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Exploring the Effect of the Application of Cognitive Behavioral Therapy (CBT) on the Severity of Somatosensory Amplifications, Health Anxiety, Social Functioning and Quality of Life in Patients with Hypochondriacal Disorder

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Keywords

Hypochondriasis; somatoformn disorder; social adjustment; quality of life; cognitive behavior therapy

Abstract

Hypochondriacal disorder involves intense health anxiety, leading to misinterpretation of normal sensations as serious illness. This causes social withdrawal, strained relationships, and diminished quality of life due to persistent distress. **Aim:** To explore the effect of the Application of Cognitive Behavioral Therapy (CBT) on the severity of Somatosensory Amplifications, health anxiety, Social Functioning and Quality of life in patients with hypochondriacal disorder **Subjects and Methods:** A Quasi-experimental study (Pre-posttest control group design) conducted involved 80 patients with Hypochondriacal Disorder who were randomly assigned to experimental or control groups. The experimental group received 13 individual CBT sessions focusing on somatosensory amplification, health anxiety, social functioning, and quality of life, along with treatment-as-usual (TAU). The control group received only TAU. Data were analyzed with dependent and independent t-tests. **Results:** The mean age of the patients was 36 years in the experimental group and 32 years in the control group. The average duration of hypochondriacal disorder was 2.7 years for both groups. The study found a significant decrease in somatosensory amplifications, health anxiety, and improved social functioning, along with an increase in quality of life, following CBT in patients with hypochondriacal disorder. **Conclusion:** Patients with Hypochondriacal Disorder experienced significantly greater reductions in somatosensory amplification, health anxiety, and social functioning, along with a marked improvement in quality of life, compared to the control group. This suggests that cognitive behavioral therapy is beneficial.

Introduction

Cognitive Behavioral Therapy (CBT) is a well-established, research-backed psychological treatment that emphasizes the link between thoughts, emotions, and

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behaviors. It posits that individuals' perceptions of situations shape their emotional and behavioral responses. The main goal of CBT is to help people identify and alter negative or distorted thoughts and behaviors, leading to healthier outcomes [1]. Initially developed by Aaron Beck in the 1960s, CBT has evolved into a widely practiced, empirically supported approach worldwide [2]. Studies consistently show CBT's effectiveness for treating various mental health disorders like depression, anxiety, PTSD, and OCD, often yielding lasting improvements that compare favorably to other therapies and, in some cases, medication [3,4].

Core philosophical principles of CBT include cognitive restructuring, which emphasizes how thoughts, beliefs, and perceptions shape emotions and behaviors. This technique focuses on identifying and challenging negative or irrational thoughts, replacing them with adaptive alternatives to reduce psychological distress [5]. Behavioral activation encourages clients to engage in meaningful activities to counteract avoidance and withdrawal, promoting emotional well-being [6]. Rooted in empirical evidence, CBT fosters a collaborative relationship between therapist and client to assess beliefs accurately [7]. Typically, structured and time-limited, CBT involves goal-oriented sessions and homework assignments, reinforcing skills learned in therapy to support coping and lasting behavioral change [8,9].

CBT serves multiple functions to support emotional and behavioral improvement. It helps clients identify and challenge negative thought patterns, promoting balanced thinking [4,5]. Behavioral activation encourages engagement in positive activities, enhancing mood [10]. CBT provides practical skills for emotional management and coping and uses exposure therapy to reduce fears, particularly in anxiety disorders [3,11]. Goal-setting, homework, and self-monitoring strengthen motivation and therapeutic progress [12,13], while relapse prevention techniques help sustain improvements [14].

