Research Paper

The Effect of Group Cognitive-Behavioral Therapy on the Lifestyle of Patients With Hepatitis B

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ABSTRACT

Background: To promote general health in patients with hepatitis, it is vital to develop effective interventions to improve the lifestyle of these patients. The present study aimed to investigate the effectiveness of group cognitive-behavioral therapy (CBT) on the lifestyle of patients with hepatitis B.

Methods: This was a quasi-experimental study with a pre-test-post-test and control group design. A sample of patients with chronic hepatitis B was selected from all patients visiting specialized clinics in Tehran, Iran in 2021. Thirty patients with hepatitis B were selected and randomly allocated to two experimental and control groups (15 patients per group). Eight sessions of group CBT (one 90-minute session per week for two months) were performed, and the Post-test was then administered to both groups. The data were collected by the health promoting lifestyle profile-II (HPLP-II) scale and analyzed via the analysis of covariance (ANCOVA) and t-test using SPSS software, version 26.

Results: There was no significant difference between the lifestyle mean scores of the groups in the pre-test stage. The Mean±SD post-test scores of the experimental and control groups were 133.42±6.28 and 94.76±5.68, respectively (P<0.001). The group CBT increased health-promoting lifestyle indicators, including health responsibility (P=0.029), physical activity (P=0.050), nutrition (P=0.045), spiritual growth (P=0.045), interpersonal relations (P=0.002), and stress management (P=0.001) in patients with hepatitis B.

Conclusion: The findings indicated the effectiveness of group CBT in improving the health-promoting lifestyle of patients with hepatitis B. CBT can thus be used by clinical psychologists and psychiatric nurses to promote a healthy lifestyle in these patients.

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Highlights

- Lifestyle is an important point in the care of patients with chronic hepatitis B.
- Group cognitive-behavioral therapy improved health responsibility and physical activity in patients with chronic hepatitis B.
- Group cognitive-behavioral therapy (CBT) had a positive role in the spiritual growth and interpersonal relations of patients with chronic hepatitis B.
- Stress management of patients with chronic hepatitis B improved under the influence of group CBT.

Plain Language Summary

The quality of life (QoL) of people with hepatitis B declines markedly as the disease progresses. Symptoms of disease in patients with hepatitis B can cause a variety of psychological problems, e.g., depression and anxiety, thereby reducing the life expectancy and mental health. Therefore, the development of effective therapeutic interventions to improve the lifestyle of patients with hepatitis is critical to their general health. In general, lifestyle indicators, including physical activity, health responsibility, nutrition, interpersonal relations, spiritual growth, and stress management improved by group cognitive-behavioral therapy (CBT) in patients with chronic hepatitis B.

1. Introduction

Viral hepatitis is one of the five infectious agents causing premature death worldwide (Jefferies et al., 2018). Hepatitis B virus (HBV) is a major cause of hepatic diseases, including liver cancer in humans. Since 2019, approximately 296 million people worldwide have been living with chronic hepatitis B (Freeland et al., 2021a). The prevalence of hepatitis B in Iran is 1.09% and is 1.3 times higher in men than women. The prevalence of hepatitis B has also increased with age (Rezaei et al. 2020). In addition to hepatitis symptoms, such as ascites and bruising, the risk of hemorrhage, bone pain, varicose veins, especially in the stomach and esophagus, steatorrhea, jaundice, and cognitive dysfunction syndrome or hepatic encephalopathy, patients with hepatitis experience a variety of emotional problems, like depression and anxiety, and decreased adjustment in emotional, occupational, social, and health-related domains, which in turn reduces life expectancy and mental health (Zabihi et al., 2017; Valizadeh et al., 2016).

