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PHYSICAL ACTIVITY AND PHYSICAL HEALTH RELATED QUALITY OF LIFE AMONG WOMEN WITH BREAST CANCER

Original Research

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ABSTRACT

Background: Breast cancer is the most diagnosed malignancy among women globally and remains a leading cause of cancer-related mortality. Despite advancements in treatment, many breast cancer patients experience compromised quality of life (QoL). Physical activity (PA) has emerged as a non-pharmacological intervention that improves outcomes by alleviating symptoms, enhancing physical health, and supporting psychological resilience. However, PA remains an underexplored domain in routine cancer care, especially in relation to its impact on health-related quality of life in breast cancer survivors.

Objective: To assess the level of physical activity and physical health-related quality of life among women with breast cancer and to examine the association between physical activity and health-related QoL.

Methods: A cross-sectional study was conducted involving 105 female breast cancer patients aged 20–50 years. Participants included those at various stages of the disease, undergoing surgery or chemotherapy. Data were collected from Jinnah Hospital, Mayo Hospital, and Pink Ribbon Breast Cancer Trust Hospital in Lahore. Ethical approval was obtained from the University of Management and Technology. Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ), while physical health-related QoL was measured through the WHOQOL-BREF. Statistical analysis was performed using SPSS version 21, applying both descriptive and inferential statistics.

Results: The mean age of participants was 33.26 ± 5.17 years (range 26–42). Among 105 participants, 5 (4.8%) were physically inactive, 73 (69.5%) had mild activity, and 27 (25.7%) were moderately active. Regarding QoL, 72 (68.6%) reported low physical health-related QoL, 27 (25.7%) moderate, and 6 (5.7%) high. A significant association was found between physical activity levels and physical health-related QoL ($p < 0.05$).

Conclusion: Although most breast cancer patients were mildly active, a substantial proportion reported poor physical health-related QoL. Enhancing physical activity engagement could positively influence recovery and overall well-being.

Keywords: Breast Neoplasms, Cross-Sectional Studies, Exercise, Female, Pakistan, Quality of Life, Survivors.

INTRODUCTION

Breast cancer is the most frequently diagnosed malignancy among women globally, with an estimated 2.26 million new cases reported in 2020 (1). Despite advancements in early detection and treatment, it remains the leading cause of cancer-related mortality among women, particularly in low- and middle-income countries where healthcare disparities persist (2). A strong association exists between the incidence of breast cancer and the human development index (HDI), with higher rates observed in developed countries. However, the growing population and evolving lifestyle patterns in less developed regions are contributing to a rapidly increasing global burden of disease (3). Risk factors for breast cancer are multifactorial, including age, reproductive history, hormonal exposures, and lifestyle behaviors. In high-income settings, breast cancer primarily affects women over the age of 70, whereas in resource-limited countries, more than half of all cases are diagnosed before the age of 50 (4). Additional risk factors such as early menarche, delayed menopause, lower parity, and shorter breastfeeding durations further exacerbate the vulnerability, alongside modifiable contributors like obesity, alcohol intake, and inherited genetic mutations such as BRCA1 and BRCA2 (4). Pathologically, breast cancer originates in glandular tissue and encompasses a spectrum of histological subtypes. Non-invasive precursors such as ductal carcinoma in situ (DCIS) and lobular carcinoma in situ (LCIS) are associated with varying degrees of malignant potential (5). Among invasive types, invasive ductal carcinoma (IDC) is the most prevalent, accounting for 70–80% of all diagnoses, followed by invasive lobular carcinoma (ILC), comprising approximately 10% of cases. Less common variants include inflammatory breast cancer (IBC), Paget's disease of the nipple, and angiosarcoma (6). Molecular classification further refines diagnosis and guides treatment, with subtypes such as hormone receptor-positive (luminal), HER2-positive, and triple-negative breast cancer displaying distinct prognostic and therapeutic profiles. Tumor markers like CA 15-3 are often utilized for tracking disease progression and evaluating treatment response (7).

