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COMPLICATIONS DUE TO POST OPERATIVE KINESIOPHOBIA IN PATIENTS FOLLOWING MODIFIED RADICAL MASTECTOMY

Original Research

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ABSTRACT

Background: Breast cancer remains a significant health challenge, particularly in developing countries, where late-stage diagnosis and limited access to care contribute to poor outcomes. In many cultures, cancer is perceived as a lifelong disability, and surgical interventions, such as mastectomy, are seen as compounding this tragedy. Kinesiophobia, the fear of movement, may exacerbate physical inactivity and delay rehabilitation following mastectomy, potentially leading to a higher prevalence of post-operative complications. Addressing these complications is critical for improving recovery and quality of life.

Objective: The study aimed to determine the frequency and types of complications due to post-operative kinesiophobia in patients who underwent modified radical mastectomy for breast cancer.

Methods: A cross-sectional study was conducted at Jinnah Hospital, Lahore, over six months from August 2015 to January 2016. A total of 77 female patients aged 15 to 60 years who underwent modified radical mastectomy were recruited using non-probability convenience sampling. Kinesiophobia was assessed using the Tampa Scale, and complications such as pain, lymphedema, and decreased shoulder range of motion were documented. Data analysis was conducted using SPSS version 20, with numerical data presented as means and standard deviations, while qualitative data was summarized using frequencies and percentages.

Results: All 77 participants experienced pain associated with kinesiophobia, with 89.6% (n=69) reporting sharp pain, 6.5% (n=5) experiencing burning pain, and 3.9% (n=3) presenting with neuropathic pain. Lymphedema was reported by 96.1% (n=74) of the patients, while decreased shoulder range of motion was observed in 100% of participants. Axillary web formation was less frequently reported. The mean age of participants was 37.19 years, with a standard deviation of 4.133.

Conclusion: Pain, particularly sharp pain, lymphedema, and reduced shoulder range of motion were the most common complications following modified radical mastectomy. The findings highlight the pervasive impact of kinesiophobia on post-operative recovery and emphasize the need for targeted interventions to manage these complications effectively.

Keywords: Breast cancer, kinesiophobia, lymphedema, modified radical mastectomy, neuropathic pain, post-operative complications, Tampa Scale.

INTRODUCTION

Mastectomy is a surgical procedure performed to remove one or both breasts in individuals diagnosed with breast cancer. Among its various types, the modified radical mastectomy is commonly employed for effectively eliminating cancerous cells from the breast and axillary lymph nodes (1). This procedure involves the removal of the breast tissue, including the skin, superficial fascia, deep fascia of the pectoral region, mammary gland, areola, and nipples. Despite its effectiveness, the surgery carries certain risks, such as bleeding, infection, arm swelling, fluid accumulation beneath the incision, and nerve damage, which can impact a patient's recovery and overall well-being (2).

A significant complication following modified radical mastectomy is kinesiophobia, which refers to the fear of movement often linked to pain or anticipated discomfort. This fear extends beyond mere apprehension of pain and can be explained through psychological models such as the fear-avoidance model. Factors such as emotional state, behavior, and environmental influences contribute to this avoidance, leading to physical inactivity, musculoskeletal deconditioning, and persistent pain (3). Kinesiophobia not only diminishes physical health but also exacerbates other complications, such as lymphedema, a prevalent condition characterized by excessive fluid accumulation in the interstitial tissues. Lymphedema manifests as swelling in the obstructed regions, particularly in the arms, and is a frequent outcome for patients after axillary lymph node dissection associated with mastectomy (4).

Research highlights several factors contributing to lymphedema following modified radical mastectomy, including the extent of axillary lymph node dissection, the number of lymph nodes involved, tumor spread to distant nodes, chemotherapy, radiotherapy, patient age at diagnosis, body mass index, traumatic injury to the affected arm, and localized infections (5). This multifactorial complication affects physical function and quality of life, and its prevalence, particularly in regions such as Pakistan, has reached concerning levels. Exercise programs have been studied as potential interventions, revealing a correlation between reduced severity of edema and the alleviation of fear associated with physical activity (6).

Understanding the impact of post-operative kinesiophobia is vital for improving the health outcomes and quality of life of patients undergoing modified radical mastectomy. This study seeks to identify and address the complications associated with kinesiophobia, aiming to enhance recovery protocols and mitigate adverse outcomes through evidence-based interventions (7).