The quality of life of people with hepatitis B declines markedly as the disease progresses (Freeland et al., 2021b). According to Freeland et al. (2021b), hepatitis B affects the quality of life and affective health because patients face worries, fears, stigmas, and lifestyle burdens. Inadequate knowledge of transmission routes and anxiety about virus transmission is also associated with social isolation for hepatitis B patients. This isolation, coupled with stigma and discrimination, clearly imposes a psychological burden on these patients (Smith-Palmer et al., 2020). To promote their general health, it is vital to develop effective interventions to improve the lifestyle of patients with hepatitis. In general, an unhealthy lifestyle is a serious public health concern in the 21st century. Developing good behavioral habits and maintaining a balanced mental state is key to overall health (Le Gautier et al., 2021). Recent findings suggest that the inclusion of lifestyle modification programs will benefit the medical management of hepatitis B. Psychological interventions can focus on reducing the burden of the disease and improving the quality of life of patients living with this disease (Xue et al., 2017; Simonetti et al., 2018).

Cognitive-behavioral therapy (CBT) has been shown to promote adherence to treatment and perception of the disease, in patients with chronic diseases (Betiar et al., 2022). For optimal effectiveness, CBT can modify patients' negative cognitive habits and feelings, rebuild healthy thinking patterns, and promote positive feelings. The ultimate goal is to alter the patient's lifestyle and health-related behaviors. CBT also allows patients to be their own therapists to effectively control their lifestyle and prevent chronic diseases (Rezaei et al., 2020; Gupta et al., 2020). Lifestyle modification is an indispensable component of a comprehensive approach to hepatitis symptom and outcome management. Effective lifestyle interventions are critical to increasing health benefits (Sun et al., 2017).

As CBT techniques serve as a non-medical corrective intervention to mitigate hepatitis-related problems, it is one of the most widely administered psychological therapies. Overall, CBT targets thinking and influencing. People's behaviors are based on their thoughts and feelings. CBT focuses on the effect of people's beliefs, thoughts, and attitudes on their feelings and behaviors (Mokri Vala et al., 2022; David et al., 2018). Noroozi et al. (2017) reported the effectiveness of CBT in the lifestyle of patients with diabetes. Li et al. (2021) concluded that CBT can shape the lifestyle and quality of life of patients with hypertension. Zhang et al. (2016) also found that the lifestyle of patients with the cardio-metabolic syndrome who received CBT significantly improved.

Chronic medical problems are often accompanied by psychological problems, e.g., mood disorders and fatigue, which can be alleviated by CBT (Alshammari et al., 2020; Golubić et al., 2018). The importance of adopting an active self-management approach and patients' need for establishing mutual relationships with healthcare workers make a CBT framework especially appropriate for addressing the problems caused by chronic illness (Carpenter et al., 2018; Nakao et al., 2021). However, there is still a dearth of research on this type of intervention for hepatitis patients. To enrich the literature, the current study administered CBT to patients belonging to a particular population in order to study its effects on the lifestyle of patients with hepatitis B in Tehran, Iran.

2. Materials and Methods

Design and participants

This research had a quasi-experiment design (pre-test and post-test with a control group). The study population comprised people with hepatitis B visiting specialized clinics in Tehran in 2021. In the present study, a center (Iranian hepatitis network) was randomly selected from public and private centers related to the treatment and counseling of gastrointestinal and liver diseases, and the research sample was selected based on the inclusion criteria from this center. We included 15 patients with hepatitis B in two experimental and control groups using G*power software (test power= 0.90, α=0.05) (Mohammadi, et al., 2021). The inclusion criteria were the age range of 20-50 years, minimum high school education, elapsing at least one year since the diagnosis of the disease, completing the treatment consent form, not having severe psychological disorders, and not receiving other counseling services. Patients who were absent for more than two treatment sessions were excluded from the study.

Procedure

A psychology Ph.D. candidate trained in CBT for two years by a clinical psychology associate professor administered the 90-minute treatment sessions once a week for two months. The experimental group participated in the treatment sessions, while the control group remained on the waiting list until the end of the treatment. The control group could attend the therapy sessions if they wished after the research was concluded. A general psychology master who was blind to the group allocation administered the questionnaire to all the participants before and after the intervention. The training material was developed based on a review of the literature and CBT references (Free, 2008), taking into account the special problems faced by hepatitis B patients and focusing on the quality of life and group therapy. This protocol and its assignments were designed for eight 90-minute weekly sessions. The participants were briefed on the procedure and the rules for participation, e.g., confidentiality, orderliness, and regular attendance in training sessions. Due to the COVID-19 pandemic at the time of the study, intervention sessions were conducted with social distancing and preventive medical equipment. To adhere to ethical principles, CBT was also administered to the control group upon completion of the research.

