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Knowledge and indications of mindfulness practices among breast surgeons: results of a survey conducted in Brazil

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ABSTRACT

Introduction: Breast cancer is the second most prevalent neoplasm affecting women in the world. The risk of mental disorders in cancer patients is about 30% higher, with a 21% prevalence of depression and anxiety. A complementary and integrative technique of psychic support is mindfulness practice. **Objective:** To assess breast surgeons' knowledge of mindfulness practices. **Methods:** A cross-sectional study of the knowledge and indication of this practice among Brazilian breast surgeons was carried out through an electronic questionnaire. **Results:** A total of 204 surgeons answered the survey. Of them, 76% reported having some knowledge or knowledge of the existence of these practices and 15% were completely unaware of mindfulness practices. The vast majority (n=177; 86.8%) did not refer any patients to perform mindfulness, and among those who did (n=27; 13.2%), most recommended fewer than ten patients in the last year. Despite including a significant sample of professionals working in oncological and academic institutions, nearly all cited not having full knowledge of mindfulness practices and their impacts, which may reflect the higher numbers of patients not being referred. **Conclusion:** Data from this study may indicate that training and dissemination of these practices are necessary among breast surgeons.

KEYWORDS: breast neoplasms; mindfulness; breast; surgeons; knowledge.

INTRODUCTION

Breast cancer is the second most prevalent neoplasm that affects women worldwide; an estimated 2.3 million new cases are diagnosed annually, with increased incidence regardless of country development pattern[1]. In Brazil, according to data from the National Cancer Institute (INCA, *Instituto Nacional de Câncer*), the forecast is 73,610 new cases of the disease in the three-year period 2023–2025, representing an incidence rate of 41.9 new cases per 100,000 women[2,3]. In contrast to the increased incidence, we are witnessing a decrease in mortality in this group of patients due to advances in early diagnosis and the increasingly effective treatment portfolio[4].

The United States data published this year showed a decline in breast cancer mortality between 1975 and 2019; from 48 to 27 deaths per 100,000 women[5,6]. Thus, with a higher incidence and lower mortality, there is an increasingly positive balance of women who live with breast cancer or are survivors of the disease. According to Carlson et al.[7], in the United States this prevalence reached about 26 million women.

With this rising number of female survivors, in addition to the physical sequelae, the psychological consequences may become evident and of significant concern. The risk of mental disorders in cancer patients is about 30% higher, with a 21% prevalence of depression and anxiety[8]. A complementary and integrative technique of psychic support that has become popular in recent years is the therapeutic use of mindfulness practices, defined as a meditation practice that cultivates mindfulness in the moment; in the present.

From an initial Buddhist origin, the goal of mindfulness is to maintain awareness at every moment, getting rid of strong

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attachment to beliefs, thoughts, or emotions, thus developing a greater sense of emotional balance and well-being[9-13]. Meditative techniques, such as mindfulness, can influence the susceptibility or treatment of diseases by reducing stress, anxiety, or depression, in addition to decreasing the use and reducing the adverse effects of analgesic, anxiolytic, or antidepressant medications[14-16].

Therefore, mindfulness practices could assist in the psychic symptoms of cancer patients[17-19]. A systematic review published in 2019 showed that the indication of complementary therapies in cancer patients reached proportions of 51%, demonstrating the importance and consideration of these practices by clinicians who promote care[20-23]. The American Society of Integrative Oncology, the American Society of Clinical Oncology (ASCO), and the North American National Comprehensive Cancer Network (NCCN) recommend mindfulness as a complementary treatment for psychological problems in cancer survivors[24-26].

Given this high incidence of psychological symptoms in cancer patients, the need for complementary therapies to treat these symptoms in this group, and the efficacy and indications in international protocols of mindfulness practices, it is necessary to evaluate the knowledge and indication of mindfulness practices by Brazilian breast surgeons.

METHODS

A descriptive cross-sectional study was conducted through a structured electronic questionnaire sent to breast surgeons associated with the Brazilian Society of Mastology (SBM, *Sociedade Brasileira de Mastologia*). The SBM membership criteria require medical residency and/or certification in clinical/surgical treatment of breast diseases through a specialist title.