Beyond its clinical manifestations, breast cancer exerts a profound impact on the physical and psychosocial well-being of affected individuals. Symptoms such as fatigue, pain, sleep disturbances, and long-term psychological distress—particularly anxiety and depression—are commonly reported among survivors (8). Physical activity (PA) has emerged as a vital component of survivorship care, demonstrating significant benefits in improving quality of life (QoL), alleviating treatment-related side effects, enhancing functional capacity, and reducing the risk of recurrence (9). Despite this evidence, participation in structured PA remains low due to multiple barriers, including lack of physician guidance, insufficient access to programs, and fear of exacerbating symptoms. Integrating adapted physical activity (APA) into the standard care pathway may offer a practical solution to these challenges, necessitating a coordinated multidisciplinary approach that empowers patients and supports long-term adherence (10). Given the increasing survivorship and long-term disease trajectory associated with breast cancer, there is a pressing need to understand the extent of physical activity engagement and its relationship to physical health-related QoL. This study aimed to evaluate the prevalence of physical activity and assess its association with physical health-related quality of life among women diagnosed with breast cancer, thereby highlighting critical gaps and informing future rehabilitation strategies.

METHODS

This cross-sectional study was conducted to evaluate the levels of physical activity and physical health-related quality of life (QoL) among women diagnosed with breast cancer. A total of 105 female participants were recruited using a non-probability convenience sampling technique. The inclusion criteria encompassed women aged between 20 and 50 years who had been diagnosed with any stage or histological type of breast cancer, either undergoing chemotherapy or in the post-operative recovery phase. Breast cancer survivors were also eligible for inclusion. Conversely, male patients with breast cancer, individuals diagnosed with other forms of malignancies, and women with significant co-morbid conditions—such as deep vein thrombosis, chronic kidney or pulmonary disease, hyperthyroidism, or acute infectious illnesses—were excluded to maintain sample homogeneity and minimize confounding variables. The required sample size was calculated using the Epitool online calculator (11). Participants were enrolled from three major healthcare institutions in Lahore: Jinnah Hospital, Mayo Hospital, and Pink Ribbon Breast Cancer Trust Hospital. Ethical approval for the study was secured from the Institutional Review Board (IRB). Prior to data collection, informed written consent was obtained from all participants, ensuring they were fully briefed on the study objectives, confidentiality safeguards, and their right to withdraw at any stage without consequences.

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Data on physical activity levels were gathered using the validated International Physical Activity Questionnaire (IPAQ) (12). According to IPAQ scoring guidelines, high physical activity was defined as engaging in at least 1500 MET minutes of vigorous activity over three days, or 3000 MET minutes over seven days from a combination of walking, moderate, and vigorous-intensity activities. A moderate activity level corresponded to a minimum of 600 MET minutes per week. Participants with values below this threshold were classified as having low physical activity. Physical health-related quality of life was assessed using the World Health Organization Quality of Life-BREF (WHOQOL-BREF) tool, which provides a domain-specific score ranging from 0 to 100, with higher scores reflecting better perceived QoL (13). Statistical analyses were performed using IBM SPSS Statistics version 21. Descriptive statistics were computed to summarize demographic and clinical characteristics, and qualitative variables were visually represented through bar and pie charts. The association between categorical variables, particularly physical activity levels and physical health-related QoL, was analyzed using the Chi-square test. A p-value of ≤ 0.05 was considered statistically significant for all inferential analyses.

RESULTS

A total of 105 female participants diagnosed with breast cancer were included in the analysis. The mean age of the sample was 33.26 ± 5.17 years, with an age range between 26 and 42 years. Body mass index (BMI) classification revealed that 26.7% of participants had a normal weight, while 37.1% were overweight and 36.2% were categorized as obese. In terms of cancer stage, the majority of participants (45.7%) were diagnosed with stage II disease, followed by 41.9% with stage III, 8.6% with stage I, and only 3.8% with stage IV. Physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ). The analysis showed that 69.5% of participants engaged in mild physical activity, 25.7% in moderate physical activity, while 4.8% reported no physical activity at all. Overall, 95.2% of the cohort were classified as physically active to some extent. Assessment of physical health-related quality of life, based on the physical health domain of the WHOQOL-BREF questionnaire, showed that 68.6% of participants had a low quality of physical health, 25.7% had moderate quality, and only 5.7% demonstrated high quality of physical health. Chi-square test analysis demonstrated a statistically significant association between physical activity level and physical health-related quality of life ($p < 0.05$). Participants engaging in moderate physical activity exhibited notably better physical health-related QoL compared to those with mild or no physical activity. Specifically, of the 27 participants who engaged in moderate physical activity, 17 reported moderate and 5 reported high quality of life, in contrast to those in the mild or inactive categories who predominantly fell into the low QoL classification.

