



Effects of Cognitive Behavioral Therapy and Recreational or Physical Exercise to Reduce Insomnia and Psychological Problem in Cancer Patient in Lahore

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Abstract

With 2.1 million new cases reported annually, breast cancer remains a major global health concern and the most common and deadly disease in women. It is responsible for one out of every four cancer-related deaths in Pakistan, with an incidence rate that is more than 4.5 times higher than the next most common cancer. Between 1990 and 2019, the number of cases of breast cancer in Pakistan rose by more than 300%, and the death rate rose by 200–300% during the same time. The present study aimed to evaluate the synergistic effects of recreational physical exercise and cognitive behavioral therapy (CBT) on

alleviating psychological distress and insomnia in breast cancer patients. Forty individuals (n=40) were divided equally into four groups: two experimental groups and two control groups for psychological issues and insomnia. The Pittsburgh Sleep Quality Index (PSQI) and the Patient Health Questionnaire-9 (PHQ-9) were used to see if sleep quality and mental health got better before and after the intervention. The experimental group's PSQI scores dropped from 17.50 to 9.20 ($p<0.000$), which means that their sleep quality got a lot better, and their PHQ-9 scores dropped from 13.30 to 6.20 ($p<0.000$), which means that their psychological distress got a lot better. Conversely, no significant enhancement was observed in the control groups ($p=0.89$ for sleep quality and $p=0.87$ for psychological distress). Furthermore, post-intervention analysis indicated that the experimental group significantly surpassed the control group ($p<0.000$). These findings, supported by additional research, indicate that cognitive behavioral therapy (CBT), when combined with leisure and physical activities, effectively enhances mental health and sleep quality, thereby promoting the overall well-being of breast cancer patients.

Keywords: sleep quality, insomnia, Cognitive Behavioral Therapy, Recreational and Physical exercises

Introduction

Cancer, one of the most deadly diseases due to its psychological and emotional effects in addition to its physical ones, affects millions of people worldwide. The fear, uncertainty, and distress associated with a cancer diagnosis and treatment often cause patients to experience anxiety, sadness, and insomnia (Shivgotra et al., 2025).

One of the most prevalent and distressing symptoms for cancer patients is insomnia, which is the inability to fall asleep, stay asleep, or have a restful night's sleep. Studies show that between 30 and 60 percent of cancer patients have sleep disturbances during and after treatment, which significantly lowers their quality of life. In Pakistan, particularly in Lahore, the majority of cancer treatment focuses on pharmaceutical and medical management, ignoring psychological issues like emotional instability and insomnia. These psychological problems must be addressed in order to improve the mental and physical recovery of cancer patients (Canak, 2025).

Cognitive behavioral therapy, or CBT, is one of the best psychological treatments for emotional and behavioral problems. CBT is based on the idea that thoughts, emotions, and behaviors are interconnected and that negative thought patterns can lead to psychological suffering (Wright et al., 2025). CBT teaches people to identify and swap out illogical or harmful beliefs for more practical and adaptive ones.

Cognitive behavioral therapy (CBT) can help cancer patients manage stress, address their concerns, and improve their sleep quality by teaching them mindfulness, relaxation techniques, and better sleep hygiene. Numerous studies have shown that CBT significantly reduces symptoms of anxiety, depression, and insomnia in people with chronic illnesses, including cancer. It helps people regain control over their thoughts and emotions, which ultimately enhances their overall health and standard of living. In addition to psychiatric treatments, recreational and physical exercise is crucial for improving both physical and mental health.

Exercise reduces fatigue, enhances the quality of sleep, and aids in the regulation of the body's internal cycles. It triggers the release of endorphins, which are natural chemicals that elevate mood and reduce stress. Furthermore, leisure activities and physical exercise offer social connection, a sense of accomplishment, and increased self-esteem—all of which are especially beneficial for patients undergoing lengthy medical treatments like chemotherapy or radiation therapy (Lirola et al., 2025). It has been demonstrated that even simple physical activities, such as yoga, stretching, or walking, can help cancer patients feel less anxious, sleep better, and develop emotional resilience (John et al., 2025). As a result, adding exercise to a cancer patient's treatment plan can be a beneficial addition to medication. Despite growing evidence of their benefits, the use of cognitive behavioral therapy and physical exercise in Pakistani healthcare settings is still relatively limited. In places like Lahore, the physical symptoms of cancer are often treated at the expense of the psychological and emotional needs of cancer patients.