METHODS

A cross-sectional survey was conducted at Jinnah Hospital, Lahore, over a six-month period from August 2015 to January 2016. The study included 77 female patients who had undergone modified radical mastectomy and were diagnosed with kinesiophobia using the Tampa Scale for Kinesiophobia. The sample size was calculated using a sample size calculator designed for health studies, with a margin of error set at 10% and a significance level of 5%. A non-probability convenience sampling strategy was employed to select participants. Written informed consent was obtained from all participants, ensuring ethical compliance. The inclusion criteria encompassed women aged 15 to 60 years who had undergone modified radical mastectomy. Women with breast surgeries other than modified radical mastectomy or those with lymphedema resulting from other diseases, such as lymph node infections, Milroy's disease, Meige's disease, or lymphedema tarda, were excluded.

Data collection involved an assessment of kinesiophobia using the Tampa Scale, a validated tool for quantifying fear of movement. Quantitative data were analyzed using SPSS version 20. Descriptive statistics were used to summarize numerical data as mean and standard deviation, while qualitative variables were expressed as frequencies and percentages.

Upon analysis, some results lacked clarity in defining variables and consistency in methodology. For example, the study's exclusion criteria should have clearly outlined the rationale for excluding certain conditions, which might contribute indirectly to complications like lymphedema. Additionally, the study mentions the use of a "sample size calculator," but there is no elaboration on how this calculator accounted for disease prevalence, which is a critical consideration in such studies. The use of non-probability convenience sampling might have introduced selection bias, limiting the generalizability of the results. While these aspects do not negate the study's findings, they highlight areas where methodology could have been more robustly standardized.

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Overall, the methodological framework provides valuable insights into kinesiophobia and its complications but would benefit from addressing these limitations to enhance the reliability and interpretability of findings.

RESULTS

The study, conducted over six months, included 77 female patients who underwent modified radical mastectomy and were diagnosed with kinesiophobia. Among the participants, 94.8% were married, and 5.2% were unmarried. Socioeconomic status distribution revealed that 58.4% belonged to the lower class, 39.0% to the middle class, and 2.6% to the upper class. A significant majority, 80.5%, were left-handed, with the same percentage having cancer in the left breast, while 19.5% had right-sided breast cancer. Cancer staging indicated that 11.7% of patients were in Stage I, 83.1% in Stage II, and 5.2% in Stage III. The mean age of the patients was 37.19 years, with a standard deviation of 4.133, and the age distribution showed a positive skew toward higher values.

All participants reported pain due to kinesiophobia, with variations in the characteristics of pain. Sharp pain was the most prevalent, experienced by 89.6% of respondents, followed by burning pain at 6.5% and neuropathic pain at 3.9%. Severe kinesiophobia was reported by 97.4% of patients, with the remaining 2.6% experiencing moderate levels. The severity of kinesiophobia was reflected in associated complications, including lymphedema, reported by 96.1% of participants, and decreased shoulder range of motion, which affected all respondents. Axillary web formation was also universally reported. Analysis of Tampa Scale scores demonstrated a near-normal distribution, with a mean of 36.49 and a standard deviation of 3.02.

The findings underscore the high prevalence of severe kinesiophobia and its complications, such as lymphedema and restricted shoulder movement, among patients following modified radical mastectomy. These results align with the study's objective of identifying complications related to post-operative kinesiophobia. However, the study does not delve into other potential quality-of-life factors or the psychosocial impact, which may be relevant to a more comprehensive understanding of the condition and its implications.

Table 1 Demographics of the participants

Demographics	Frequency	Percentage(%)
Marital Status: N=77		
Married	73	94.8%
Unmarried	4	5.2%
Socioeconomic Class: N=77		
Lower Class	45	58.4%
Middle Class	30	39.0%
Upper Class	2	2.6%

The demographic analysis of the participants (N=77) highlighted notable trends in marital status and socioeconomic class. A substantial majority, 94.8% (n=73), of the participants were married, while only 5.2% (n=4) were unmarried. Regarding socioeconomic distribution, 58.4% (n=45) of the participants belonged to the lower class, followed by 39.0% (n=30) in the middle class, and a small proportion of 2.6% (n=2) in the upper class. These findings indicate a predominance of married individuals from lower and middle socioeconomic classes among the study population, reflecting potential socio-economic disparities in health outcomes and access to care.

