Original Article

Assessment of knowledge levels amongst pre-operative patients regarding the importance of post-mastectomy exercises for optimal outcome: A Cross-sectional study

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Abstract

Background: Post-operative exercises play a crucial role in the recovery process for mastectomy patients. Assessing pre-operative knowledge can guide effective educational interventions. **Aim:** The primary objective of the study was to evaluate the knowledge levels of pre-operative breast cancer patients regarding post-operative exercises. **Materials and Methods:** A descriptive cross-sectional study was conducted from March 2021 to March 2022 at Female District Hospital and Satish Pandey Memorial (SCPM) Multi-Specialty Hospital, Gonda, Uttar Pradesh. Using a purposive sampling technique, 150 pre-operative breast cancer patients were selected. Data were collected via questionnaires assessing demographic variables and knowledge of post-operative exercises. Statistical analysis was conducted using SPSS, with significance set at 95% confidence interval. **Results:** Findings showed 27.3% of patients had no knowledge, 33.3% had inadequate knowledge, 27.3% had moderate knowledge, and 12% had adequate knowledge, with a mean score of 2.24 (SD = 0.98). Chi-square analysis indicated significant associations between knowledge levels and demographic factors such as age, education, occupation, family type, and living area, ($p<0.05$). **Conclusion:** The study highlights varied knowledge levels regarding post-operative exercises among mastectomy patients, with many showing inadequate understanding. Educational programs are essential to improve knowledge and promote better recovery outcomes.

Keywords: Knowledge levels, post-operative exercises, Mastectomy, Empowerment, Breast cancer

Introduction

Breast cancer remains one of the most prevalent cancers affecting women globally. With advancements in early detection and treatment, survival rates have improved significantly[(1)]. However, the surgical management of breast cancer, particularly mastectomy, continues to be a crucial aspect of treatment. For patients undergoing mastectomy, post-operative rehabilitation, including exercises, plays a pivotal role in recovery, reducing complications, and improving quality of life[(2)].

Post-operative exercises play a crucial role in the recovery journey of patients undergoing mastectomy, a life-altering surgical procedure commonly used in the treatment of breast cancer. These exercises encompass a range of movements and activities designed to restore physical function, alleviate discomfort, and promote psychological well-being in the post-operative period[(3)].

Post-operative exercises are critical for recovery after mastectomy, as they help restore shoulder and arm function, prevent lymphedema, and improve overall mobility. Literature indicates that early initiation of post-operative exercises can reduce complications and promote faster recovery[(4)]. López et al. highlighted the importance of educating patients about post-operative exercises as part of the surgical care pathway. The study found that patients who were informed and trained on these exercises pre-operatively were more likely to adhere to their exercise regimen post-operatively, resulting in better functional outcomes and fewer complications[(5)].

The significance of assessing and enhancing the knowledge levels of pre-operative mastectomy patients on post-operative exercises lies in its potential to empower patients, improve recovery outcomes, and enhance the quality of life[(6)]. By providing patients with accurate information and practical guidance, healthcare providers can enable patients to take an active role in their recovery, reduce the risk of complications, and promote long-term physical and emotional well-being[(7)]. Furthermore, addressing knowledge gaps in patient education can contribute to more effective post-operative care strategies, ultimately leading to improved patient satisfaction and healthcare outcomes[(8)].

Despite their importance, the knowledge levels of pre-operative mastectomy patients regarding these exercises remain underexplored. Understanding and addressing these knowledge gaps are essential for optimizing patient outcomes and improving the overall quality of care in mastectomy patients[9].

Objectives

To assess patients' knowledge of post-mastectomy exercises and explore its association with selected socio-demographic variables.

Materials and Methods

This descriptive cross-sectional study was conducted from March 2021 to March 2022 at the Female District Hospital and Satish Chandra Pandey Memorial (SCPM) Multi-Specialty Hospital in Gonda, Uttar Pradesh. A purposive sampling technique was employed to select participants, with a calculated sample size of 150 based on the formula for cross-sectional studies[10]: $n = Z^2 \times P \times (1- P)/E^2$. For this calculation, a Z-value of 1.96 was used for a 95% confidence level, an estimated proportion (P) of 0.5 for maximum variability, and a margin of error (E) of 0.0803, resulting in approximately 149 participants, which was rounded to 150 for adequacy. Data were collected through a questionnaire assessing demographic variables such as age, education, occupation, religion, family type, living area, source of information, and previous surgical history, along with knowledge of post-operative exercises. Descriptive and inferential statistics were applied, with a significance level set at $p<0.05$. Statistical Package for Social Sciences (SPSS) software was utilized for data analysis to examine the relationship between demographic factors and knowledge of post-operative exercises.