Qualified psychologists and structured fitness programs for cancer patients are often lacking in hospitals. Thus, a large number of patients continue to suffer from untreated psychological distress and insomnia, which lowers their mood and affects treatment compliance and recovery rates (Amedu et al., 2025). Therefore, it is essential that Lahore cancer treatment programs include both physical and psychological therapies. This integration can help create a holistic approach that ensures patients receive comprehensive care throughout their therapy by addressing the mind and body. The goal of this study is to determine how cognitive behavioral therapy and physical or recreational exercise might help cancer patients in Lahore who are experiencing psychological issues and sleeplessness.

By comparing the outcomes of these two treatments, the study aims to identify the most effective non-pharmacological approach for improving mental health and sleep quality in this vulnerable population. It also seeks to contribute to the growing body of research on psychosocial oncology, particularly in Pakistan, where such studies are scarce. The findings of the study can help physicians, psychologists, and lawmakers develop integrated treatment programs that include medical, psychological, and pharmaceutical care for cancer patients.

The significance of this study extends beyond its academic merit. It has useful implications for improving Pakistan's healthcare systems by emphasizing the need for patient-centered care (Malik et al., 2025). Implementing structured exercise programs and cognitive behavioral therapy in hospitals may improve the overall quality of life for cancer patients, reduce psychological distress, and speed up the healing process. Additionally, by offering safer and more sustainable alternatives, it can reduce dependency on sleeping and anti-anxiety

medications. Evidence-based therapies like cognitive behavioral therapy and physical exercise can greatly enhance the course of treatment and recovery for cancer patients in Lahore, who still face physical and mental health challenges (Xiang et al., 2025).

Cancer patients often have serious sleep and psychological problems that negatively affect their health and capacity to recover. Two effective, non-invasive, and cost-effective strategies to address these issues are exercise and cognitive behavioral therapy. However, there are currently no local studies looking at their effects on cancer patients in Pakistan, particularly in Lahore.

In order to help develop a more compassionate and comprehensive cancer care paradigm, the goal of this study is to examine how these therapies might reduce psychological discomfort and insomnia in this population. By integrating mind-body practices into existing treatment frameworks, medical professionals can help cancer patients live longer and have a higher quality of life.

Objectives of the Study

- i. The purpose of the study was to:
 - i. Investigate the effects of cognitive behavioral therapy (CBT) on maladaptive thought patterns and behaviors associated with sleeplessness;
 - ii. Determine how leisure or physical activities affect cancer patients' general psychological health.
 - iii. To look into the potential benefits of integrating cognitive behavioral therapy (CBT) with recreational pursuits or exercise to improve sleep quality and reduce psychological discomfort.

Material and Method

In this experimental study, the effects of cognitive behavioral therapy (CBT) and physical or recreational exercise on reducing psychological issues and insomnia in cancer patients in Lahore were examined. Forty patients were randomly selected from Cancer Care Hospital and Jinnah Hospital and divided into four groups of ten each: two experimental groups that received cognitive behavioral therapy and exercise treatments, and two control groups that received standard medical care. The six-week intervention included cognitive behavioral therapy (CBT) sessions (45–60 minutes twice weekly) that addressed cognitive restructuring, stress management, and relaxation in addition to supervised physical activities like yoga, stretching, and light aerobics. Before and after the intervention, data on psychological distress and sleep quality were collected using the Patient Health Questionnaire (PHQ-9) and Pittsburgh Sleep Quality Index (PSQI). Pre- and post-test differences were examined using descriptive (mean, SD) and inferential (paired and independent t-tests) statistics at a significance level of $p < 0.05$. As part of the ethical procedures, participants' informed consent, confidentiality, and right to withdraw were all strictly followed. The design ensured that the experimental and control groups were fairly compared in order to evaluate the effectiveness of cognitive behavioral therapy (CBT) in conjunction with physical or recreational exercise in improving the sleep and psychological well-being of cancer patients.