CBT has various functions aimed at fostering emotional and behavioral growth. It helps clients recognize and challenge negative thoughts, promoting balanced, adaptive thinking [4,5]. Behavioral activation encourages engagement in positive activities to boost mood [10]. Skills training aids in managing emotions, while exposure therapy reduces anxiety [3,11]. Goal-setting, homework, and self-monitoring support motivation and progress [12], with relapse prevention helping to sustain lasting improvements [12,14]. CBT includes a variety of functions designed to promote emotional and behavioral well-being. A primary component is helping clients identify and challenge negative thought patterns that contribute to emotional distress. This process, known as cognitive restructuring, encourages individuals to replace distorted thoughts with more balanced and adaptive thinking, a technique supported by extensive research [4,5].

Behavioral activation is another key function, encouraging clients to engage in activities that bring a sense of accomplishment and enjoyment. By participating in these activities, individuals can counteract withdrawal and avoidance behaviors, which often exacerbate symptoms of mood disorders. Studies have shown that behavioral activation is effective in improving mood and reducing depressive symptoms [10]. In addition, CBT offers practical skills training to help individuals manage emotions and handle challenging situations more effectively. This training equips clients with coping mechanisms to navigate stress and other emotional challenges, thus fostering resilience [3]. Exposure therapy, another component of CBT, is especially beneficial for anxiety disorders. By gradually confronting feared situations or stimuli, clients can reduce their anxiety response over time [11].

Illness Anxiety Disorder (IAD), formerly known as Hypochondriacal Disorder, involves a persistent, distressing preoccupation with having a serious illness. Individuals with IAD often misinterpret normal bodily sensations or appearances as signs of a severe medical condition, typically focusing on one or two organs or systems. This fixation leads them to seek frequent medical consultations rather than psychiatric support, as they strongly believe in the presence of illness and may suspect multiple ailments beyond their primary concern. Anxiety and depression commonly accompany this disorder [15]. Prevalence rates vary, with estimates ranging from 0.02 % to 7 % in the general population and 0.8 % to 8.5 % in primary care settings [16]. According to the cognitive model by Warwick and Salkovskis, four mechanisms sustain IAD: affective (health-related anxiety), cognitive (bias toward illness interpretations), behavioral (seeking reassurance), and perceptual (hypersensitivity to bodily symptoms) [17]. Cognitive distortions, including discounting benign explanations, selective abstraction, and catastrophizing, are key contributors to health anxiety.

The aim of this study was to explore the effect of Application of Cognitive Behavioral Therapy (CBT) on severity of Somatosensory Amplifications, health anxiety, Social Functioning and Quality of life.

Subjects and methods

Study design was a Quasi-experimental study, pre-posttest control group design. The study included a sample of 80 patients diagnosed with Hypochondriasis Disorder according to the ICD-10 DCR criteria (WHO, 1993). Conducted at Balrampur Hospital, Lucknow, the research randomly assigned participants to either experimental or control groups based on their outpatient department (OPD) visits. The inclusion criteria re-

quired participants to meet the ICD-10 DCR diagnostic standards for Hypochondriasis Disorder, be aged between 18 and 50 years, proficient in Hindi or English, capable of providing informed consent, and have a disorder duration of no more than five years. Both inpatient (IPD) and outpatient (OPD) participants receiving standard treatment were included. However, patients with substance dependence (with or without psychotic symptoms), co-morbid psychiatric diagnoses such as Obsessive-Compulsive Disorder (OCD), anxiety disorders, or depression, as well as those with organic illnesses, were excluded. Additionally, individuals participating in other psychotherapeutic interventions at the time of the study were not eligible.

