doi:10.22100/ijhs.v12i6.1330
Original Article

SJMS 2026;12(6):47-57
sjms.shmu.ac.ir

SJMS
Shahroud Journal of Medical Sciences

The Effect of the Adaptive Sustainability Model of Care in Improving and Promoting the Quality of Life and Self-Confidence of Patients with Hepatitis

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Received: 6 August 2025
Accepted: 18 August 2026

Abstract

Background: *Hepatitis C is a significant global health concern and a leading cause of chronic liver disease. Its chronic nature profoundly affects multiple dimensions of patients' lives. Nursing care models can mitigate the psychological burden and enhance adaptability in affected individuals. This study examines the effect of an adaptive sustainability model of care(model of care refers to a healthcare system's capacity to maintain positive outcomes and core functions through continuous flexibility and responsiveness to environmental changes, resource fluctuations, and evolving needs) on quality of life and self-confidence in hepatitis C patients referred to the Shahrekord Behavioral Diseases Center.*

Methods: *A quasi-experimental pre-test/post-test design with control and intervention groups was employed. Participants were selected via convenience sampling and randomly assigned to groups. The four-stage adaptive sustainability model-comprising family status assessment, desensitization, collaboration, and continuous monitoring-was implemented through face-to-face and telephone sessions. Data were collected using the demographic checklist, World Health Organization Quality of Life Questionnaire (WHOQOL-BREF), and Rosenberg Self-Esteem Scale (RSES).*

Results: *Results indicated that the two groups showed no statistically significant differences in demographic variables, including age, gender, education level, and marital status (P-value>0.05). An independent t-test revealed that the mean self-esteem scores before the study were not significantly different between the two groups (P-value>0.11). However, after the intervention and follow-up period, this difference became statistically significant (P-value<0.001). Additionally, repeated measures ANOVA demonstrated a positive trend in the educational and care-based interventions within the intervention group (P-value<0.001). Similarly, the independent t-test indicated no significant difference in the mean quality-of-life scores between the two groups before the study (P-value>0.2). Yet, after the intervention and follow-up period, this difference reached statistical significance (P-value<0.002). Furthermore, repeated measures ANOVA confirmed the positive impact of the educational and care-based interventions in the intervention group (P-value<0.001).*

Conclusion: *The adaptive sustainability care model effectively enhances quality of life and self-confidence in hepatitis C patients. Healthcare providers should integrate such models into care plans to improve patient outcomes.*

Keywords: Adaptive sustainability model, Quality of life, Self-confidence, Hepatitis C, Health promotion.
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Please cite this paper as: Salehi Tali S, Nowrozi H, Raisi Dehkordi Z, Hasanpour Dehkordi A. The Effect of the Adaptive Sustainability Model of Care in Improving and Promoting the Quality of Life and Self-Confidence of Patients with Hepatitis. Shahroud Journal of Medical Sciences 2026;12(6):47-57.

Introduction

Hepatitis C virus (HCV) infection is a leading cause of chronic liver disease worldwide. Approximately 80% of infected individuals remain asymptomatic, which is one of the main reasons for delayed diagnosis and treatment[1-3]. The clinical spectrum of HCV ranges from mild hepatitis with minimal hepatic necrosis to advanced fibrosis, cirrhosis, and hepatocellular carcinoma, and is therefore often referred to as the "silent killer"[2-4]. According to the World Health Organization, approximately 1.75 million people were newly infected with HCV in 2015. Globally, an estimated 58 million people are living with chronic HCV infection, with approximately 1.5 million new infections and nearly 290, 000 HCV-related deaths reported annually[5].

The prevalence of HCV varies considerably across different regions. The highest prevalence has been reported in the Eastern Mediterranean Region (2.3%), whereas the lowest prevalence has been observed in Southeast Asia (0.5%)[5]. Iran has one of the lowest HCV prevalence rates (0.6%) in the Eastern Mediterranean Region. However, neighboring countries such as Pakistan and Azerbaijan have substantially higher prevalence rates[6-9].

Patients with HCV experience numerous physical and psychological problems in addition to the growing burden of chronic debilitating diseases[10, 11]. HCV is a chronic disease that substantially impairs patients' quality of life, even in the absence of advanced clinical manifestations, owing to physical symptoms such as fatigue, musculoskeletal pain, sleep disturbances, and appetite changes, as well as psychological problems including anxiety, depression, and social stigma[10, 12, 13]. Quality of life is defined as an individual's perception of well-being in the physical, psychological, and social domains of life[14, 15]. Because HCV is most prevalent among young adults, who are in one of the most productive stages of life and require good health to fulfill their social and occupational roles, maintaining their quality of life is particularly important[14, 16].