The questions and answer options are described in Table 1, and consist of demographic data, such as age, gender, region of residence in Brazil, certification of specialist in breast diseases, years after graduation, work in an oncology hospital, educational institution, and city of capital or countryside; and data on

Table 1. Questionnaire applied with the available answer possibilities.

Questions		Possible Answers					
Demographic Characteristics							
1	How old are you?	<30 years	31–40 years	41–50 years	51–60 years	61–70 years	>70 years
2	What is your gender?	Male	Female	Other			
3	Where in Brazil do you live?	North	Northeast	Midwest	Southeast	South	
4	Do you have a Specialist in Mastology (TEMA) title?	Yes	No				
5	How many years have you graduated in Medicine?	<5 years	5–10 years	>10 years			
6	Do you work in an institution dedicated to oncology treatment?	Yes	No				
7	Do you work in an academic institution (teaching hospital, university, educational institution)?	Yes	No				
8	Do you work most of your time in the capital of your state or in a non-capital city?	Capital	Non-capital				
Working with Mindfulness							
9	Are there interactive and complementary practices services at your hospital?	Yes	No	I do not know			
10	What is your level of knowledge regarding mindfulness?	Great knowledge	Some knowledge	Only knowledge of existence	Lack of knowledge		
11	Have you ever referred patients undergoing or post-treatment for breast cancer for mindfulness practices?	Yes	No				
12	If so, how many patients in the last year?	<10 patients	10–50 patients	>50 patients	No Referred to		
13	Are you aware of the impacts described in the literature of mindfulness practices for: Depression / Anxiety / Sleep / Stress / Quality of Life / Pain?	Yes	No	No referred to			
14	Do you practice mindfulness?	Yes, daily	Yes, rarely	I know, but I do not practice	I do not practice, because I do not know		

clinical performance with mindfulness: presence in the service of integrative practices, degree of knowledge about mindfulness, clinical indication of mindfulness to patients, number of patients referred, knowledge about the impacts of mindfulness practices, and personal use of practices.

The email contacts of breast surgeons from all over Brazil were retrieved from the SBM database and records. Only Brazilian surgeons and partners registered at SBM and those who accepted participation in the study after reading and acknowledging the informed consent form were included in the study. SBM also provided data on age, gender, region of residence, and whether or not they were certified as specialists in the total number of associated surgeons; thus, allowing the comparison of those who answered the questionnaire (sample) with the total number of associates (general population). SBM's list of partners was updated in 2023 and is considered complete and reliable.

Therefore, we assume that all associates were considered eligible for the questionnaire and the concept of unknown eligibility was not applied. Those who did not return the questionnaires were considered non-responders. The response rate was calculated by the number of returned responses divided by the number of eligible subjects (SBM-associated members). For this calculation, complete responses (above 80%) were used.

On the other hand, questionnaires with a proportion of responses less than 80%, but with responses above 50% were considered partial, not entering into the calculation of response rate, but were considered for analysis of the study's objective.

The study stages include three phases:

Phase 1) Sending the electronic address of the questionnaire in Google Forms format. The questionnaire does not contain any identification data of the candidate participant, only demographics and questions about clinical practice with mindfulness. The invitation to participate in the research together with the direct access shortcut, without intermediary or identification, was sent via email by SBM to the associated mastologist physicians registered at this institution. Four emails were sent to all associates, within 15 days between them, during the period of June and July/2024.

All emails were the same and had the same body content.

The emails were sent by the SBM secretary, always by the same person, through the company's electronic address unique digital platform. In the "Reply" email field and in the "To" field, there was only and exclusively the email of the responsible researcher. The addresses of all guests to participate were exclusively included in the "Bcc" field which allows sending the email to several people while keeping the addresses private, safe, and confidential.

Phase 2) Tabulation of Google Forms data in a Microsoft Excel for Windows spreadsheet, duly adapted for statistical analysis.

Phase 3) Analysis of the results from the R for Windows software, version 4.2, by the Research Support Office of the Faculty of Medicine of Botucatu.

The demographic profile of the study sample was assessed using absolute (n) and relative (%) frequency measures. Relative frequencies were analyzed according to the number of participants who answered each question. The association between the demographic characteristics of the sample and the population (all breast surgeons associated with SBM) was analyzed using contingency tables and proportion testing. Significance was set at 5% (p-value [p]<0.05).