The study utilized several tools to gather data. A Socio-Demographic and Clinical Data Sheet was designed as a semi-structured form to collect personal details such as name, age, gender, education, and occupation, along with clinical information about the illness, including its course, progress, mode, and duration. The Somatosensory Amplification Scale (SSAS), a 10-item self-report questionnaire, assessed preoccupation with somatic sensations. Items were rated on a five-point scale (1 = not at all to 5 = extremely), with higher scores indicating greater somatosensory amplification; the scale demonstrated a test-retest reliability of 0.79 ($p = 0.0001$) and internal consistency of 0.82 (Cronbach's alpha). The Short Health Anxiety Inventory (SHAI), an 18-item tool, measured health anxiety independently of physical health status by assessing health-related worry, bodily awareness, and feared illness consequences. Each item was scored on a 0–3 scale, with a reliability coefficient of $\alpha = 0.89$. The Social Functioning Questionnaire (SFQ), an 8-item scale, evaluated social functioning in domains such as work, family relationships, finances, and leisure activities. Each item was scored on a four-point scale (0–3), with a total possible score of 24, demonstrating good reliability and construct validity. Finally, the World Health Organization Quality-of-Life Scale (WHOQOL-BREF), a 26-item instrument, measured quality of life across four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environmental health (8 items). Items were scored on a five-point scale, with scores transformed to a 0–100 scale. Internal consistency ranged from 0.66 (social domain) to 0.84 (physical health domain), reflecting good reliability.

CBT Treatment Framework

The therapy consists of sessions lasting 45-60 minutes, conducted twice a week. Each patient in the experimental group receives a total of 13 individual sessions, ensuring consistency across all 40 participants. Techniques are selected from Adrian Wells' Cognitive Behavioural Techniques of CBT: A Practice Manual and Conceptual Guide, focusing on those most relevant to the dependent variables. Therapists employ visual aids such as pie charts and diagrams to illustrate how specific techniques can effectively address health anxiety, illness bias, reassurance-seeking behaviors, and hypersensitivity to somatic symptoms. Engagement is prioritized to maximize each patient's potential.

The initial phase emphasizes rapport building and psychoeducation regarding the illness and treatment process. The middle phase targets managing health anxiety, cognitive restructuring, and compulsive behaviors. The final phase involves summarizing prior sessions, reviewing progress, and gathering patient feedback. Overcoming patients' reluctance to attribute their issues to psychological factors is crucial, often requiring cognitive techniques that encourage hypothesis testing.

Procedure

The present study received approval from the Institutional Ethical Committee of Shree Guru Gobind Singh Tricentenary University. Initially, a senior psychiatrist conducted a clinical interview to confirm the diagnosis of Hypochondriasis Disorder according to the ICD-10 DCR (WHO, 1993) and to assess the presence of any coexisting psychiatric disorders prior to participant admission. Following a detailed explanation of the study's objectives, informed consent was obtained from all participants. Selection was based on established inclusion and exclusion criteria. Socio-demographic and clinical details were gathered using a dedicated data sheet. Before initiating the therapeutic intervention, baseline assessments included the Somatosensory Amplification Scale, Short Health Anxiety Inventory, Social Functioning Questionnaire, and WHO Quality of Life Scale. The CBT Treatment Framework was then implemented for the experimental group, consisting of 13 individual sessions lasting 90 minutes each, occurring twice weekly over two months, alongside their Treatment as Usual (TAU) for Sleep Problems, Anxiety/Panic Attacks, Somatic Symptoms. The control group continued solely with their TAU. Upon completing the 13 CBT sessions, both groups were reassessed using the same measures to evaluate post-treatment outcomes.

Statistical Analysis

Statistical analysis was conducted using SPSS v 29.0. Data were tested for normality using the Shapiro-Wilk test. Descriptive statistics, including mean and standard deviation, described socio-demographic and study variables. Parametric tests, including paired t-tests for pre- and post-scores and independent sample t-tests between groups, evaluated changes in dependent variables from the beginning to the end of treatment.

Results

The present study was aimed to explore the effect of the Application of Cognitive behavior therapy (CBT) on the level of severity of somatosensory amplifications, health anxiety, social functioning, and quality of life in patients with hypochondriasis disorder. Results after going through the analysis are presented below:

This summary outlines the socio-demographic characteristics of participants in the experimental and control groups. The experimental group had an average age

of 36.00 years (SD = 8.28), while the control group's average age was 32.05 years (SD = 7.31). The average illness duration was 33.17 months (SD = 12.01) for the experimental group and 32.55 months (SD = 11.35) for the control group.