The chronic nature of HCV and its frequent coexistence with other chronic conditions highlight the importance of addressing both physical and mental health. Living with a chronic disease exposes patients to financial, social, and psychological burdens, including anxiety, depression, and hopelessness, all of which negatively affect their quality of

life[17]. Social stigma is another major challenge experienced by patients with HCV. Feelings of being "unclean, " together with fear of transmitting the infection, often discourage patients from interacting with family members and friends, resulting in discrimination, social isolation, unemployment, and ultimately reduced self-confidence[2, 18-20]. Although remarkable advances have been made in antiviral therapy, many patients continue to experience considerable psychosocial problems, including reduced self-confidence and emotional distress[21-23].

Because of their close and continuous contact with patients and their families, nurses are ideally positioned to identify the physical, psychological, emotional, and spiritual needs of patients with HCV and address these needs through appropriate nursing interventions without additional treatment-related adverse effects[4, 24]. Given the multidimensional impact of HCV, comprehensive health-promotion strategies are required to improve treatment adherence, as poor adherence remains one of the major causes of treatment failure[4, 25].

The application of coping models in patients with chronic diseases, particularly hepatitis, has demonstrated that the Transactional Model of Stress and Coping developed by Lazarus and Folkman effectively helps patients manage the stress associated with HCV diagnosis and treatment[26]. Acceptance and Commitment Therapy (ACT) has also been shown to reduce anxiety and improve psychological flexibility. Oraki et al. reported that ACT significantly improved treatment adherence among patients with non-alcoholic fatty liver disease, suggesting that this approach may be useful for enhancing adherence in patients with chronic liver diseases[27]. Likewise, the Hope Model has been used to strengthen patients' motivation to continue treatment. Ghayebizadeh et al. demonstrated that greater levels of hope and happiness were associated with better adherence to treatment regimens, improved health-related behaviors, and enhanced quality of life among Iranian older adults with chronic diseases during the COVID-19 pandemic[28].

The adaptive sustainability model of care aims to improve patients' adaptation to chronic illness through four sequential stages: family assessment, sensitization, collaboration, and continuous follow-up. During these stages, nurses implement motivational and cognitive-behavioral interventions to modify patients' attitudes and promote adaptation. Continuous follow-up helps maintain continuity of care and supports long-term adaptation to the disease[29]. Therefore, the present study aimed to investigate the effects of the Adaptive Sustainability Model of Care on the quality of life and self-confidence of patients with hepatitis C.

Materials and Methods

This study is a quasi-experimental research with pre-test and post-test and with intervention and control groups. The statistical population of the study consisted of males and females with chronic hepatitis C aged 18 years and older, referred to the Behavioral Disease Center of Shahrekord University of Medical Sciences in 2021-2022. The inclusion criteria of the study included Definitive diagnosis of hepatitis C by an infectious disease specialist, a documented positive HCV antibody test in medical records, having a medical record in the Center of Behavioral Diseases, willingness to participate in the study, age over 18 years, and not suffering from psychiatric diseases, which was obtained by studying the files and reviewing the records of the patients. The exclusion criteria of the study were the patient's refusal to participate in the study, failure to attend study after 2 sessions, incomplete questionnaires, and the occurrence of mental and physical problems are the exclusion criteria.

A convenience sampling method was used among those who were referred to these centers. After obtaining informed consent, the patients who had a medical record in the behavioral disease center and met the study criteria were included in the study. According to the predetermined schedule, five patients were referred each hour and were placed in separate rooms, which had been arranged under the supervision of the respective clinic director, and they left the clinic before the arrival of the next group. The reason for this was that hepatitis patients were sensitive about coming face-to-face with other patients. Each hour, when different groups came to fill out the questionnaires, the objectives and implementation method of the intervention were explained separately to the patients, and they were assured that their information would remain confidential. Then, they were divided into two control and intervention groups using the Random Allocation Rule program. GraphPad software was used for randomization. The initial sample comprised 70 patients with hepatitis C, who were randomly assigned to either the intervention (n=35) or control (n=35) group. One patient in the intervention group was withdrawn from the study due to non-attendance at the educational sessions, leaving a final sample of 34 patients in the intervention group for analysis. Prior to data collection, the research objectives and intervention procedures were fully explained to all participants, and they were given assurances regarding the confidentiality of their responses. All patients then completed a demographic questionnaire, the World Health Organization Quality of Life Questionnaire (WHOQOL-BREF), and the Rosenberg Self-Esteem Scale (RSES). Participants were requested to complete the questionnaires independently and to refer to the accompanying guidelines should they encounter any ambiguities.