Intervention

The first author, who is a Ph.D. candidate in health psychology and had formal training in CBT, administered the treatment interventions. Therapeutic intervention sessions were held at the Araminta Psychology Clinic in Tehran as follows:

Session 1: introduction, discussing the importance of lifestyle, factors impacting lifestyle, the role of these factors in exacerbating and continuing hepatitis, and relaxation training.

Sessions 2 and 3: Discussions on the relationship between thoughts and emotions, ways to identify irrational thoughts, processing errors, thought re-appraisal training, and challenging thoughts as ways to change irrational thoughts.

Session 4: Anger, anxiety, and stress management training, the role of physical activity, and following the physician-recommended diet.

Session 5: Problem-solving, social and interpersonal relationships, the role of spirituality in promoting mental health and quality of life.

Session 6: The importance of lifestyle, and how a poor lifestyle leads to illness.

Session 7: Recommended solutions to having a proper lifestyle and quality of life.

Session 8: Overview, practicing the skills acquired in the course.

In each session, the therapist first instructed the patients and assigned tasks to be carried out until the next session. The patients had to report these assignments to the therapist. The therapeutic protocol was based on Free's workbook (2008).

Instrument

The Health Promoting Lifestyle Profile-II (HPLP-II): The HPLP-II was developed by Walker, et al. (1987) to measure health-related habits and lifestyles. This 52-item edition comprises the subscales of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Each item is answered on a four-point Likert scale from never (1) to always (4). The minimum and maximum scores obtainable for HPLP II are 52 and 208, respectively. The interpretation of scores on HPLP-II is as follows: poor (52-90), moderate (91-129), good (130-168), and excellent (169-208). In other words, a higher score indicates more health-promoting behaviors (Mohamadian et al., 2013). Walker et al. (1987) reported the internal consistency coefficients for the overall score of health-promoting lifestyle behaviors and the subscales of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management as: 0.94, 0.86, 0.85, 0.80, 0.86, 0.87, and 0.79, respectively. Mohammadian et al. (2013) reported the Cronbach's α coefficient of the Persian version of the instrument for the whole HPLP II as 0.86 and for the subscales from 0.70 to 0.77. Demographic characteristics of the subjects included education, age, marital status, and medical history, which were recorded using the profile form.

Statistical analysis

The Kolmogorov-Smirnov test was used to check the normality of pre-test and post-test data, and Levine's test was used to check the equality of variances. The data were analyzed by independent t-test and one-way analysis of covariance (ANCOVA) using SPSS software, version 26. The significance level was set at 0.05.

3. Results

Thirty patients with hepatitis B, including five men and ten women in the experimental group and three men and 12 women in the control group, participated in this study. The Mean±SD of the participants' age was 34.65±6.33 and 35.50±5.08 years in the experimental and control groups, respectively. The demographic variables of the patients are shown in Table 1.

Table 2 presents the descriptive statistics and data of HPLP-II, along with t-test results for pre-test comparison, the variance homogeneity test, and regression slope as the assumptions of ANCOVA. The two groups were homogeneous regarding the pre-test scores, and the assumptions of the homogeneity of variances and homogeneity of regression slope were confirmed. Therefore, ANCOVA could be run to evaluate the effectiveness of group CBT on the main lifestyle indicators of hepatitis B patients. According to Table 2, the mean score of physical activity, health responsibility, nutrition, interpersonal relations, spiritual growth, and stress management increased in the experimental group in the post-test compared to the control group. In addition, the total lifestyle score in hepatitis B patients in the experimental group increased compared to the control group.