The results of experimental group found significant decrease in the severity of Somatosensory Amplifications (t - value of 40.06 and $p < 0.001$) between pre and post scores of the patients with Hypochondriacal disorder due to application of CBT.

The results of experimental group found significant decrease in the severity of Health Anxiety (t - value of 89.81 and $p < 0.001$) and Negative consequences (t-value of 30.28 and $p < 0.001$) between pre and post scores of the patients with Hypochondriacal disorder due to application of CBT.

The results of experimental group found significant decrease in the severity of Social Functioning between pre and post scores of the patients with Hypochondriacal disorder due to application of CBT.

Table 1. Descriptive Statistics for Socio-demographic Variables (n = 80)

Socio-demographic Variables	Experimental Group	Control Group
	Mean ± SD n = 40	Mean ± SD n = 40
Age (in Years)	36.00 ± 8.28	32.05 ± 7.31
Education (in Years)	12.70 ± 2.43	13.40 ± 2.66
Duration of Illness (in Months)	33.17 ± 12.01	32.55 ± 11.35

Table 2. Comparison of the Somatosensory Amplification Scale Index's pre and post treatment scores for the experimental group (n = 40)

Variables	Pre Scores n = 40	Post Scores n = 40	t-Values	df	p-Value
	Mean ± SD	Mean ± SD			
Somatosensory Amplification Scale	42.00 ± 1.86	30.52 ± 1.64	40.06	39	0.001
df= degrees of freedom					

Table 3. Comparison of the Short Health Anxiety Inventory's pre and post treatment scores for the experimental group (n = 40)

Variables	Pre Scores n = 40	Post Scores n = 40	t - Values	df	p - Value
	Mean ±SD	Mean ±SD			
Health Anxiety	33.40 ± 1.86	19.55 ± 2.43	89.81	39	0.001
Negative Consequences	09.72 ± 1.51	05.67 ± 1.52	30.28	39	0.001

Table 4. Comparison of the Social Functioning Questionnaire's pre and post treatment scores for the experimental group (n = 40)

Variables	Pre Scores n = 40	Post Scores n = 40	t - Values	df	p - Value
	Mean ± SD	Mean ± SD			
Social Functioning Questionnaire	20.02 ± 1.45	12.10 ± 1.46	105.66	39	0.001

The results of experimental group found significant increase in the severity of Physical Health (t-value of -22.78 and $p < 0.001$), Psychological (t - value of -18.15 and $p < 0.001$), Social Relationship (t - value of -24.70 and $p < 0.001$), Environment (t - value of -26.84 and $p < 0.001$), between pre and post scores of the patients with Hypochondriacal disorder due to application of CBT.

The results of control group found no significant difference in the severity of Somatosensory Amplification (t - value of 1.72 and $p > 0.04$) between pre and post scores of the patients with Hypochondriacal disorder.

The results of control group found no significant difference in the severity of Health Anxiety (t - value of 0.25 and $p > 0.40$) and negative consequence (t - value of -1.02 and $p > 0.15$) between pre and post scores of the patients with Hypochondriacal disorder.

The results of control group found no significant difference in the severity of Social Functioning (t- value of

Table 5. Comparison of the WHO Quality of Life's pre and post treatment scores for the experimental group (n = 40**)**

Variables	Pre Scores N = 40	Post Scores n = 40	t - Values	df	p - Value
	Mean ± SD	Mean ± SD			
Physical Health	14.22 ± 2.29	20.70 ± 1.80	-22.78	39	0.001
Psychological	13.70 ± 1.75	17.95 ± 1.79	-18.15	39	0.001
Social Relationship	5.47 ± 1.51	9.35 ± 1.35	-24.70	39	0.001
Environment	16.75 ± 2.74	23.97 ± 2.52	-26.84	39	0.001

Table 6. Comparison of the Somatosensory Amplification Scale's pre and post treatment scores for the control group (n = 40)

Variables	Pre Scores N = 40	Post Scores n = 40	t - Values	df	p - Value
	Mean ± SD	Mean ± SD			
Somatosensory Amplification Scale	43.55 ± 2.34	42.62 ± 3.15	1.72	39	0.04

Table 7. Comparison of the Short Health Anxiety Inventory's pre and post treatment scores for the control group (n=40).