The protocol and the informed consent form of the study were approved by the SBM internal ethics council and the Medical Ethics Committee of the Botucatu School of Medicine of the Universidade Estadual Paulista "Júlio de Mesquita Filho" (UNESP) under number 77508524.5.0000.5411.

RESULTS

Among the 1,893 SBM members, 204 breast surgeons accepted and completed the questionnaire in full; their demographic data are presented in Table 2. Most respondents were aged between 31–40 years (27.9%), followed by 41–50 (27.5%), and 51–60 (25.5%). In a comparative analysis, there was no statistical age difference between the group of responders and the general population of associated members, except in the population between 51–60 years old which was more represented in our study (25.5% versus 19%; p=0.02).

Of the total 204 surgeons in the sample, 111 (54.4%) were female, similar to the general study population.

As for the region of the country of residence, we observed a divergence of our sample with the general population associated with SBM. There was similar representation only concerning the Northeast and Midwest regions.

We did not obtain answers from the North region. The Southeast region, which despite concentrating the majority of associated members (n=962; 50.8% of the total), in our study, was represented by the majority of the questionnaires answered (63.7%), a percentage above the general population (50.8%; p=0.001).

Regarding certification as a specialist, the study was statistically representative of the general population and the majority of the sample had certification (166 versus 38; 81.4%). Data on clinical and professional performance are described in Table 3. As for the time after graduation, 81.4% answered that they had graduated for more than ten years and the majority (n=107; 52.5%) worked in an exclusive oncological institution.

Those surgeons in the sample who worked in an academic or educational institution represented 61.8% (n=126). As for the city of acting, the majority (n=125; 61.3%) worked in the capital of their state of residence. Regarding the existence of an integrative practices service in the institution where the surgeons in the sample worked, 45.6% did not have this service for referral of patients, 38.7% had this service, and 15.7% were unaware of the availability of integrative practices in the institution.

In an analysis of the responses about specific knowledge regarding mindfulness practices, summarized in Table 4, 76%

Table 2. Demographic characteristics of responders (sample) and general population of surgeons associated with Brazilian Society of Mastology.

Characteristics	n sample (204)	%	n SBM members (1,893)	%	p-value
Age					
<30 years	5	2.50	31	1.68	0.58
31–40 years	57	27.90	554	30.14	0.69
41–50 years	56	27.50	549	29.80	0.64
51–60 years	52	25.50	350	19.00	0.02
61–70 years	26	12.70	213	11.58	0.63
>70 years	8	3.90	141	7.67	0.08
Gender					
Male	93	45.60	831	44.00	0.78
Female	111	54.40	1,062	56.00	0.59
Region of Residence					
North	0	0	73	3.85	0.007
Northeast	45	22.10	413	21.80	1.00
Midwest	11	5.40	155	8.18	0.19
Southeast	130	63.70	962	50.80	0.001
South	18	8.80	290	15.30	0.01
Specialist certification					
Yes	166	81.40	1,462	77.00	0.31
No	38	18.60	431	23.00	0.18

Table 3. Demographic characteristics of the respondents' performance.

Characteristics	n (204)	%
Years after Graduation		
<5 years	7	3.50
5–10 years	31	15.20
>10 years	166	81.40
Work in an Exclusive Oncology Institution		
Yes	107	52.50
No	97	47.50
Work in an Academic Institution		
Yes	126	61.80
No	78	38.20
Work in the Capital City		
Yes	125	61.30
No	79	38.70
Existence of Integrative Practice in the Institution of Activity		
Yes	79	38.70
No	93	45.60
I do not know	32	15.70

Table 4. Knowledge of mindfulness practices and referral of patients by breast surgeons.

Knowledges	n (204)	%
Knowledge of mindfulness practices		
Great knowledge	17	8.30
Some knowledge	73	35.80
Knowledge of existence	82	40.20
Lack of knowledge	32	15.70
Knowledge of mindfulness impacts		
Yes	62	30.40
No	69	33.80
Some knowledge	73	35.80
Referral of patients to mindfulness		
Yes	27	13.20
No	177	86.80
How many patients were referred in the last year		
< 10 patients	21	10.30
10–50 patients	10	4.90
> 50 patients	2	1.00
No referred to	171	83.80
Practice of Mindfulness by the surgeon		
Yes, daily	18	8.80
Yes, rarely	49	24.00
I know, but I do not practice	49	24.00
I do not practice, because I do not know	88	43.10

reported having some knowledge or awareness of the existence of these practices and 15% cited complete ignorance of mindfulness practices.