The WHOQOL-BREF is a 26-item instrument designed to assess an individual’s overall and general quality of life. Developed in 1996 by a group of experts from the World Health Organization, the scale was created by adapting items from the original 100-item version of this questionnaire. The WHOQOL-BREF consists of four subscales and one overall score. These subscales measure: Physical Health, Psychological Health, Social Relationships, and Environmental Health, along with a single global quality of life score. Initially, a raw score is obtained for each subscale, which must then be converted to a standardized score ranging from 0 to 100 using a specific formula. Higher scores indicate a greater quality of life[30]. The reliability of the questionnaire in terms of internal consistency was checked by Cronbach's alpha criterion. Its validity was assessed using linear regression to distinguish the healthy group, the chronic patient group, the non-chronic patient group, and the chronic and non-chronic patient groups. The intra-cluster correlation index in the test-retest after a two-week interval was reported from 0.75 to 0.84 in four domains of the Iranian version of this questionnaire. Also, Cronbach's alpha and construct validity values indicate the acceptable validity of this study[31].

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RSES includes 12 self-report items assessing the general feeling of self-worth. Each item is scored on a 4-point scale, ranging from strongly disagree (score 1), disagree (score 2), agree (score 3), and strongly agree (score 4). In this questionnaire, after reading the questionnaire questions, the person is asked to express his or her opinion by selecting the relevant option. Then, it assesses the level of self-esteem or feeling of worthlessness of the person. In other words, it evaluates the overall picture of a person's positive or negative attitude toward himself or herself. The total score ranges from -10 to 10, and higher scores indicate higher self-esteem. The validity and reliability of the Persian version of the RSES were evaluated in a study conducted by Ghasempour et al. (2025)[32].

After completing the questionnaires, the session of the intervention implementation process was held. Family status discovery stage: During two 40-minute sessions, the subjects introduced themselves to the patients and expressed their goals and expectations to each other; hepatitis C disease, drug therapy, diet, and available treatments were explained to the patients. To present the materials based on the conditions and content of the educational materials, group discussion and brainstorming methods were used. The goal at this stage was to achieve a common understanding of the events occurring to the patient. Therefore, the patient was examined at different demographic levels, the existing tensions (primary and secondary), the existence of supporting resources, and the ability to manage life affairs. At this stage, the primary concerns and needs of the patients were realized, which helped the researcher to make practical decisions to increase the patient's adaptation to his or her problem. In the next stage, the contact numbers of the researcher and the patient were provided to each other to continue communication with the patient. In the second stage (desensitization), 3 sessions were held for 30-45 minutes to prepare the patient to accept the nature of hepatitis disease, the importance of following the treatment regimen, and the treatment process to change their attitude and to create motivation to continue the treatment. Then, the questions raised by the patient were answered.

Achieving these goals included three stages:

A: Melting: In this stage, based on the needs assessment done in the previous stage, the researcher identified those beliefs of the patients that were in a framework with fixed and principled rules. Then, a 30-40-minute session was held with the patients to make their previous beliefs flexible by giving them information related to their needs so they were ready to receive a new attitude. In this stage, the researcher explained the controllability of hepatitis, the ways to prevent the transmission of the disease to others, and necessary self-care, provided that the patient participates constructively in the process of treating the disease.

B: Change: In this stage, the patient's attitude is modified, and he or she believes that he or she can adapt himself to the disease, the treatment process, and the situation. A 40-minute session was held with the patients, and the questions raised by the patients were answered. The characteristic of this stage is that the patient suffering from hepatitis is challenged by many questions and answers.

C: Freezing: In this stage, the researcher has established the new attitude of the patient toward the hepatitis disease. The new attitude could be that the patient does not consider hepatitis a social and incurable stigma but has accepted it. By cooperating in the treatment process, he or she can control it and actively participate in the follow-up of monthly visits and adherence to the medication regimen.

3- In the third or collaboration stage, a 40-minute session was organized with the presence of the patient and his or her family (wife, father, or mother), and advice was given to them regarding hepatitis disease, the way of communicating with each other, and taking care of oneself according to four stages (crisis, acute, maintaining health, and promoting health). Diagnosing the treatment stage of a hepatitis patient and involving the family in each of these stages can play a significant role in the treatment process of patients with hepatitis and the prevention of disease recurrence. In the crisis stage, the patient was identified with aggressive states, anxiety, denial of the disease, and non-cooperation in the treatment process. The goal of the researcher in this stage was to calm the patient by teaching effective techniques and to create sustainability in his life. Hence, the participation of the family was effective in accelerating the patient's containment, managing the environment, and restoring peace of mind to the person.

In the acute stage, the patient was diagnosed with symptoms of hepatitis and deviation from the normal course of life. The goal of the researcher was to reduce the symptoms of hepatitis and help the patient continue the normal course of life. Thus, the researcher evaluates the patient's perception and feelings toward hepatitis disease and its treatment and provides necessary information regarding the available medical and pharmaceutical treatments, the lack of definitive treatment, the controllability of the disease, the lack of progression of the disease, and the prevention of virus transmission to healthy people in case of adherence to the treatment process. In the stage of maintaining health, the symptoms of hepatitis decrease in the person. The goal of the researcher is to help the patient recover and prevent the disease's recurrence. At this stage, we help the patient to continue the treatment process by creating a balance in the relationship between the individual and the family, teaching the family members or relatives (through educational films and pamphlets) about how to communicate with each other.