Variables	Pre Scores N = 40	Post Scores n = 40	t - Values	df	p - Value
	Mean ± SD	Mean ± SD			
Health Anxiety	33.95 ± 2.91	33.80 ± 3.08	.25	39	0.40
Negative Consequences	9.30 ± 1.98	9.70 ± 1.80	-1.02	39	0.15

Table 8. Comparison of the Social Functioning Questionnaire's pre and post treatment scores for the control group (n = 40)

Variables	Pre Scores n = 40	Post Scores n = 40	t - Values	df	p - Value
	Mean ±SD	Mean ± SD			
Social Functioning Questionnaire	20.27 ± 1.48	20.52 ± 1.46	-0.80	39	0.21

-0.80 and p > 0.21) between pre and post scores of the patients with Hypochondriacal disorder.

The results of control group found no significant difference in the severity of Physical Health (t - value of 0.20 and p > 0.41), Psychological (t - value of 0.12 and p > 0.45), Social Relationship (t-value of 0.13 and p > 0.44), Environment (t - value of 0.36 and p > 0.35),between pre and post scores of the patients with Hypochondriacal disorder.

The results found significant decrease in the severity of Somatosensory Amplifications (t - value of -21.47 and p < 0.001) post-treatment scores between experimental and control group.

The results found significant decrease in the severity of Health Anxiety (t-value of -22.93 and p < 0.001) and negative consequences (t - value of -10.78 and p < 0.001) post-treatment scores between experimental and control group.

Table 9. Comparison of WHO Quality of Life's pre and post treatment scores for the control group (n = 40)

Variables	Pre Scores	Post Scores	t - Values	df	p - Value	n = 40	n = 40
	Mean ± SD	Mean ±S D					
Physical Health	18.17 ± 1.98	18.07 ± 2.09	0.20	39	0.41		
Psychological	14.90 ± 3.31	14.82 ± 2.35	0.12	39	0.45		
Social	6.52 ± 1.82	6.47 ±1.35	0.13	39	0.44		
Relationship Environment	17.02 ± 3.87	16.75 ± 3.26	0.36	39	0.35		

Table 10. Comparison of the Somatosensory Amplification Scale's post-treatment scores between the experimental and control groups (N = 80)

Variables	Experimental n = 80	Control n = 80	t-Values	df	p-Value
	Mean ± SD	Mean ± SD			
Somatosensory Amplification Scale	30.52 ± 1.64	42.62 ± 3.15	-21.47	78	0.001

Table 11. Comparison of the Short Health Anxiety Inventory's post-treatment scores between the experimental and control groups (N = 80)

Variables	Experimental N = 80	Control n = 80	t-Values	df	p-Value
	Mean ± SD	Mean ± SD			
Health Anxiety	19.55 ± 2.43	33.80 ± 3.08	-22.93	78	0.001
Negative Consequences	5.67 ±1 .52	9.70 ± 1.80	-10.78	78	0.001

Table 12. Comparison of the Social Functioning Questionnaire's post-treatment scores between the experimental and control groups (N = 80)

Variables	Experimental n = 80	Control n = 80	t-Values	df	p-Value
	Mean ± SD	Mean ± SD			
Social Functioning Questionnaire	12.10 ± 1.46	20.52 ± 1.46	-25.70	78	0.001

Table 13. Comparison of the WHO Quality of Life's post-treatment scores between the experimental and control groups (N = 80)

Variables	Experimental n = 80	Control n = 80	t-Values	df	p-Value
	Mean ± SD	Mean ± SD			
Physical Health	20.70±1.80	18.07±2.09	6.01	78	0.001
Psychological	17.95±1.79	14.82±2.35	6.67	78	0.001
Social Relationship	9.35±1.35	6.47±1.35	9.49	78	0.001
Environment	23.97±2.52	16.75±3.26	11.07	78	0.001

The results found significant decrease in the severity of Social Functioning (t - value of -25.70 and $p < 0.001$) post-treatment scores between experimental and control group.