Studies indicate the impact of mindfulness practices on the treatment of depression, anxiety, sleep, stress, quality of life, and pain. When participants were asked about the knowledge of these impacts, we obtained a similar proportion among those who reported not having knowledge (33.8%), having knowledge (30.4%), and partially knowing the impacts (35.8%).

One of the questions in the questionnaire was about the referral of patients to mindfulness practices. The vast majority (n=177; 86.8%) did not refer any patients to perform mindfulness and, among those in the sample who did (n=27; 13.2%), most referred fewer than ten patients in the last year.

Finally, another question addressed knowing about the performance of mindfulness practices by the breast surgeon professionals. Only 8.8% reported practicing the techniques daily and 24%, despite knowing mindfulness, reported not practicing them.

Subgroup analyses were performed based on the complete data collection and decision of the authors.

Regarding age group, respondents were subdivided into 50 years of age or less and over 50 years of age, resulting in a younger majority (58% and 42%, respectively).

As for the gender subgroups, a statistical majority was female (p=0.09), and of the total number of respondents who reported complete ignorance of mindfulness, the majority was male (p<0.05).

Concerning knowledge of mindfulness impacts, the highest statistical proportion of the response was partially in the female group and not in the male group. The proportion that reported yes to the knowledge of impacts was statistically similar between genders (Figure 1).