The goal of the researcher is to reach the best level of health by educating the patient and his or her family. The researcher helps the patient to achieve the best level of quality of life. In the above four stages, sessions were held in the hepatitis clinic with the presence of patients and their families, and educational materials were shared with them. At the end of the sessions, educational pamphlets and CDs were also distributed among the patients. Educational videos were also shared on social media in the formed groups (patients and families). As a result, the patient and his or her family were familiarized with the disease, its treatment, and the necessity of follow-up. It was effective in the patient's adaptation to hepatitis, treatment follow-up, and disease recurrence.

4- Continuous monitoring: In this stage, the treatment process was continuously followed by the researcher to maintain the sustainability of adaptation and reach the maximum level of adaptation. It was done via phone and in person by the researcher in connection with the patient to

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follow up on the treatment and participate in the care. We helped him or her solve the problems caused by the disease. Patients were monitored in the adaptive sustainability model during two initial and periodic phases. This stage consisted of two phases. In the initial phase, the researcher made phone calls to the patients to convince them to follow up with the treatment process, take medicines, and follow the treatment regimen to reduce the symptoms. Six calls were made with the patients over three months, each lasting an average of 5 to 10 minutes (Table 1 and Figure 1).

Table 1. Implementation phases and content of the intervention based on the adaptive sustainability model

Stages	Number of sessions		Description of sessions
Discovery of family status	Session 1		Introducing yourself to the patients - explaining the research plan and upcoming benefits (periodic liver checkup and free PCR test), expressing expectations and goals, explaining hepatitis C disease, using the group discussion method and brainstorming to test the level of information of the patients, and examining educational needs, exchanging contact numbers that preferably have social networks (WhatsApp) for additional training.
	Session 2		Explaining drug therapy, diet, and existing treatments; examining patients' problems (problems related to hepatitis disease and secondary problems caused by hepatitis) with the help of a demographic information questionnaire using the methods of observation, interviewing, examining patients' documents, answering patients' questions, and helping to increase the patient's adaptation to his problem on WhatsApp to help the learning process, and they were encouraged to ask questions and answer.
Desensitization	Melting	Session 3	During 40 minutes, the questions were answered based on the needs of the patients, the significance of the treatment regimen was explained, examining the patients' point of view regarding the discussed issues and the modification of the method of changing their attitude (about the controllability of the disease, ways to prevent the necessary transfer, and self-care), getting help from the positive experiences of patients to emphasize their attitudes, giving a pamphlet containing all the questions asked by patients with short answers, sending a clip related to the training, and the questions and answers continue on WhatsApp.
	Change	Session 4	At this stage, the changes occurred in the patients' attitudes are tangible, and they speak more confidently about their problems, They have found adaptability to their disease and the treatment process, and several questions and answers to challenge the patients, in the desensitizing stage, the psychologist's help for providing additional explanations was used to accelerate exploitation (social stigma related to the disease, negative view of the medical staff, and fear of death) were thoughts that appeared over time and we succeeded in solving them. Educational clips on social networks, and the questions and answers continue.
	Freezing	Session 5	The patient's attitude towards his or her disease has been stabilized - patients do not consider hepatitis a social stigma, but it can be controlled by completing the course of treatment and observing the drug and treatment regimes, and the possibility of transmission to others is minimized, asking questions about their diet and how to take drugs that are a sign of hope for treatment and improving the quality of life, an educational CD containing the clips is given to the patients, and the questions and answers continue on WhatsApp.
Collaboration	Crisis	Session 6	At this stage, patients with anxiety, aggressive states, disease denial, and non-cooperation with treatment were identified. The purpose of this phase was to help calm the patient by teaching effective techniques and to stabilize their lives. Family participation was effective in accelerating the containment of the patient, restoring peace of mind, and managing the environment.
	Acute	Session 7	This stage is characterized by the appearance of hepatitis symptoms and the deviation of life from its normal course. We discuss with the patient how to control the symptoms and help to continue the normal course of life. We assure the patient that by following the medical and nutritional treatment process, he or she will be able to control the symptoms, the progression of the disease will be stopped, and the possibility of transmission to others will be reduced.
	Maintaining health	Session 8	The symptoms of hepatitis in the person have decreased and we help to prevent the recurrence of the disease and symptoms in the patient, by educating the patient and the family in the form of pamphlets, CDs, and WhatsApp, we help them to learn how to communicate with each other and help each other in the treatment process to restore relationships.
	Promoting health	Session 9	At this stage, the person has reached a new order in life. By educating the patients and their families, we help them achieve the best level of health and mental peace.
Continuous monitoring	Initial phase		During one month, we monitor the patient's active participation in the process of self-care via phone and in person. If a problem occurs, we will try to solve it through questions and answers and examine the patient's persistence in taking medications.
	Periodic phase		In the second month, to ensure that the symptoms do not recur, the patients were contacted once a week, and we discussed the treatment with the patients; we informed them about the side effects of the drugs; we answered the patients' questions regarding care, treatment, diagnosis, and counseling. In the second and third months, the patients and their families were contacted every two weeks, and questions were asked about the regular use of medications, how to communicate with each other, and periodic checkups; no recurrence of symptoms and improvement in liver checkups were observed during the research period.

