $> 2$	19 (33.33%)
1.1.6 $\leq 2$	38 (66.67%)
Site of lesion	
1.1.7 Right and left	10 (17.54%)
1.1.8 Right	22 (38.61%)
1.1.9 Left	25 (43.85%)
Size of lesion (cm)	
1.1.10 $> 2$	31 (54.38%)
1.1.11 $\leq 2$	26 (45.62%)
Complication of hematoma	
1.1.12 Yes	2 (3.51%)
1.1.13 No	55 (96.49%)

write the pain-relieving injection and oral medication under his supervision. You can confirm from my experience that VABB and its routine follow-up function very well, giving me a satisfying experience” Patient #5 (P5).

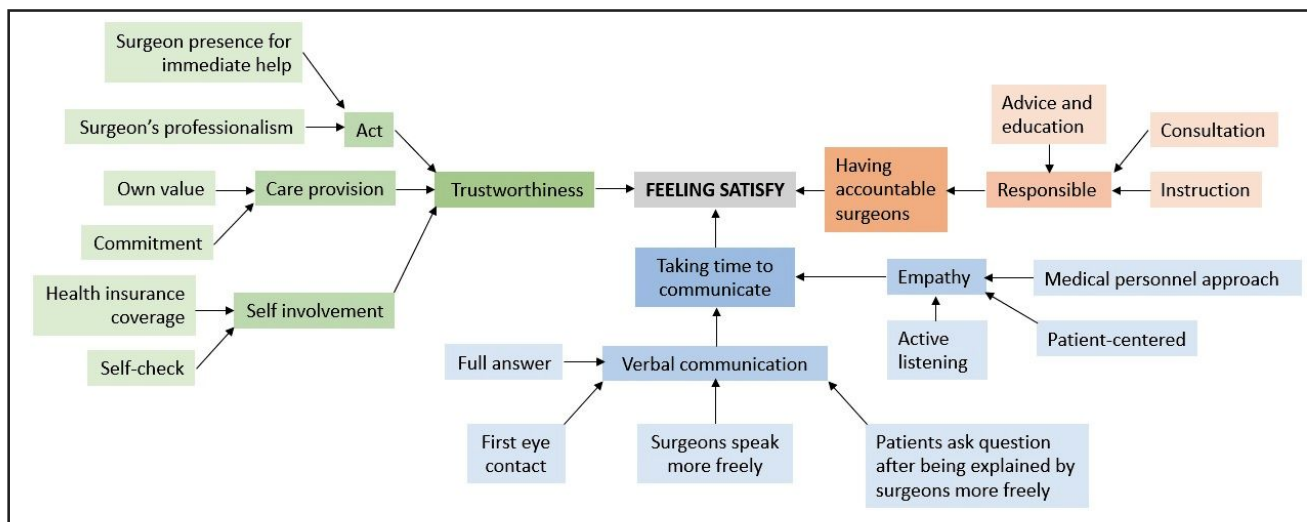
### Trustworthiness

Through autonomy, the patients feel trust. It allowed them to self-check upon the surgical result. Some patients also experienced the surgeon’s professionalism, as seen in minor device problems during the VABB procedure. The patient could also watch if the surgeon and nurse had performed their work correctly, as VABB did not use general anesthesia. These main factors and the corresponding code of factors may not directly

**Table 3.** The evaluation of UNS-BsQ8 satisfaction of VABB for FAM in our center (N = 57).

	Score					Mean ± SD
	5	4	3	2	1	
Q1	16 (28.10%)	26 (45.60%)	15 (26.30%)	0 (0.00%)	0 (0.00%)	4.017 ± 0.743
Q2	17 (29.80%)	26 (45.60%)	14 (24.60%)	0 (0.00%)	0 (0.00%)	4.052 ± 0.742
Q3	1 (1.80%)	10 (17.50%)	29 (50.90%)	12 (21.10%)	5 (8.80%)	2.824 ± 0.889
Q4	8 (14.00%)	29 (50.90%)	6 (10.50%)	5 (8.80%)	9 (15.80%)	3.385 ± 1.292
Q5	22 (38.60%)	22 (38.60%)	10 (17.50%)	3 (5.30%)	0 (0.00%)	4.105 ± 0.880
Q6	37 (64.90%)	15 (26.30%)	0 (0.00%)	5 (8.80%)	0 (0.00%)	4.473 ± 0.888
Q7	21 (36.80%)	25 (43.90%)	11 (19.30%)	0 (0.00%)	0 (0.00%)	4.175 ± 0.734
Q8	29 (50.90%)	19 (33.30%)	9 (15.80%)	0 (0.00%)	0 (0.00%)	4.350 ± 0.743

UNS-BsQ8, Universitas Sebelas Maret Breast Satisfaction Questionnaire 8; Q1, Question-1; Score 5 indicates the highest satisfaction level; Score 1 indicates the lowest satisfaction level.

**Figure 2.** Thematic map of the possible factor causing satisfaction with VABB. It shows the main factors, subfactors, and code of factors.

influence satisfactory results. However, the code of factor of health insurance coverage caused a direct dissatisfaction in Q3 of UNS-BsQ8 concerning surgical cost (Mean ± SD: 2.824 ± 0.889) as VABB is the latest advanced surgical procedure compared to conventional lumpectomy or excisional biopsy. Unfortunately, the national health insurance does not cover this VABB procedure causing dissatisfaction in cost-issue.