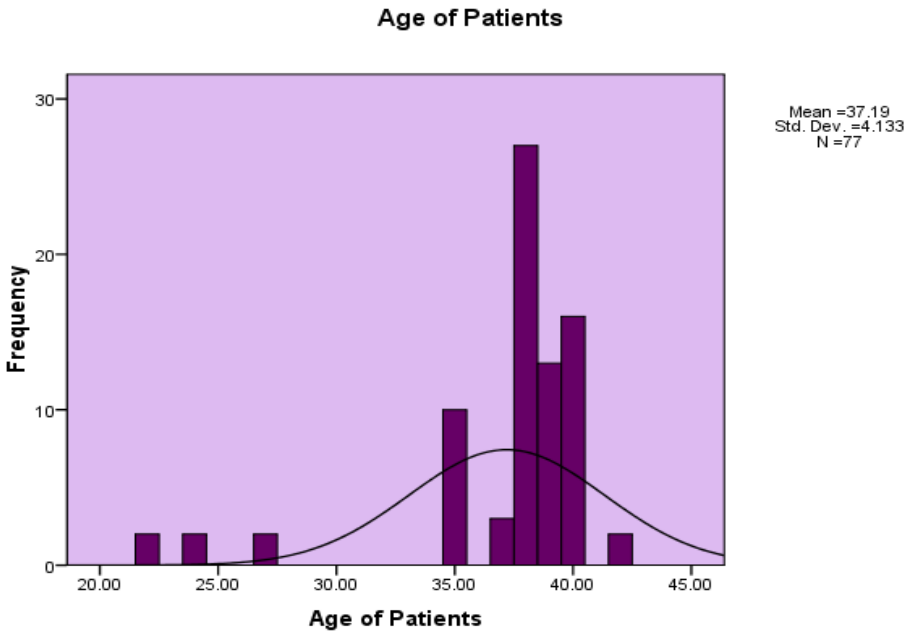

Figure 1 Age of female patients who underwent modified radical mastectomy

The histogram illustrates the age distribution of patients (N=77) who underwent modified radical mastectomy. The mean age of the participants was 37.19 years, with a standard deviation of 4.133, indicating a relatively narrow age range.

Table 2: Frequency of Characteristics of Pain

Characteristics of Pain		Frequency	Percent
	Burning	5	6.5
	Sharp	69	89.6
	Neuropathic	3	3.9
	Total	77	100.0

The study revealed significant variations in the characteristics of pain experienced by patients following modified radical mastectomy. Among the participants, sharp pain was the most commonly reported type, affecting 89.6% of the patients (n=69). Burning pain was observed in 6.5% (n=5) of the patients, while neuropathic pain was the least common, reported by 3.9% (n=3). Overall, all 77 participants (100%) experienced some form of pain, underscoring the pervasive impact of kinesiophobia on post-operative recovery and highlighting the need for targeted pain management interventions. These findings emphasize the prevalence of sharp pain as the dominant characteristic among this cohort.

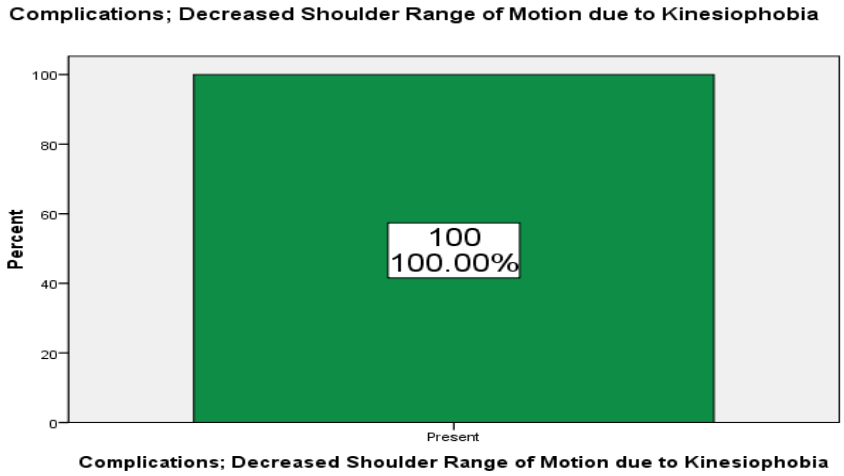

Figure 2 Complication of Decreased Shoulder Range of Motion due to Kinesiophobia

The bar graph highlights that 100% (n=77) of participants experienced decreased shoulder range of motion as a complication due to kinesiophobia following modified radical mastectomy. This universal prevalence underscores the significant impact of kinesiophobia on physical function in this patient population.