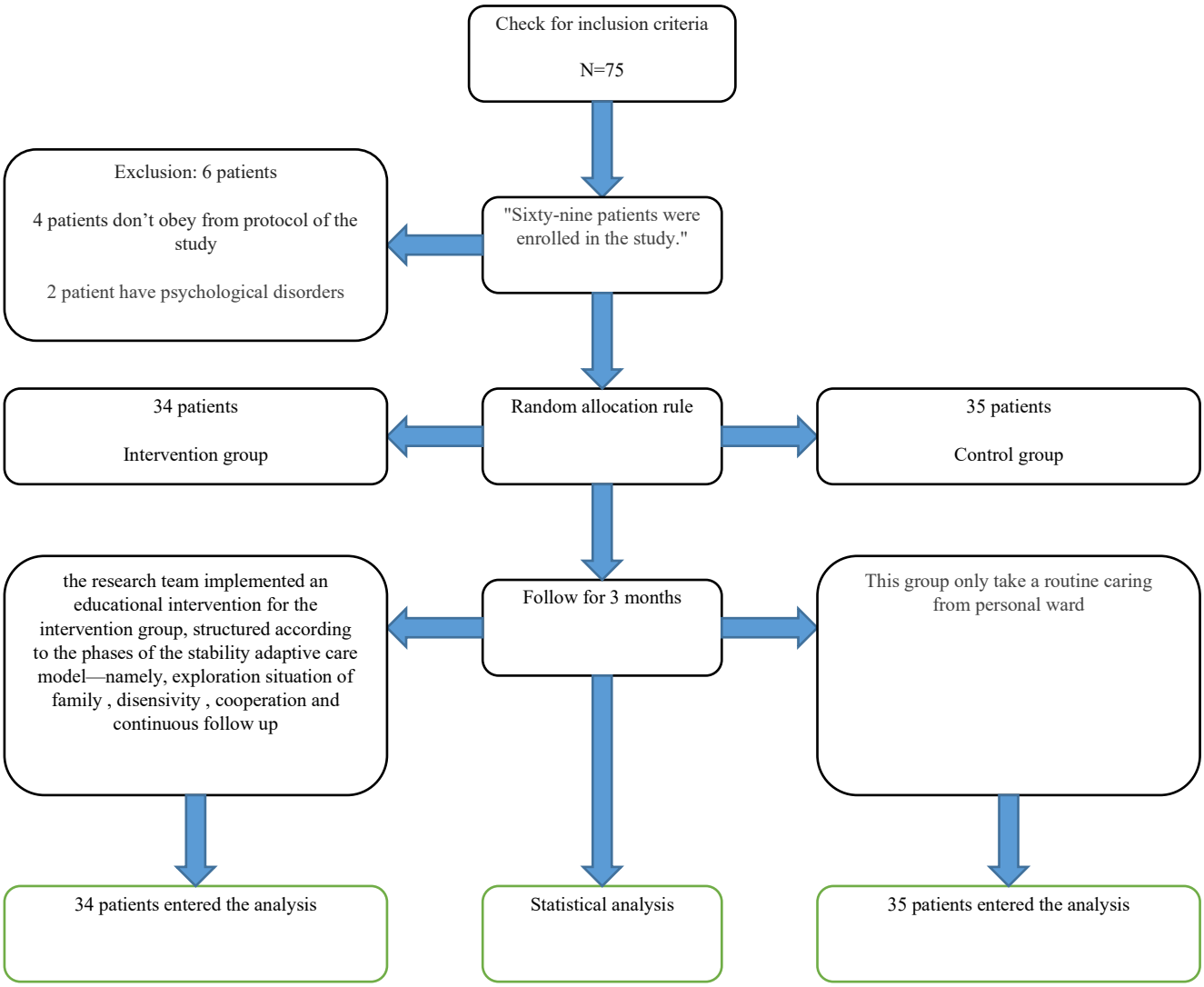


Figure 1. The CONSORT flow diagram

Results

The frequency of the male in the control group was 80% and in the intervention group was 82.4%, the greatest number of the participants in two groups were married and self-employment, base on the education level in the control group diploma 32.4 % and in the intervention group high school 51.4 % were greatest number of the participants, therefore the Chi-square test detected no significant difference was observed between the gender, marital status, employment status, age, and educational status of the participants in the two investigated groups (Table 2).