Subgroup analyses revealed additional insights into the relationship between physical activity levels, physical health-related quality of life, and participant characteristics such as BMI and age. Among participants with a normal BMI, the majority (82.1%) engaged in mild physical activity, with none achieving moderate activity levels or reporting moderate/high physical quality of life. In contrast, overweight individuals demonstrated exclusively low quality of life despite predominantly engaging in mild activity. Obese participants showed a more diverse distribution, with 21 individuals participating in moderate physical activity and six of them achieving moderate or high QoL scores, suggesting a potential benefit of higher activity levels even within this high-risk group. When analyzed by age strata, participants aged 26–30 years showed the greatest diversity in physical health outcomes, including the highest proportion of high QoL scores (3 out of 6 total). In the 31–35 age group, mild activity was most common, but those who engaged in moderate activity reported better QoL outcomes. Participants in the older age categories (36–40 and 41–42 years) also demonstrated improved physical QoL with moderate physical activity, while those who remained inactive reported uniformly low QoL. These patterns suggest that age and BMI may influence both physical activity engagement and its perceived benefits on quality of life. This subgroup analysis provides more nuanced evidence that moderate physical activity can positively impact quality of life across diverse BMI and age groups. However, despite this benefit, physical inactivity and low QoL remain more pronounced among participants with higher BMI and those in older age brackets.

Table 1: Age of the participants

Demographics	Age
Mean	33.2571
Std. Deviation	5.16651
Minimum	26.00

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Demographics	**Age**
Maximum	42.00
Total	105

Table 2: BMI of the Participants

BMI	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Normal	28	26.7	26.7	26.7
Overweight	39	37.1	37.1	63.8
Obese	38	36.2	36.2	100.0
Total	105	100.0	100.0	

Table 3: Descriptive statistics of physical activity

Physical Activity	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
no physical activity	5	4.8	4.8	4.8
mild physical activity	73	69.5	69.5	74.3
moderate physical activity	27	25.7	25.7	100.0
Total	105	100.0	100.0	

Table 4: Association between physical activity and quality of physical health

physical activity	**Domain 1: physical health**				**P-Value**
	Low quality of life	Moderate quality of life	High quality of life	Total	
No physical activity	5	0	0	5	0.00
mild physical activity	62	10	1	73	
moderate physical activity	5	17	5	27	
Total	72	27	6	105	

Table 5: Subgroup Analysis: BMI and Age vs Activity and QoL

Physical Activity	**Mild**	**Mild**	**Moderate**	**Moderate**	**None**
QoL Physical	Low	Moderate	High	Moderate	Low
BMI Category					

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Physical Activity	Mild	Mild	Moderate	Moderate	None
Normal	23	0	0	0	5
Obese	5	6	6	21	0
Overweight	39	0	0	0	0