RESULTS

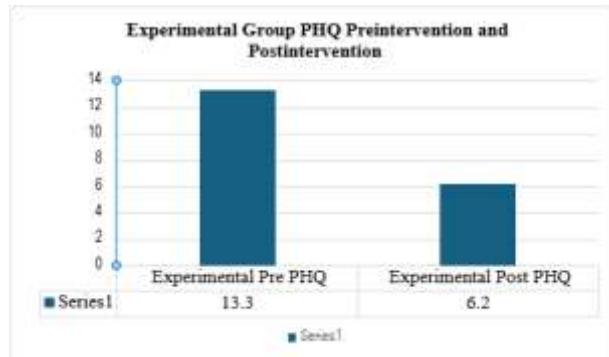


Figure 1 Paired sample t-test Results of Experimental Group Psychological Problems Pre-Intervention and Post-Intervention

The findings show that following the session, cancer patients' psychosocial issues significantly decreased. With a t-value of 14.07 and a p-value of .00, the mean score dropped from 13.30 (pre-intervention) to 6.20 (post-intervention), demonstrating the very significant favorable impact of cognitive behavioral therapy plus physical or recreational exercise on enhancing psychological well-being.

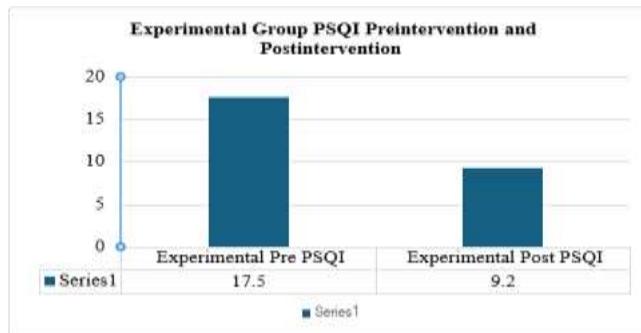


Figure 2 Paired sample t-test Results of Experimental Group Insomnia Pre-Intervention and Post-Intervention

The results indicate that after the intervention, cancer patients' sleep quality significantly improved. With a t-value of 24.77 and a p-value of .00, the mean insomnia score dropped from 17.50 (pre-intervention) to 9.20 (post-intervention), suggesting that cognitive behavioral therapy plus physical or recreational exercise successfully lowered insomnia in the experimental group.

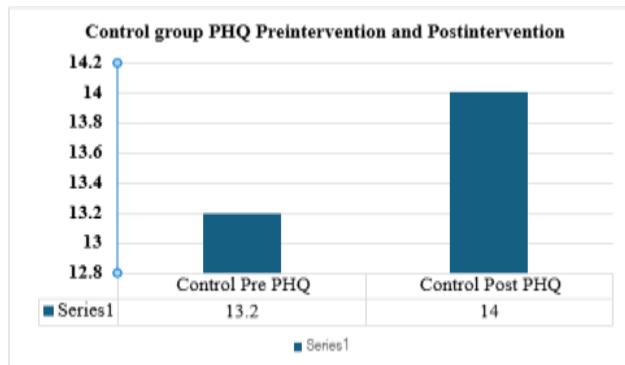


Figure 3 Paired sample t-test Results of Control Group Psychological Problems Pre and Post

The control group's psychological issues did not significantly better, according to the data. With a t-value of -1.92 and a p-value of .87, the mean score increased marginally from 13.20 (pre-test) to 14.00 (post-test), suggesting that there was no discernible decrease in psychological distress among cancer patients in the absence of intervention.

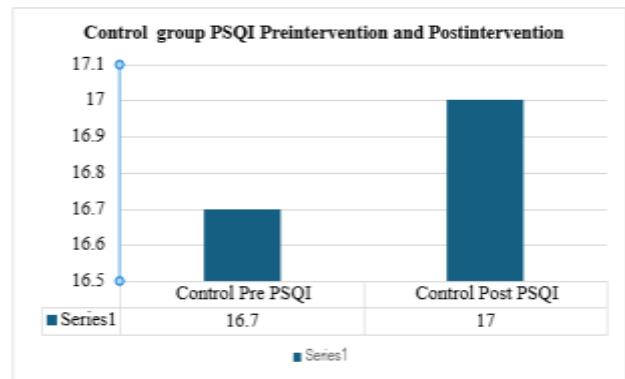


Figure 4 Paired sample t-test Results of Control Group Insomnia Pre and Post

The findings indicate that there was no discernible change in the control group's levels of insomnia. The mean score increased slightly from 16.70 (pre-test) to 17.00 (post-test), with a t-value of -1.96 and a p-value of .089, suggesting that the insomnia of cancer patients was mostly steady in the absence of intervention.