Table 2. Demographic characteristics and contextual variables of the subjects in two intervention and control groups

Variable	Groups	Intervention		Control		P-value
		Number	Percent	Number	Percent	
Gender	Female	6	17.6	7	20	0.80*
	Man	28	82.4	28	80	
Marital status	Single	6	17.6	6	17.1	0.82*
	Married	26	76.5	28	80	
	Divorced	2	5.9	1	2.9	

	Student	---	---	---	---	
	Employee	1	2.9	2	5.7	
Job status	Self-employment	20	58.8	19	54.3	0.87*
	Unemployed	9	26.5	11	31.4	
	Retired	4	11.8	3	8.6	
	18-44	16	0.47	14	40	
Age category (years)	45-65	15	45	18	52	0.42*
	>65	3	8	3	8	
	Below high school	11	32.4	18	51.4	
Educational status	Diploma	20	58.8	14	40	0.15*
	Academic	3	8.8	3	8.7	

*** Fisher's Exact Test**

The independent t-test shows that the mean self-esteem scores before the intervention of the two groups are not statistically significantly different (P-value>0.22). However, immediately after the intervention and at the 3-month follow-up, the mean self-esteem score in the intervention group showed a statistically significant difference compared to the control group, indicating an increase in the intervention group P-value<0.001 (Table 3).

The results of the repeated-measures analysis of variance (ANOVA) revealed that the main effect of measurement time on the participants' mean self-confidence scores was significant (F=1.93, P-value<0.005). Additionally, the interaction effect between time and group was also found to be significant (F=1.87, P-value<0.01). This indicates that the differences in mean self-confidence scores across the various measurement time points varied according to the levels of the group variable. Furthermore, as presented in Table 3, the main effect of group on the participants' mean self-confidence scores was significant (F=1.43, P-value<0.01). Hence, it can be concluded that, irrespective of measurement time, there were significant differences in the mean self-confidence scores among the experimental groups (see Table 3).

Table 3. Mean and standard deviation of the self-confidence score before, immediately, and 3 months after follow-up in control and intervention groups

		Time					
Variable	**Group**	**Before**	**Immediately after**	**3 months later**	**Time effect (P-value)**	**Group effect (P-value)**	**Time-group interaction (P-value)**
Self-confidence score	Intervention	2.5±1.2	6.69±3.67	6.36±4.01			
	Control	2±5.63	1.52±5.44	1.43±5.63	<0.005*	<0.01*	<0.01*
Between groups		0.22**	<0.001**	<0.001**	F=1.93	F=1.87	F=1.14
Effect size		0	0.456	0.765			

*** Repeated Measures ANOVA (Analysis of Variance)**

**** Independent t-test**

A significance level of P-value<0.05.

The research findings indicated that before the intervention, the mean and standard deviation of the quality of life scores did not show a statistically significant difference according to the independent t-test (P-value>0.2). However, immediately after the intervention and at the 3-month follow-up, the mean quality of life score in the intervention group showed a statistically significant difference compared to the control group, indicating an increase in the intervention group P-value<0.001 (Table 4). The results of the repeated-measures ANOVA indicated that the effect of measurement time on the mean overall quality of life score was significant (F=1.93, P-value<0.001). Furthermore, the interaction effect between time and group was also found to be significant (F=41.28, P-value<0.001). This suggests that the differences in mean overall quality of life scores across various time points varied depending on the levels of the group variable. Additionally, as presented in Table 4, the main effect of group on the mean overall quality of life score was significant (F=41.28, P-value<0.001). Hence, it can be concluded that, regardless of measurement time, there were

significant differences in the mean quality of life scores among the experimental groups (see Table 4).

Table 4. Mean and standard deviation of the overall quality of life score before, immediately, and three months after the intervention in control and intervention groups

Variable	Group	Time			Time effect (P-value)	Group effect (P-value)	Time-group interaction (P-value)
		Before	Immediately after	3 months later			
Overall quality of life	Intervention	51.10±17.50	68.01±10.29	73.10±15.97			
	Control	44.64±23.53	43.57±23.55	40.53±23.58	<0.001*	<0.001*	<0.01*
Between groups		0.20**	<0.001**	<0.001**	F= 31.03	F=41.28	F=29.61
Effect size		0	0.45	0.76			

*** Repeated Measures ANOVA (Analysis of Variance)**

**** Independent t-test**

A significance level of P-value<0.05.

The research findings indicated that before the intervention, the mean and standard deviation scores of the four subscales of quality of life—namely, mental health, physical health, community relations, and environmental health—did not show any statistically significant differences according to the independent t-test (P-value>0.05). However, the results of the independent t-test revealed a significant positive effect of the group on the study variables (P-value<0.001).