*“At first, I came to the surgical polyclinic of this hospital to have my breast lump checked. Then the doctor suggested VABB with all its advantages and disadvantages. However, during the satisfaction interview after VABB surgery. I am not quite satisfied. The fact that the national health insurance system in Indonesia does not cover the surgical cost issue”* (P11).

#### Taking time to communicate

Entire patients felt that surgeons and nurses communicated well with them. The medical personnel also kept their privacy. All patients reported that they always see the surgeons at least once a day, despite surgeons rarely visiting them twice. Moreover, surgeons and nurses were friendly during patient care. They gave complete answers to patient questions

and paid attention if there were patients' complaints. A patient also noticed that the nurses understood VABB and its follow-up program. Thus, sometimes the patients received sufficient information from nurses rather than the surgeons. This third factor contributes to the VABB satisfaction in more general (Q1 to Q8, except Q3) and indirectly. Patients also saw that surgeons and nurses able to listen actively, making them feel being patient-centered and satisfied with the VABB surgical outcomes, as the following testimonies show:

*“Sometimes I recognize a nurse as a surgeon because that experienced nurse can explain the VABB well three times or more until I fully understand it. They do not hesitate to explain despite the fact that I am insecure”* (P41).

*“He (author-1) and his nurses were all active listeners about my breast lump, privacy, and insecurity. They made me feel safe and satisfied that their VABB is the best surgical for esthetic preservation approach nowadays”* (P23).

Many factors determine patient satisfaction with breast surgery outcomes [11]. This general qualitative exploratory study determined the satisfaction of FAM patients regarding VABB outcomes based on UNS-BsQ8. Three main factors affecting the Q1–Q8 score became apparent: having



accountable surgeons, taking time to communicate, and trustworthiness [12,13]. All patients felt satisfied upon VABB (UNS-BsQ8 =  $2.824 \pm 0.889 - 4.473 \pm 0.888$ , lowest-to-highest of mean  $\pm$  SD). This is because both surgeons and nurses consistently visited them following VABB surgery, indicating a surgeon's professionalism, commitment, and self-check by the patients themselves [14,15]. A trustworthiness factor explains that both surgeons and nurses must always be trusted by the patients throughout inpatient care and after hospital discharge (Fig. 2). However, there was a lack in the code of factors of health insurance coverage as the patients thought that VABB procedures and care were reimbursed by either public or private health insurance [16–18]. Thus, there must be an encouragement for Indonesian stakeholders to consider VABB surgical costs to be covered by the national health insurance system as VABB is an easy and cost-effective surgical procedure [19–21].

The breast has an important role in women in both the physiological role of breastfeeding and the psychological role in fertility and secondary sex sign [22]. Thus, females undergoing breast surgery may feel discomfort from surgical pain sequelae and suffer a decline in their femininity [23]. UNS-BsQ8-related pain aspects such as Q5 and Q6 are not a major concern for our patients. Meanwhile, the esthetic outcomes such as Q4, Q7, and Q8 must be a priority concern in VABB surgery. Interestingly, a patient's satisfaction with the physical outcome often contrasts with the surgeon's perception. While some are satisfied, the surgeon is not; vice versa. However, the surgeon might be satisfied with the esthetic outcome after undergoing surgical difficulties. Our study showed that socioeconomic factors also highly influence satisfaction, as seen in Q3 of the UNS-BsQ8 result (Table 3). We consider the lack of patients' self-involvement (Fig. 2) and communication causing these low satisfaction results regarding the health insurance issue (Mean  $\pm$  SD:  $2.824 \pm 0.889$ ).

The one-time interviews can be transformed into at least three scheduled interviews throughout inpatient care and further hospital discharge follow-up. Moreover, three interviews are regarded as sufficient since the wound healing process may cause small scar disappearance. This will cause unsatisfied patients to change into satisfied. The peer review that was carried out did not involve people outside the research, so there could be potential and suspicion of subjectivity. This study used a relatively small sample size ( $n = 57$ ) for a qualitative descriptive study. This is due to the lack of esthetic interest, especially for older patients, and the absence of health insurance coverage for VABB. However, this study provides pioneer results of USG-guided VABB satisfaction from homogenous FAM patients. Despite the highest safety, VABB may cause pain and bleeding during and after the surgery, causing dissatisfaction and discomfort in rare circumstances [7].

## CONCLUSION

USG-guided VABB is a reliable surgical approach with less risk; it is relatively easy to operate and is well-tolerated by FAM patients. Its satisfaction results are also proved by this present study using UNS-BsQ8. Thus, further studies can use UNS-BsQ8 and our thematic map of possible factors causing VABB dissatisfaction for future research.

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## AUTHOR CONTRIBUTIONS

All authors made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work. All the authors are eligible to be an author as per the international committee of medical journal editors (ICMJE) requirements/guidelines.

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## CONFLICTS OF INTEREST

The authors have no conflict of interest to declare.

## ETHICAL APPROVALS

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## DATA AVAILABILITY

All data generated and analyzed are included in this research article.

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