Table 1. Demographic variables of the subjects

Groups	Mean±SD		No. (%)					
			Education		Marital status		Gender	
	Age (y)	Duration of Illness (y)	High School Education	College education	Married	Single	Male	Female
Experimental	34.65±6.33	4.69±2.44	9(60.00)	6(40.00)	4(26.67)	11(73.33)	5(33.33)	10(66.67)
Control	35.50±5.08	4.18±2.69	10(66.67)	5(33.33)	3(20.00)	12(80.00)	3(20.00)	12(80.00)
P	0.861	0.419	0.670		0.668		0.327	

Table 2. Mean±SD and assumptions of analysis of covariance of the variables

Variables	Phase	Group	Mean±SD	P (Between Groups)	Homogeneity of Variances		Homogeneity of Regression Slope	
					F	P	F	P
Health responsibility	Pre-test	CBT	13.46±3.82	0.715	0.51	0.480	0.21	0.816
		Control	13.97±4.00					
	Post-test	CBT	18.74±5.09	0.029				
		Control	14.84±4.45					
Physical activity	Pre-test	CBT	14.07±6.96	0.10	0.91	0.35	0.74	0.490
		Control	10.32±5.81					
	Post-test	CBT	19.40±6.90	0.050				
		Control	13.07±6.89					
Nutrition	Pre-test	CBT	13.66±4.09	0.275	1.07	0.310	0.81	0.463
		Control	15.77±6.09					
	Post-test	CBT	20.36±5.72	0.045				
		Control	15.51±5.51					
Spiritual growth	Pre-test	CBT	17.54±4.78	0.940	0.01	0.974	0.57	0.94
		Control	17.67±4.58					
	Post-test	CBT	27.97±5.58	0.002				
		Control	21.66±4.47					
Interpersonal relations	Pre-test	CBT	15.90±4.80	0.796	0.79	0.780	0.13	0.87
		Control	16.38±5.41					
	Post-test	CBT	26.96±7.37	0.002				
		Control	16.93±8.27					
Stress management	Pre-test	CBT	10.90±6.12	0.206	4.71	0.059	1.28	0.303
		Control	13.29±3.68					
	Post-test	CBT	20.00±5.06	0.001				
		Control	12.75±6.20					

CBT: Cognitive-behavioral therapy.

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The results of ANCOVA to compare the experimental and control groups after removing the pre-test effects are presented in Table 3. According to the results, group CBT significantly improved the health responsibility, spiritual growth, physical activity, interpersonal relations, nutrition, stress management, and total health-promoting lifestyle of hepatitis B patients.

4. Discussion

Since the main outcomes of hepatitis are often related to psychological variables, interventions should modify patients' lifestyles and increase their preparedness to cope with the disease to reduce their general health problems. Among medical protocols and rehabilitation methods, old and new CBT techniques offer success-

Table 3. Results of ANCOVA to compare the experimental and control groups

Variables	Sources	SS	df	MS	F	P	η^2
Health responsibility	Pre-test	23.38	1	23.38	1.02	0.320	0.037
	Group	121.04	1	121.04	5.30	0.029	0.164
	Error	616.40	27	22.83			
Physical activity	Pre-test	165.35	1	165.35	3.38	0.61	0.124
	Group	165.96	1	165.96	3.84	0.050	0.125
	Error	1165.58	27	43.17			
Nutrition	Pre-test	36.39	1	36.39	1.16	0.291	0.041
	Group	138.50	1	138.50	4.42	0.045	0.141
	Error	846.88	27	31.37			
Spiritual growth	Pre-test	0.42	1	0.42	0.016	0.901	0.001
	Group	298.62	1	298.62	11.27	0.002	0.294
	Error	715.51	27	26.50			
Interpersonal relations	Pre-test	5.39	1	5.39	0.085	0.773	0.003
	Group	759.18	1	759.18	11.98	0.002	0.307
	Error	1711.43	27	63.39			
Stress management	Pre-test	42.50	1	42.50	1.36	0.255	0.048
	Group	433.58	1	433.58	13.83	0.001	0.339
	Error	846.63	27	31.36			
Lifestyle (total score)	Pre-test	58.37	1	58.37	1.15	0.311	0.037
	Group	567.84	1	567.84	14.22	0.001	0.440
	Error	1251.45	27	46.35			

SS: Sum of squares; MS: Mean square; df: Degrees of freedom; F: F-statistic; P: P-value; η^2: Eta-squared. Client- Centered Nursing Care

ful strategies to clinical psychologists and psychiatric nurses to help patients have a successful, sustainable, and long-term plan toward a healthy lifestyle (Delshad Noghabi et al., 2021).