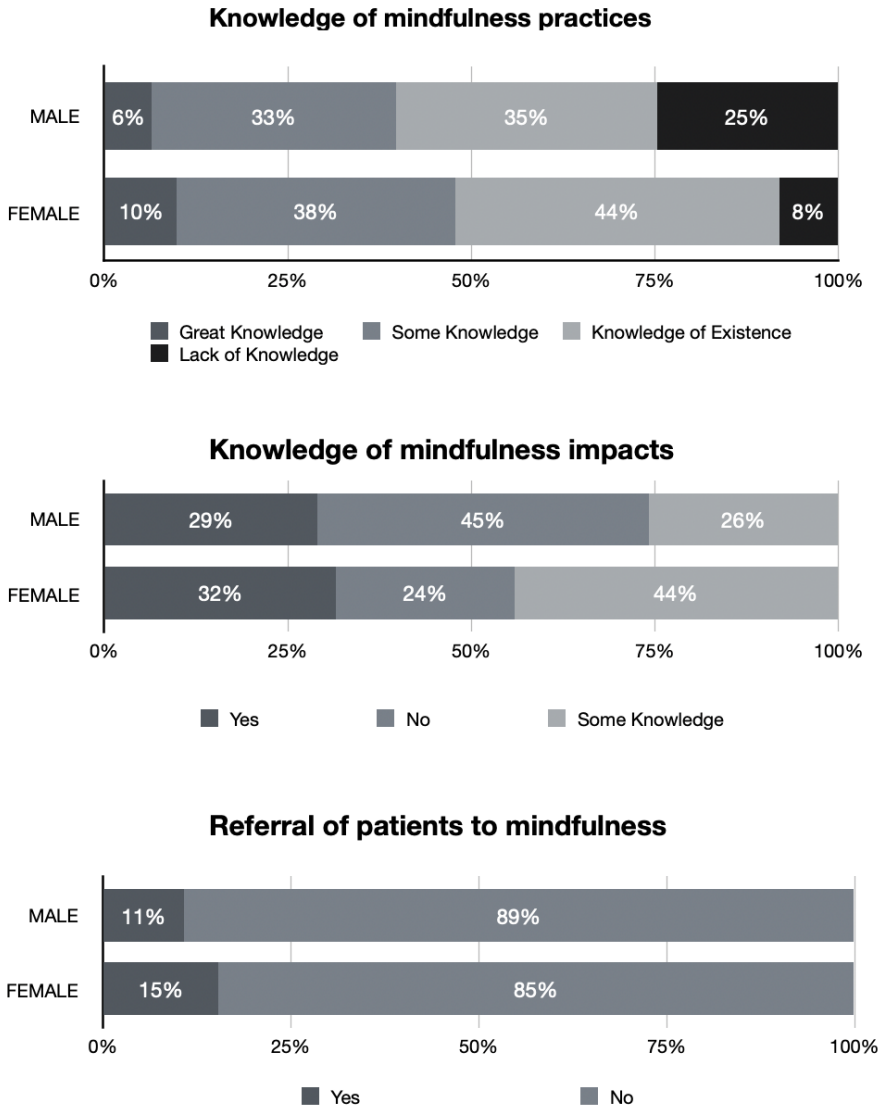

Figure 1. Distribution of respondents according to gender and knowledge of mindfulness practices, knowledge of impacts, and referral of patients to mindfulness. (male=93; female=111).

In the subgroups regarding the city of residence, most respondents' statistics were concentrated in the capital and there was a statistical difference in deep knowledge of mindfulness (higher in the capital's population, p=0.03) and complete inexperience (higher in the countryside's population, p<0.05).

Considering the populations of the countryside and the capital, there was a similarity regarding the knowledge of mindfulness impacts and greater referral of patients by the responders of the capitals, as shown in Figure 2.

Figure 3 exhibits the distribution of respondents according to time since graduation, where the vast majority were concentrated in surgeons with more than ten years, with knowledge of mindfulness being similar between the groups, except for those who responded "awareness of the existence of mindfulness", which was greater in the group with longer graduation time (27% versus 73%; p=0.02). Even so, there was no statistical difference between the groups for referral of patients to practices (p=1.00).

In an analysis of the subgroup that has or does not have a specialist certificate, where most have the certification, no statistical difference was found between the groups for knowledge of the practices, their impacts, and referral of patients to therapy.

Regarding the question of performance in an academic institution, although most respondents were linked to educational institutions, there were also no statistical differences regarding the responses of knowledge of the practices, their impacts and referral of patients. For work in exclusive cancer care institutions, no differences were observed between the groups of responders regarding the knowledge and indication of mindfulness.

In the subgroup regarding the existence or not of a mindfulness service in the institution of the responding surgeons, the statistical majority reported not having the availability of mindfulness and also represented the majority who did not know the impacts (p=0.01). Despite this, no statistical difference was found between the groups regarding the referral or not of patients to mindfulness practices.