Inclusion and exclusion criteria

The inclusion criteria for the study specified that participants had to be female patients admitted to SCPM Hospital and Female District Hospital in Gonda, Uttar Pradesh, diagnosed with breast cancer. These individuals needed to understand and communicate in Hindi and express a willingness to participate by providing informed consent. Additionally, only those scheduled for a mastectomy in the pre-operative stage were considered. Conversely, the exclusion criteria encompassed patients with severe health conditions that could hinder their participation, those who were unavailable during the data collection period, and individuals with cognitive impairments that would limit their ability to comprehend or respond to the study requirements.

Research instruments

The part-1 of the research instrument was demographic variables of the patients and part-2 was knowledge questionnaire on post-operative exercises after mastectomy. The knowledge questionnaire for assessing post-operative exercises following a mastectomy focused on several components to evaluate the patient's understanding. It began with general questions about mastectomy and the importance of post-operative care to ensure patients were aware of why these exercises were essential. The questionnaire covered specific types of exercises, such as when they should be initiated, their frequency, and duration. It assessed patients' knowledge regarding exercise precautions, physical and psychological benefits, and methods for managing pain. Additionally, it explored adherence to the exercise regimen, including factors like motivation, barriers, and possible solutions, as well as the availability of instructional support and resources. Lastly, it inquired about patients' self-monitoring habits and scheduled follow-up appointments to ensure continuous recovery.

Scoring key

The study scoring key consisted of four categories of knowledge levels: as Adequate knowledge: 21-30, Moderate knowledge: 11-20, Inadequate knowledge: 1-10, No knowledge- 0[11].

Tool validation and reliability

The tool's validity was established through expert opinion. A panel of nine field experts reviewed the tool for content validity, ensuring that it accurately measures the intended constructs. The reliability of the tool was evaluated using Pearson's correlation coefficient, a method used to assess the consistency of the tool's results over time. The reliability test yielded an "r" value of 0.97, indicating a very high level of consistency and reliability.

Results

Section-I: Demographic variables of the patients

According to Table 1, the demographic data indicated that the largest group of respondents was aged 30-35 years, with 42 (28%) respondents. Regarding education, the majority had completed secondary education, 48 (32%), and a notable portion was identified as Hindu, 46 (30.7%). Farming was the most common occupation, involving 53 (35.3%) respondents, and 60 (40%) belonged to nuclear families. Both rural and urban areas were equally represented, with 57 (38%) respondents each. The primary source of information for respondents was television, 43 (28.7%), while 85 (56.7%) had a previous surgical history (Table 1).

Table 1: Frequencies and percentage distribution of demographic variables of patients (n=150)

Demographic Variable	n (%)
Age (in years)	
30-35	42 (28)
36-40	40 (26.7)
41-45	32 (21.3)
46 and Above	36 (24)
Level of education	
Primary education	40 (26.7)
Secondary education	48 (32)
Intermediate	38 (25.3)
Degree and above	24 (16)
Religion	
Hindu	46 (30.7)
Muslim	38 (25.3)
Christians	35 (23.3)
Others	31 (20.7)
Occupation	
Farmer	53 (35.3)
Daily wages	38 (25.3)
Housewife	24 (16)
Business	35 (23.3)
Type of family	
Nuclear	60 (40)
Joint	53 (35.3)
Extended	37 (24.7)
Place of living	
Rural	57 (38)
Urban	57 (38)
Semi-urban	36 (24)
Source of information	
Television	43 (28.7)
Newspaper	39 (26)
Books	34 (22.7)
Parents	34 (22.7)
Previous surgical history	
Yes	85 (56.7)
No	65 (43.3)

Knowledge levels of the patients

Table 2: Knowledge levels of patients on post-operative exercises with mastectomy (n=150)