This study aimed to investigate the effectiveness of group CBT on the lifestyle of patients with hepatitis B. Based on the findings, CBT improved the healthy lifestyle of patients with hepatitis B in its six main dimensions: physical activity, health responsibility, spiritual growth, nutrition, interpersonal relations, and stress management. Moreover, the total lifestyle score under the influence of CBT in the experimental group improved compared to the control group. These findings are in line with the findings of other studies reporting the effectiveness of CBT approaches on lifestyle-related indicators. Abedishargh et al. (2021) showed that CBT significantly reduced body mass index (BMI) and promoted an efficient lifestyle in overweight women. Delshad Noghabi et al. (2021) showed that group CBT-based self-management intervention significantly affected lifestyle dimensions in adults with metabolic syndrome. Jelalian et al. (2019) also found that cognitive therapy improved depressed mood in depressed overweight adolescents. According to Zhang et al. (2016), lifestyle interventions using patient-centered CBT can improve the physical and mental health status of individuals who report a history of cardiac metabolic syndrome.

Herein, the CBT protocol aiming at lifestyle modification was designed based on three main axes of dietary recommendations, attention to physical activity, and cognitive therapy, in order to overcome the barriers to stress management and dysfunctional health-related behaviors. It is believed that these components interact and contribute to the ultimate success of the therapy (Allegrante, et al., 2019; Nakao et al., 2021). CBT considers all three components from the very first sessions, it recommends that patients follow a proper diet and exercise (even for 5 minutes a day) and address their destructive thoughts. Generally, a successful and effective CBT requires a change in lifestyle and way of thinking. Cognitive therapy also helps people solve their practical and psychological problems and acquire the necessary skills and efficient thinking. Thus, by applying new strategies, they will learn how to overcome their current and future problems (Callesen et al., 2020). Herein, we witnessed the success of the therapy and the participants' improved self-efficacy in health-promoting lifestyle components.

Besides, the usefulness of group therapy compared to individual therapy should not be overlooked. Group therapy helps people learn more effective social skills and realize that others have similar problems. Participating in CBT sessions and interactions with peers, increase people's responsibility by changing dysfunctional cognitions and unhelpful behaviors (Dalle Grave et al., 2020). By taking responsibility and accepting one's current situation, people are encouraged to improve the situation, and this lays the ground for an effective lifestyle change. This indicates the effectiveness of group CBT in improving lifestyle. Based on the findings of the present study, CBT can achieve these goals and can improve the lifestyle of patients with hepatitis B.

This study was conducted on a small sample of people with hepatitis. Moreover, it was conducted during the COVID-19 pandemic, possibly leading to anxiety and stress and reducing subjects' desire to participate and follow up on their therapy. Another limitation was the absence of follow-up. It is suggested that similar studies be performed on larger samples with a follow-up period.

5. Conclusion

In general, indicators of health responsibility, spiritual growth, physical activity, interpersonal relations, nutrition, and stress management affect the way people think about themselves, others, and the environment, thereby improving or impacting general health. The findings of the present study indicated the effectiveness of group CBT in improving the health-promoting lifestyle of patients with hepatitis B. CBT can thus be used to promote a healthy lifestyle in these patients. Developing lifestyle standards with adequate levels of knowledge and training will help hepatitis patients better deal with the problems and consequences of their illness.

Ethical Considerations

Compliance with ethical guidelines

The Ethical Committee of Islamic Azad University, Tonekabon Branch approved the study (Code: IR.IAU.TON.REC.1399.058) and it adhered to ethical principles, including patient consent, administering the intervention to the control group at the end of the research, and confidentiality of information.

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Authors' contributions

All authors participated in the study concept and design, acquisition of data, data analysis, and critical revision of the manuscript for important intellectual content.

Conflict of interest

No conflict of interest to declare.

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