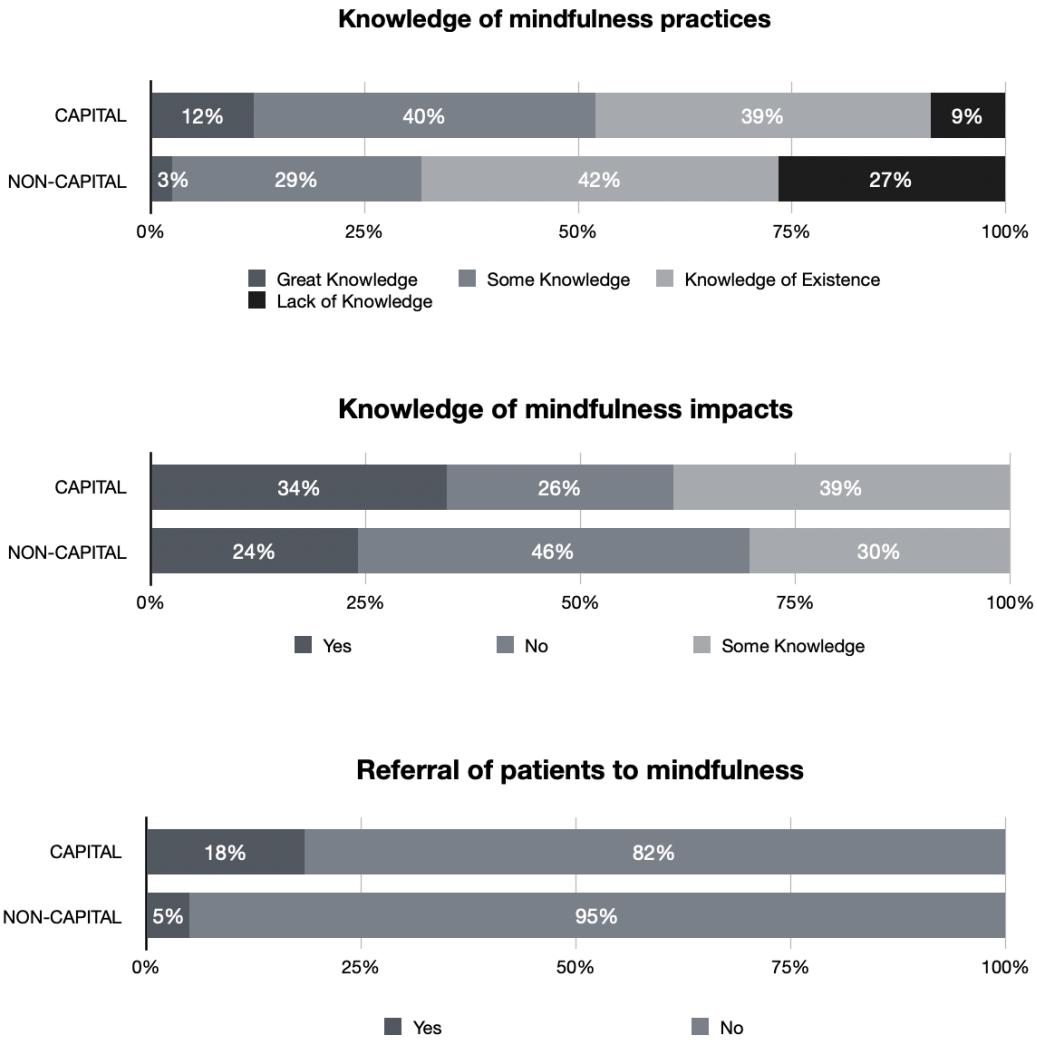

Figure 2. Distribution of respondents according to city of residence and knowledge of mindfulness practices, knowledge of impacts, and referral of patients to mindfulness (capital=125, non-capital=79).