Knowledge levels	Scoring	n (%)
Adequate	21-30	18 (12)
Moderate	11-20	41 (27.3)
Inadequate	1-10	50 (33.3)
No knowledge	0	41 (27.3)

Table 2 presents the distribution of knowledge levels among patients regarding post-operative exercises following mastectomy. Of the total participants, 18 (12.0%) demonstrated adequate knowledge, while 41 (27.3%) exhibited moderate knowledge. A larger proportion of patients displayed inadequate knowledge, with 50 (33.3%) falling into this category. Additionally, 41 (27.3%) participants showed no knowledge of post-operative exercises. The mean knowledge level was 2.24, with a corresponding standard deviation of 0.98 (Table 2).

Association of demographic variables with knowledge levels

Table 3 outlined the association between patients' knowledge of post-operative exercises following mastectomy and demographic variables. Patients aged 30-40 years, with primary education, rural backgrounds, and from nuclear families predominantly showed inadequate knowledge, while those aged 41+ years and with higher education demonstrated moderate to adequate knowledge. Hindus, Muslims, farmers, and those relying on television or newspapers for information also had inadequate knowledge compared to others. Patients with previous surgeries exhibited higher levels of inadequate knowledge. These findings highlight the impact of demographic factors on knowledge, stressing the need for targeted educational interventions.

Discussion

The findings of this study provide significant insights into the knowledge levels of pre-operative mastectomy patients regarding post-operative exercises and their association with various demographic variables. The distribution of knowledge levels among participants reveals a considerable proportion with inadequate or no knowledge, indicating potential gaps in patient education and understanding of post-operative care practices. This underscores the importance of targeted educational interventions to improve patient awareness and adherence to prescribed exercise regimens, ultimately enhancing their postoperative outcomes and quality of life.

Table 3: Association of knowledge levels of post-operative exercises in mastectomy and demographic variables by χ^2 test (n=150)

Demographic Variable	No Knowledge	Inadequate	Moderate	Adequate	Chi-square (χ^2)
	n (%)	n (%)	n (%)	n (%)	
Age (in years)					
30-35	29 (19.3)	3 (2)	-	10 (6.7)	χ^2 = 104.45, df- 9, S**
36-40	3 (2)	25 (16.7)	9 (6)	3 (2)	
41-45	6 (4)	15 (10)	7 (4.7)	4 (2.7)	
46 and above	3 (2)	7 (4.7)	25 (16.7)	1 (0.7)	
Level of education					
Primary	25 (16.7)	-	4 (2.7)	11 (7.3)	χ^2=128.25, df- 9, S**
Secondary	7 (4.7)	39 (26)	2 (1.3)	-	
Intermediate	6 (4)	4 (2.7)	21 (14)	7 (4.7)	
Degree and above	3 (2)	7 (4.7)	14 (9.3)	-	
Religion					
Hindu	25 (16.7)	-	20 (13.3)	1 (0.7)	χ^2= 128.25, df- 9, S**
Muslim	11 (7.3)	16 (10.7)	-	11 (7.3)	
Christians	5 (3.3)	29 (19.3)	1 (0.7)	-	
Others	-	5 (3.3)	20 (13.3)	6 (4)	
Occupation					
Farmer	29 (19.3)	3 (2)	20 (13.3)	1 (0.7)	χ^2= 95.36, df- 9, S**
Daily wages	8 (5.3)	16 (10.7)	3 (2)	11 (7.3)	
Housewife	4 (2.7)	20 (13.3)	-	-	
Business	-	11 (7.3)	18 (12)	6 (4)	
Type of family					
Nuclear	38 (25.3)	6 (4)	12 (8)	4 (2.7)	χ^2= 99.82, df- 6, S**
Joint	2 (1.3)	32 (21.3)	19 (12.7)	-	
Extended	1 (0.7)	12 (8)	10 (6.7)	14 (9.3)	
Area of living					
Rural	28 (18.7)	13 (8.7)	1 (0.7)	15 (10)	χ^2= 65.21, df- 6, S**
Urban	13 (8.7)	21 (14)	20 (13.3)	3 (2)	
Semi-urban	-	16 (10.7)	20 (13.3)	-	
Source of information					
Television	14 (9.3)	18 (12)	11 (7.3)	-	χ^2= 55.28, df- 9, tv-16.92, S**
Newspaper	13 (8.7)	5 (3.3)	21 (14)	-	
Books	2 (1.3)	14 (9.3)	9 (6)	9 (6)	
Parents	12 (8)	13 (8.7)	-	9 (6)	
Previous surgical history					
Yes	34 (22.7)	26 (17.3)	18 (12)	7 (4.7)	χ^2= 17.00, df- 3, S**
No	7 (4.7)	24 (16)	23 (15.3)	11 (7.3)	