The results found significant increase in the severity of Physical Health (t-value of 6.01 and $p < 0.001$), Psychological (t-value of 6.67 and $p < 0.001$), Social Relationship (t-value of 9.49 and $p < 0.001$), and Environment (t-value of 11.07 and $p < 0.001$) post-treatment scores between experimental and control group.

In conclusion, the experimental group showed significantly better outcomes than the control group across all measures. This indicates that the CBT intervention was highly effective in reducing somatosensory amplifications, anxiety-related symptoms and improving overall quality of life in physical, psychological, social, and environmental domains.

Discussion

Cognitive Behavioral Therapy (CBT) as a treatment modality demonstrated efficacy in addressing somatosensory amplifications, health anxiety, social functioning, and quality-of-life interconnected issues. CBT directly targeted the cognitive distortions by employing cognitive restructuring techniques; patients learned to challenge their exaggerated perceptions of bodily sensations. Research by Kloiber and associates showed that participants who underwent CBT reported a significant decrease in somatosensory amplification scores compared to a control group, indicating the therapy's effectiveness in helping patients manage their perceptions of physical symptoms [18].

Health anxiety is a central feature of IAD, leading to compulsive behaviors such as frequent medical consultations and excessive health monitoring. CBT employed exposure therapy and cognitive interventions to help patients confront their fears and re-evaluate their beliefs about health. A meta-analysis by Fennell and associates revealed that patients receiving CBT experienced marked reductions in health anxiety, with many reporting a substantial decrease in health-related behaviors [19]. This suggests that CBT effectively equips patients with the tools to manage their anxieties.

Social withdrawal is common among individuals with IAD, often resulting from health-related fears. CBT promoted gradual exposure to social situations, reducing avoidance behaviors and encouraging re-engagement in social activities. A study by Tyrer and associates found that patients who completed a course of CBT showed significant improvements in social functioning and reported increased participation in social interactions [20]. This enhancement is crucial, as stronger social networks can provide additional support and reduce feelings of isolation.

The chronic worry associated with IAD can severely impact patients' quality of life. CBT not only alleviated health anxiety but also fostered coping strategies that improve overall well-being. Research by van Dierendonck and associates. found that individuals who underwent CBT reported significant improvements in quality-of-life measures, including increased satisfaction and reduced functional impairment in daily activities [21]. These results underscore the holistic benefits of CBT in addressing both psychological and functional aspects of IAD.

Cognitive Behavioral Therapy is a highly effective intervention for reducing the severity of somatosensory amplification and health anxiety, while also improving social functioning and quality of life in patients with Illness Anxiety Disorder. The evidence supports CBT as a comprehensive treatment that not only addresses core symptoms but also enhances overall well-being. Continued research is essential to refine treatment protocols, explore individual differences, and extend findings to diverse populations, ultimately enhancing the therapeutic outcomes for individuals affected by IAD.

The study had several notable limitations. First, it was conducted at a single center, which limits the ability to

generalize the findings to a broader medical population, as the characteristics and conditions of patients in other healthcare settings may differ significantly. Second, the research was conducted in a tertiary care hospital, which predominantly caters to patients with more severe or advanced illnesses. This focus on a specific patient demographic reduces the applicability of the results to individuals with milder or less complex conditions typically seen in primary or secondary care. Third, the sample size was relatively small, which may have reduced the statistical power and robustness of the findings. Additionally, the lack of representation from primary and secondary care settings further constrains the generalizability of the results to the entire medical population. To address these limitations, future studies should aim to include larger, more diverse samples and involve multiple centers across various levels of care, including primary, secondary, and tertiary care facilities. This approach would ensure a more comprehensive understanding of the study's implications across different healthcare contexts.

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Conflict of Interest

None to declare.

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