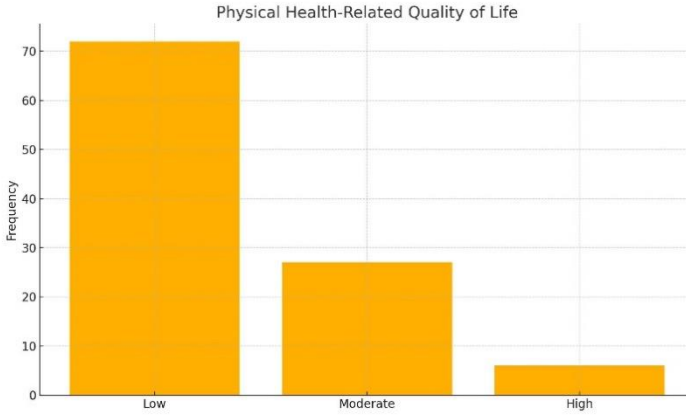

Figure 2 Physical Health-Related Quality of Life

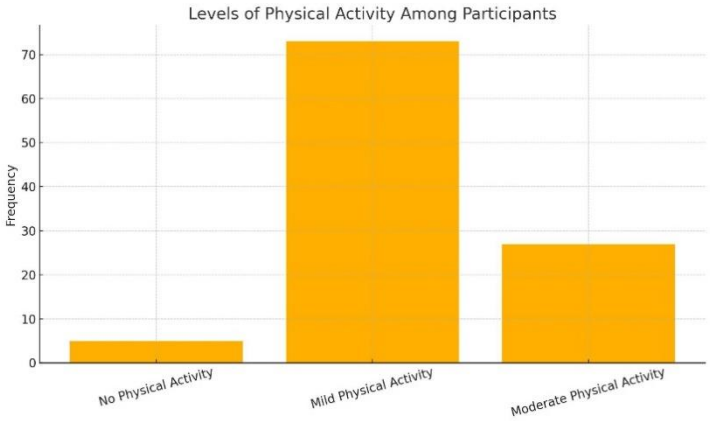

Figure 1 Levels of Physical Activity Among Participants

DISCUSSION

The present study examined the prevalence of physical activity and its association with physical health-related quality of life among women diagnosed with breast cancer in Lahore. The findings demonstrated that a substantial proportion (95.2%) of the participants engaged in some form of physical activity, with most involved in mild activity and a smaller percentage (25.7%) participating in moderate activity, as assessed by the International Physical Activity Questionnaire (IPAQ). These results are consistent with previous research that has reported moderate levels of physical activity among breast cancer survivors (14). However, other studies have highlighted a decline in physical activity following a cancer diagnosis, likely due to the physiological and psychological burden of treatment and disease progression, underscoring variability in patient response (15). While physical activity levels were relatively high in this cohort, the majority of participants were found to have poor physical health-related quality of life. This discrepancy may reflect underlying barriers such as fear of symptom exacerbation, treatment-related fatigue, or lack of structured exercise interventions, which have been cited in existing literature as contributing to diminished physical well-being in oncology populations (16,17). Furthermore, psychosocial resilience and coping mechanisms may have a protective influence on mental health even when physical health is compromised, as suggested by previous reports documenting higher psychological than physical health scores among similar populations (18).

The findings reinforced the beneficial role of physical activity in enhancing health-related quality of life, particularly in its physical health dimension. Previous evidence has demonstrated that regular physical activity contributes positively to fatigue management, functional independence, and overall well-being in breast cancer survivors (19). The current results support this relationship by revealing that women who engaged in moderate physical activity reported better physical quality of life compared to those who were inactive or only mildly active. This underscores the importance of promoting structured physical activity programs as part of survivorship care to support recovery and improve life quality. An important strength of this study lies in its use of standardized and validated tools—IPAQ for physical activity and WHOQOL-BREF for quality-of-life assessment—enabling objective comparison with international datasets. The multicenter data collection from public and specialized cancer hospitals added representativeness to the findings. Moreover, subgroup analyses by age and BMI categories provided valuable insights into how demographic and anthropometric factors may influence physical activity behavior and its perceived impact (20).

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Nevertheless, the study had limitations that should be acknowledged. It exclusively focused on women, thereby excluding male breast cancer patients who, although less frequently affected, represent a unique clinical subgroup. Individuals with co-morbid conditions were also excluded, potentially omitting insights into how physical limitations and chronic illnesses impact activity levels and health perception. Additionally, the cross-sectional design precludes any causal inference between physical activity and quality of life, and the convenience sampling technique may have introduced selection bias, limiting generalizability. Psychological and environmental determinants of activity levels—such as motivation, support systems, or access to exercise facilities—were not explored but could significantly modulate outcomes. The lower prevalence of moderate-to-high physical quality of life observed in this study suggests a critical gap in post-treatment rehabilitation and survivorship support. There remains a need for healthcare systems to integrate adapted physical activity interventions into routine cancer care, especially within low-resource settings. Future research should employ longitudinal designs to explore the dynamic relationship between physical activity and health outcomes over time, including stratification by treatment phase, cancer subtype, and socioeconomic status. Expanding the scope to include mental and emotional well-being as additional endpoints would provide a more comprehensive understanding of survivorship needs in breast cancer care.

CONCLUSION

This study concluded that while a majority of women with breast cancer engaged in mild physical activity, their physical health-related quality of life remained largely suboptimal. A significant association between physical activity levels and physical health was observed, highlighting the positive influence of moderate activity on well-being. These findings underscore the need to prioritize physical activity as an integral component of survivorship care. Encouraging and facilitating structured exercise interventions can play a vital role in enhancing recovery, improving quality of life, and supporting the long-term health of breast cancer patients.

AUTHOR CONTRIBUTION

Author	Contribution
Farazay Tanya	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Maida Mushtaq*	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
Sara Khan	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Sara Nisar	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Hamna Saeed	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Mahnoor Umer Khan	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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