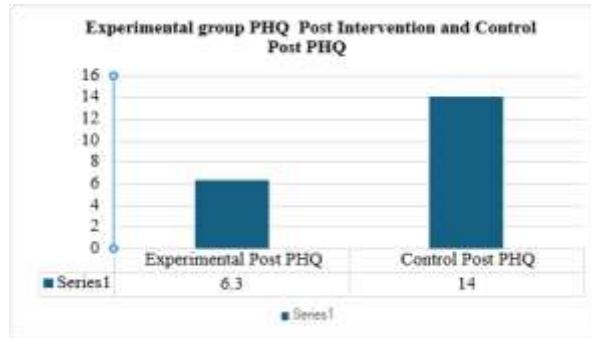


Figure 5 Independent sample t-test Results of Experimental Group Psychological Problems Post Intervention and Control Psychological Problems Post

Following the intervention, the results show a highly significant difference between the experimental and control groups. The control group's mean score on psychological issues stayed high at 14.00, whereas the experimental group's mean dropped to 6.30. The results show that cognitive behavioral therapy and physical or recreational exercise significantly decreased psychological issues among cancer patients when compared to the control group (t-value of -21.00 and p-value of .00).

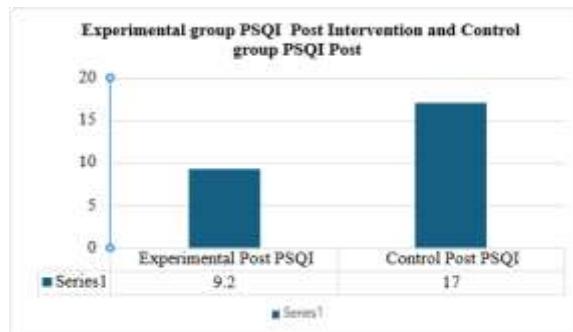


Figure 6 Independent sample t-test Results of Experimental Group Insomnia Post Intervention and Control Group Insomnia Post

The findings show that following the intervention, there was a statistically significant difference in the quality of sleep between the experimental and control groups. While the control group's mean PSQI score stayed high at 17.00, the experimental group's dropped to 9.20. The results show that cognitive behavioral therapy and physical or recreational exercise were very effective in improving sleep quality and reducing insomnia in cancer patients, with a t-value of -15.92 and a p-value of .00.

Discussion

This study examined whether combining Cognitive Behavioral Therapy (CBT) with physical or recreational activities could improve sleep quality and reduce psychological distress in cancer patients. While there were no noticeable changes in the control group, the experimental group's results showed significant improvements. The psychological distress levels of the experimental group dropped from 13.30 to 6.20 ($t=14.07$, $p<.001$), indicating that cognitive behavioral

therapy combined with exercise is effective in reducing depression and anxiety. Furthermore, ratings of insomnia decreased from 17.50 to 9.20 ($t=24.77$, $p<.001$), suggesting a notable improvement in the quality of sleep. These findings are in line with other studies (Osborn et al., 2006; Savard et al., 2001; Mustian et al., 2017) that have demonstrated the cognitive behavioral therapy's ability to restructure negative beliefs and the advantages of exercise for hormonal balance and emotional stability. While cognitive behavioral therapy (CBT) addressed emotional and cognitive aspects, exercise enhanced relaxation, melatonin regulation, and overall well-being. The two interventions worked together. Comparing the experimental and control groups on post-tests revealed highly significant differences in psychological distress and sleep quality, confirming the intervention's significant therapeutic efficacy. Overall, the study supports the biopsychosocial model by showing how integrating psychological and physical therapy can enhance the mental and physical health of cancer patients.

Implications of the Findings

The results of the study have important ramifications for rehabilitation programs and clinical practice. Cognitive behavioral therapy (CBT) and physical or recreational activity may be incorporated into cancer treatment to improve psychological adjustment, sleep quality, and ultimately health outcomes. These treatments are essential parts of supportive oncology therapy because they are non-invasive, affordable, and flexible enough to be used with a variety of patient populations (Jacobsen & Wagner, 2012). The findings conceptually support the integrated model of psycho-oncology by demonstrating that treating both psychological and physical factors enhances recovery outcomes in comparison to concentrating on just one. The inclusion of structured psychological and fitness therapy in hospital and community-based cancer rehabilitation programs is also empirically supported by these findings.

Conclusion

The study's findings offer compelling proof that, when paired with recreational or physical activities, cognitive behavioral therapy dramatically lowers psychological distress and enhances the quality of sleep for cancer patients. Comparing the intervention to the control group revealed statistically and clinically significant changes. These results are in line with earlier research and add to the mounting body of evidence that supports the use of physical and psychological therapy in the treatment of cancer. Future studies should look at gender differences, long-term effects, and the possible advantages of group therapy over individual treatment.

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