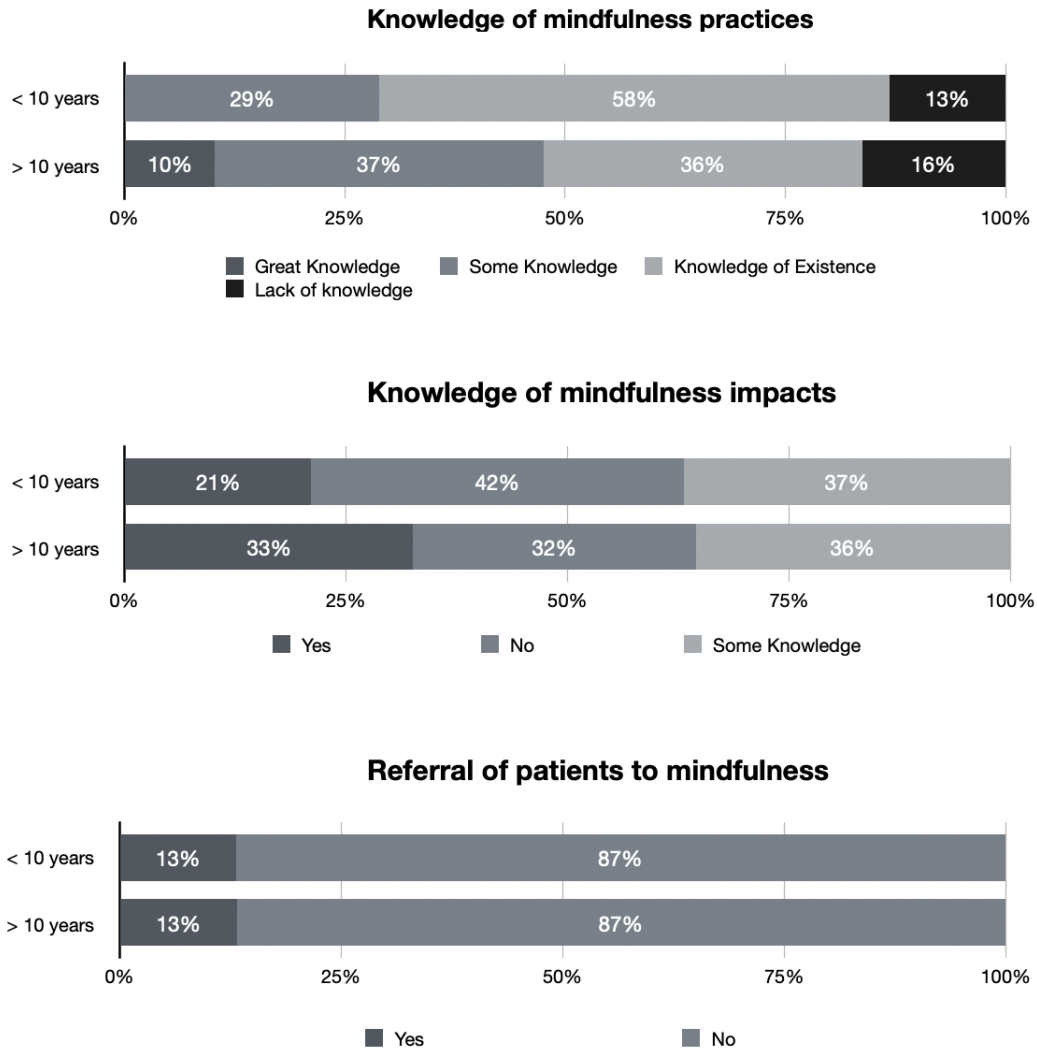

Figure 3. Distribution of respondents according to time since graduation and knowledge of mindfulness practices, knowledge of impacts, and referral of patients to mindfulness (<10 years=38; >10 years=166).

DISCUSSION

The population of Brazilian breast surgeons who participated in this study had a homogeneous distribution in relation to age groups and gender.

The vast majority were certified by SBM and graduated more than ten years ago. They were in the capital cities of the country and had links with educational institutions or cancer care institutions. These demographic data suggest and may indicate adequate training and experience of the population of surgeons in the study regarding the treatment and specific management of patients with breast cancer.

Despite this probable indication of the scientific and clinical preparation of the respondents, most considered themselves to have insufficient knowledge of mindfulness practices. More than half said they were only aware of the existence of the practices or were completely unaware. Associated with this, we also obtained complementary data regarding the knowledge about mindfulness, which was the lack of complete or partial information on the impacts of mindfulness for patients with breast cancer by the responding surgeons.

In an older meta-analysis by Halle et al.[23], which evaluated ten studies and 1,709 women with breast cancer, mindfulness had a positive impact soon after intervention in relation to quality of life, fatigue, sleep, stress, anxiety, and depression. After six months, these results held for symptoms of anxiety and depression.

A systematic review of Cochrane, published by Schell et al. in 2019, analyzing only the Mindfulness-Based Stress Reduction (MBSR) practice in women with breast cancer, resulted in a slight improvement of mindfulness in dealing with anxiety, depression, and sleep quality after intervention of six months[15]. And, more recently (2024), in a Chinese meta-analysis publication with 1,644 patients, MBSR significantly reduced perceived stress, depression, anxiety, and fear of recurrence[24]. These secondary studies indicated the impacts and possibly beneficial effects of mindfulness practices on breast cancer patients.

From those and other data in the literature, we believe that mindfulness knowledge by professionals who work with women with breast cancer is essential for a more comprehensive, holistic treatment, aiming at the best possible quality of life for these patients during and after treatment.

Since most surgeons believe they do not know mindfulness practices and their in-depth impacts results in patients not being referred to the practices. Almost 90% of the surgeons in our survey did not refer patients to mindfulness; and among the few who did, the majority indicated mindfulness for less than ten patients in the last year. Thus, these data probably suggest that the fact that the practice is not known in detail interferes with its indication and with the non-referral of patients to mindfulness.

In this regard, it is also necessary to take into account that more than 60% of respondents did not have or were unaware of the existence of an integrative medicine or mindfulness service in their workplaces, resulting in probable lower dissemination of practices and less possibility of clinical indication.

The data of our research, in subgroup analysis, also indicated that male surgeons have a greater lack of knowledge of mindfulness and its impacts on the health of patients but this was not reflected in a higher rate of referral of patients to perform the practices. Referral was reported as very low in both genders; possibly, there was no close relationship of gender with these results.

Our population of respondents was more concentrated in state capitals and, thus, may have interfered with the statistical results of greater knowledge of mindfulness among them than residents of smaller cities, who reported greater ignorance. Again, this factor should not represent interference in the causes of patients' referral to mindfulness, since the rates were low and similar between the two groups.