The results of the repeated-measures ANOVA indicated that the effect of measurement time was significant for the participants across the quality of life subscales, including physical health (F=49.98, P-value<0.001), mental health (F=31.77, P-value<0.001), social relationships (F=26.84, P-value<0.001), and environmental health (F=39.58, P-value<0.001). Therefore, it can be stated that, irrespective of the experimental group, there were significant differences in the mean overall quality of life scores across the pretest, posttest, and follow-up assessments. Furthermore, the interaction effect between time and group was also significant. Accordingly, it can be concluded that the differences in the mean overall quality of life scores of the patients across different time points varied depending on the levels of the group variable (Table 5).

The main effect of group was also found to be significant across the quality of life subscales, including physical health, mental health, social relationships, and environmental health. Hence, it can be concluded that, irrespective of measurement time, there were significant differences in the mean overall quality of life scores among the experimental groups (see Table 5).

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Table 5. Mean and standard deviation of the quality of life subgroup scores before, immediately, and 3 months after the follow-up in control and intervention groups

Variable	Group	Time			Time effect (P-value)	Group effect (P-value)	Time-group interaction (P-value)
		Before	Immediately after	3 months later			
Physical health	Intervention	50.10±15.95	65.02±9.62	73.10±13.01			
	Control	50.61±16.58	49.78±15.62	46.42±18.23	<0.001*	<0.001*	<0.01*
Between groups		0.89**	<0.001**	<0.001**	F=49.82	F=37.46	F=33.34
Effect size		0	0.45	0.33			
Mental health	Intervention	52.32±14.97	64.70±8.77	70.83±9.81			
	Control	50.24±17.43	50.12±18.21	42.18±17.41	<0.000*	<0.001*	<0.01*
Between groups		0.55**	<0.001**	<0.001**	F=31.77	F=36.77	F=28.7
Effect size		0	0.32	0.43			
Community relations	Intervention	50.83±16.13	61.02±12.61	61.11±10.34			
	Control	52.86±20.91	54.65±21.43	49.49±11.77	<0.001*	<0.05*	<0.01*
Between groups		0.67*	0.001**	<0.001**	F=26.84	F=38.8	F=26.66
Effect size		0	0.26	0.28			
Environmental health	Intervention	42.37±11.28	48.48±8.34	45.50±10.34			
	Control	39.46±12.08	39.82±11.22	33.98±9.14	<0.001*	<0.02*	<0.01*
Between groups		0.30**	<0.001**	<0.001**	F=39.58	F=36.88	F=32.64
Effect size		0	0.28	0.34			

*** Repeated Measures ANOVA (Analysis of Variance)**

**** Independent t-test**

A significance level of P-value<0.05.

Discussion

In this study, the effect of the adaptive sustainability model of care in improving and promoting the quality of life and self-confidence of patients with hepatitis is evaluated, and the results detected a positive effect of this model on the quality of life and self-confidence of the C hepatitis patients.

Quality of life improved following the implementation of the Adaptive Stability Care Model by nurses. This finding is consistent with the study by Davisson et al., which also reported a significant improvement in quality of life among participants in the intervention group compared with those in the control group after implementation of the nursing model. The authors suggested that the nursing intervention program encourages individuals to engage in activities that promote responsibility for their own health, strengthen their ability to communicate effectively with their surrounding environment, and develop adaptive behaviors and coping strategies, ultimately leading to an improved quality of life[33].

The findings of this study further support the effectiveness of the Adaptive Stability Model[34]. Consistent with our results, that study demonstrated the positive effects of the Adaptive Stability Model, suggesting that such interventions can improve patients' quality of life and facilitate adaptation throughout the course of their illness and treatment.

Therefore, it can be concluded that therapeutic interventions based on structured care models, including the Adaptive Stability Model, can improve patients' quality of life, promote healthier lifestyles, increase disease-related knowledge and awareness, and enhance adaptation to and acceptance of the disease. These effects were clearly demonstrated by the significant improvements observed after the intervention in the present study. Similarly, previous studies have reported that self-care education for patients with chronic hepatitis significantly improved their quality of life. These interventions enabled patients to adopt behaviors that reduced the risk of disease transmission, adjust their daily lives to accommodate their illness, and better cope with the physical and psychological challenges of the disease. Furthermore, acceptance of the illness, together with support from family members, healthcare providers, and counseling services, contributed to reduced stress levels and facilitated patients' return to occupational and social activities[35, 36].

Given the substantial psychological burden and reduced quality of life experienced by patients with hepatitis, supportive therapeutic interventions are essential to alleviate these challenges, enhance hope, and promote continued engagement with treatment. Consistent with our findings, a study of 200 patients with hepatitis C demonstrated that nursing interventions significantly improved patients' quality of life.