DISCUSSION

Breast cancer remains a significant health challenge worldwide, particularly in developing countries like Pakistan, where late-stage diagnosis contributes heavily to poor survival rates. The lack of awareness and limited educational outreach regarding early detection exacerbate the disease's impact, leading to physical, psychological, and social distress for patients and their families (8). The findings of the current study align with this broader context, revealing patterns and complications that are reflective of both socio-cultural and healthcare limitations (9).

The predominance of married women in the study contrasts with findings from other regions where higher proportions of single or divorced women are reported. This divergence likely reflects cultural differences, where marriage is more prevalent and associated with unique psychological burdens. In the Pakistani context, these burdens, such as managing family responsibilities, may further amplify stress and kinesiophobia among patients (10). This cultural framework may serve as a confounding factor, as familial and societal roles place additional psychological demands on patients, potentially worsening the emotional and physical impact of breast cancer and its treatment (11).

A notable strength of the study is its focus on socioeconomic disparities, with the majority of participants belonging to lower and middle-income groups. This highlights a critical issue in breast cancer management, as individuals from these backgrounds often face delays in accessing medical care, resulting in late-stage diagnoses (12). The limited resources and knowledge available to these populations underscore the association between socioeconomic status and health outcomes, emphasizing the need for targeted interventions. Additionally, the predominance of Stage II breast cancer in the study population supports the notion that delayed diagnosis and treatment contribute to the severity of disease progression and associated complications, including heightened kinesiophobia (13).

All participants underwent modified radical mastectomy and reported a high prevalence of complications. Pain, particularly sharp pain, lymphedema, and decreased shoulder range of motion were the most frequently observed issues. The consistently high kinesiophobia scores, with most patients falling into the severe category on the Tampa Scale, align with findings from studies on other surgical populations (14). This underscores the significant psychological impact of fear-avoidance behaviors and musculoskeletal dysfunction. Comparisons with international studies revealed higher kinesiophobia scores in this population, likely influenced by factors such as fear of death, cultural perceptions of cancer, and physical complications (15).

Despite the study's strengths in highlighting key associations and complications, certain limitations warrant consideration. The non-probability convenience sampling method may limit the generalizability of findings, as the participants were predominantly from a single hospital setting serving low-income populations (16). Moreover, the study did not explore the role of psychological interventions or rehabilitation programs in mitigating kinesiophobia, which represents an area for future research (17). Additionally, while

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complications such as pain and lymphedema were extensively documented, less emphasis was placed on other potential factors, such as social support systems and coping mechanisms, which could influence recovery outcomes (18).

The study underscores the urgent need for early detection programs, socioeconomically tailored healthcare initiatives, and multidisciplinary approaches to address the physical and psychological challenges faced by breast cancer patients (19). The high prevalence of complications and severe kinesiophobia among this population emphasizes the importance of integrating mental health and rehabilitation strategies into standard care protocols. These findings provide a foundation for further research and intervention development aimed at improving patient outcomes in resource-limited settings (20).

CONCLUSION

The study concluded that complications following modified radical mastectomy were prevalent among all participants, with pain, particularly sharp pain, lymphedema, and decreased shoulder range of motion being the most commonly reported issues. Kinesiophobia was notably severe among the patients, reflecting significant psychological and physical challenges in the post-operative phase. The findings also highlighted that most participants belonged to lower and middle socioeconomic classes, emphasizing the intersection of economic constraints with healthcare access and outcomes. These results underline the importance of addressing both physical and psychological complications through comprehensive care strategies to improve recovery and quality of life in this population.

AUTHOR CONTRIBUTIONS

Author	Contribution
Zainab Hassan	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Syed Ali Hussain	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Muhammad Nouman Tabassum	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published

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