As for the subgroup analysis considering the time since graduation, although we obtained more respondents with more than ten years, the lack of statistical difference regarding in-depth knowledge and mindfulness impacts did not also reflect on the referral rate. That is, it is likely that the hypothesis of longer clinical experience has not resulted in greater knowledge and offer of practices to patients. Associated with this, we also noted similar knowledge of mindfulness and low referral of patients even though most responders are specialists in breast diseases or work in academic and oncology services.

The fact of longer experience, proven specialty, and greater contact and possible access to scientific information (academic or oncological services) may not have interfered with greater knowledge of mindfulness and the use of these practices in clinical care.

We also analyzed data regarding the use of mindfulness by the breast surgeons themselves. As there is evidence of practices in various psychic symptoms, we believe that they can also impact the professional.

As expected, considering the previous data regarding the lack of full knowledge of practices, 75% of the professionals do not perform any mindfulness practice. Figure 4 illustrates the comparison of these data in a graph.

One primary limitation of our study includes the low response rate nationwide; we had 204 responses from a total population of 1,893 surgeons. The fact that it is a cross-sectional observational study based on electronically sent questionnaires is also a limitation. Additionally, we know that in this type of research, there is the possibility of selection bias, where those professionals most likely to participate or interested in the subject in question come to answer the survey.

Another limitation was that our sample was not statistically significant to represent the population aged 51–60 years; however, we do not believe it is of major importance since the highest concentration of the general population of breast surgeons associated with SBM are in younger age groups.

A divergence in our study was the disproportionality of participants according to the Brazilian State regions where the breast surgeons participating in the research reside.

We did not have the participation of the North region but there was a greater representation from the Southeast region. This imbalance could affect the data, but according to our analysis, the final result would not have a considerable impact since the great concentration of health professionals throughout the scope occurs in the Southeast region. Despite the small divergences in the representativeness of the sample in relation to the general population of breast surgeons, the data indicate that knowledge of mindfulness practices as well as their impact on breast cancer women's health was considered insufficient by the participants and possibly impacted the referral of patients to mindfulness and its use by the surgeons themselves.

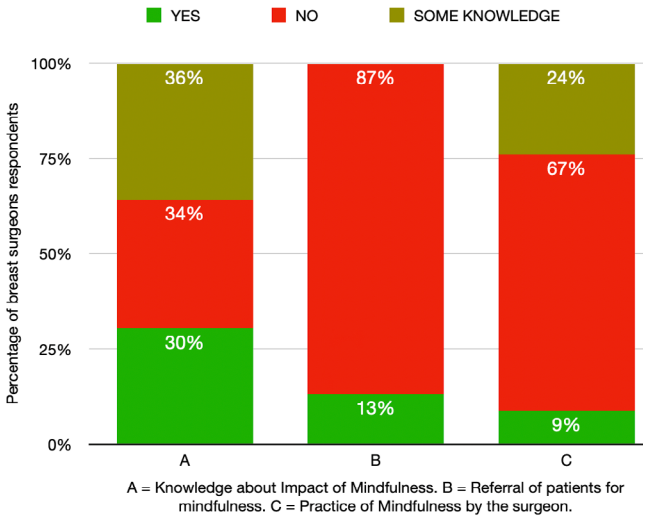

Figure 4. Distribution of breast surgeon respondents regarding knowledge of the impact of mindfulness, referral of patients to mindfulness, and practice of mindfulness by the surgeon (n=204).

Considering the positive impacts that mindfulness can bring to women with breast cancer, it is necessary, in view of these data, to promote the dissemination and training of breast surgeons. With this, we could increase the indication of mindfulness among patients and results in better quality of life.

CONCLUSION

Our study indicates that, among the Brazilian breast surgeons who answered the questionnaire, despite including a considerable sample of professionals working in oncological and academic institutions, the vast majority judged that they did not have full knowledge about mindfulness practices and their impacts.

This may be reflected in the higher numbers of patients not being referred to the practices and not being carried out by the professionals themselves.

Thus, considering the impacts that mindfulness practices can have on patients' treatments, the data from this study may indicate that further training and dissemination of these practices are necessary among breast surgeons.

AUTHORS' CONTRIBUTION

PGTA: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. FPC: Formal Analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. GTT: Conceptualization, Formal Analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. DABB: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

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