The authors concluded that nurses, through their continuous contact with patients, are uniquely positioned to assess patients' needs, manage treatment-related challenges, and provide education and support, thereby enhancing patients' adaptation and overall quality of life[37].

The Adaptive Stability Nursing Model promotes active patient participation within the multidisciplinary care team, increasing patients' responsibility for and engagement in their treatment. Through structured group interactions with nurses, physicians, and peers, patients receive culturally sensitive cognitive, behavioral, emotional, and supportive interventions delivered across four stages: family assessment, desensitization, collaboration, and continuous follow-up. This process enhances patients' adaptation to their illness by improving their knowledge, motivation, and self-care skills. As patients become more actively involved in disease management, they are better able to maintain their health and achieve an improved quality of life[38, 39].

Our findings are consistent with those of Khazaipour and other studies demonstrating that nursing education significantly improves multiple dimensions of quality of life, with the greatest improvement observed in physical health[35-37]. This improvement may be attributed to increased patient knowledge and better management of chronic disease symptoms, such as fatigue and pain, leading to enhanced daily functioning and overall quality of life[36]. Mental health also improved significantly following the supportive and educational nursing intervention, whereas no significant difference existed between groups before the intervention (P-value=0.55), and the intervention group showed significantly higher mental health scores afterward (P-value<0.001). These findings are particularly relevant because patients with hepatitis C commonly experience anxiety, depression, and emotional distress related to the disease, treatment side effects, and social stigma[38]. Disease-related stigma may further limit access to healthcare, increase stress, promote social isolation, and reduce self-confidence, thereby negatively affecting mental well-being[39, 40]. Moreover, diminished self-esteem has been identified as a risk factor for poorer psychological health, impaired interpersonal relationships, and reduced functioning in individuals with chronic diseases[41, 42].

According to the findings of the implementation study, the Adaptive Sustainability Model of Care was associated with an increase in patients' self-confidence.

Self-confidence is an important psychological attribute, and its assessment in patients with hepatitis C is essential because the disease can profoundly affect patients' living standards and lifestyle. In addition, hepatitis C is often associated with social stigma, which may result in social isolation and distancing from others. Consequently, many affected individuals experience rejection, which ultimately reduces self-confidence.

According to the findings of previous studies, disease-related stigma may gradually become internalized, resulting in feelings of inferiority. Consequently, affected individuals tend to reinforce negative self-perceptions, evaluate themselves unfavorably, and subsequently experience emotions such as anger and hopelessness[39]. Furthermore, these individuals often hold fewer positive beliefs about themselves and exhibit lower levels of self-acceptance. Collectively, these factors may contribute to diminished self-esteem among patients experiencing stigma[43].

The findings of numerous studies indicate that nursing interventions are associated with improvements in patients' self-confidence and self-efficacy. For example, an Internet-based nursing model, known as the 4C model (Comprehensive, Collaborative, Coordinated, and Continuous Care), has been shown to significantly enhance self-efficacy among patients with chronic obstructive pulmonary disease (COPD). This web-based intervention resulted in a significant increase in self-efficacy scores in the intervention group compared with the control group[44].

Similarly, a randomized controlled trial evaluating the Continuous Care Model (CCM) among patients with cancer demonstrated that implementation of this model significantly improved patients' self-efficacy, with a statistically significant difference observed following the intervention (P-value=0.001)[45].

Likewise, an Expert Patient Program (EPP) implemented among patients undergoing surgery for gastric cancer showed beneficial effects on patient outcomes. In this clinical trial, the nurse-led supportive program, delivered in collaboration with trained expert patients, significantly improved participants' self-efficacy and promoted self-care behaviors compared with routine care[46].

Given the findings of the present study and their alignment with the results of previous research, it is inferred that implementing patient care based on nursing models facilitates behavioral changes and appropriate responses to patients' needs.

Conclusion: The present study demonstrates that the Adaptive Stability Nursing Model significantly improves the quality of life and self-confidence of patients with hepatitis C. These benefits are likely mediated through enhanced disease-related knowledge, adaptive coping, reduced psychological distress and stigma, and greater engagement in self-care. Consistent with previous evidence, the model should be considered for integration into routine clinical practice as a structured, nurse-led approach to promote holistic adaptation and long-term patient engagement.

Ethical Considerations

This study was derived from a master's thesis approved by Shahrekord University of Medical Sciences (Ethics Code: IR.SKUMS.REC.1400.198).

Acknowledgment

The authors would like to express their sincere gratitude to all patients and their families, as well as the hospital administrators and nursing staff of the Behavioral Diseases Center of Shahrekord University of Medical Sciences, for their valuable cooperation and support in conducting this research.

Conflict of Interest

The authors declare that there is no conflict of interest.

Funding

This study was financially supported by the Vice-Chancellor for Research and Technology of Shahrekord University of Medical Sciences, Shahrekord, Iran.

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