Note: χ^2: Chi-Square value; df: degree of freedom; S**: Significance, P<0.05

Comparisons with similar studies in the literature highlight both consistencies and discrepancies in findings. A notable proportion of mastectomy patients demonstrate inadequate knowledge or misconceptions regarding post-operative exercises[11,12]. For example, a study by Rose et al. found that a significant portion of mastectomy patients lacked an understanding of the importance and proper execution of post-operative exercises, echoing the findings of the current study. Similarly, another study observed associations between demographic factors such as age, education, and occupation with knowledge levels regarding post-operative care among mastectomy patients, consistent with the results presented here[13].

However, some studies have reported contrasting findings or nuanced variations in the associations between knowledge levels and demographic variables. For instance, while our study found that higher education levels were associated with better knowledge of post-operative exercises, other studies have reported mixed or inconclusive results regarding the influence of education on patient understanding[14]. Additionally, variations in cultural and socioeconomic factors across different study populations may contribute to differences in knowledge levels and associations with demographic variables. Further to this, similar studies' knowledge levels were 37.29 ± 11.35 and 16.42±3.0[15,16].

In addition to this, by identifying specific demographic groups at higher risk of inadequate knowledge, healthcare providers can develop targeted interventions to address their unique needs and enhance patient engagement in their care. Further research is warranted to explore additional factors influencing knowledge levels and evaluate the effectiveness of educational interventions in improving patient outcomes following mastectomy[17].

Recommendations

Based on the findings of this study, several recommendations emerge to enhance the post-operative care of mastectomy patients. Firstly, there is a pressing need to develop tailored educational interventions that address the specific knowledge gaps identified among patients[17]. These interventions should consider the diverse demographic characteristics of the patient population, including age, education level, occupation, and cultural background, to ensure maximum relevance and effectiveness[18]. Secondly, efforts should be made to improve access to reliable information about post-operative exercises through various channels, including educational materials, workshops, and online resources. Additionally, personalized counseling sessions with healthcare professionals can provide individualized guidance and support, addressing patients' specific concerns and questions[19]. By implementing these recommendations, healthcare providers can empower mastectomy patients to actively engage in their post-operative care, ultimately enhancing their recovery outcomes and overall quality of life[20].

Limitations

While this study provides insights into pre-operative mastectomy patients' knowledge of post-operative exercises, several limitations should be noted. Conducted in specific healthcare facilities, the findings may not be generalizable. Purposive sampling could introduce selection bias, affecting sample representativeness[21]. The cross-sectional design limits causal interpretation, and reliance on self-reported data may introduce response bias. The study focused solely on knowledge levels, excluding factors like attitudes, beliefs, or social support that could influence outcomes[22]. Chi-square analysis may oversimplify relationships, and the long-term impact of knowledge on patient outcomes or the effectiveness of interventions was not assessed. Future research should address these limitations for a broader understanding of post-operative care factors[23].

Conclusion

The findings reveal significant proportions of patients with inadequate or no knowledge, highlighting potential knowledge gaps in patient education and understanding of post-operative care practices. Demographic factors such as age, education level, occupation, and previous surgical history were found to be associated with knowledge levels, underscoring the importance of educational interventions to address these disparities. To enhance patient education, access to information, counseling, and peer support networks are proposed to improve post-operative outcomes among mastectomy patients.

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Ethical consideration

The ethical letter was obtained from the SCPM College of

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Data Availability Statement

Data will be available with corresponding author on request.

Authors' Contribution

URK: Conceptualization, Designing study, Data Analysis and interpretation, drafting the manuscript and critical review of manuscript, L: Conceptualization, Designing study, Data Analysis and interpretation, critical review of manuscript, JBD: Conceptualization, Designing study, Data Analysis and interpretation, drafting the manuscript and critical review of manuscript

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