Jundishapur J Chronic Dis Care. 2016 October; 5(4):e33617. doi: 10.17795/jjcdc-33617.

Published online 2016 September 13. **Research Article**

Effectiveness of the Professional Collaboration of Care-Centered Model (PCCC) on the Knowledge of Patients with Hepatitis B Regarding Preventive Behaviors

Fatemeh Hardani,[1] Nasrin Elahi,[2,*] Simin Jahani,[2] Mohammadhossein Haghighi zadeh,[3] and Pezhman Alavi Nejad[4]

[1]Nursing and Midwifery School, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran
[2]Department of Nursing, School of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran
[3]Department Biostatistics, School of Health, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran
[4]Gastroenterology and Hepatology Research Center for Infectious Diseases, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran

[*]*Corresponding author*: Nasrin Elahi, Department of Nursing, School of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran. Tel: +98-9163117909, Fax: +98-6133738333, E-mail: elahi-n@ajums.ac.ir

Received 2015 October 18; **Revised** 2016 January 02; **Accepted** 2016 January 15.

Abstract

Background: Education is crucial to improve the preventive behaviors of patients with hepatitis B. The Professional collaboration of care-centered model (PCCC) is one novel educational model that has shown promising effects in recent studies.
Objectives: Thus, this study aimed to assess the effects of patient education based on PCCC on the knowledge of patients with hepatitis B regarding preventive behaviors.
Methods: This randomized clinical trial study was conducted on 50 patients with hepatitis B in Ahvaz Imam and Razi hospitals in Iran during 2014. Patients were randomly divided into two groups: an intervention (n = 25) and a control (n = 25) group. First, patients in both groups completed a demographical and clinical checklist as well as a knowledge questionnaire. Patients in the control group received routine education, while patients in the intervention group were educated based on PCCC for 4 sessions. At the end of the 4-week intervention, patients completed the questionnaires again. Data were analyzed by SPSS version 22 using Student's t test and the chi-squared test.
Results: Before the intervention, there were no significant differences between the two groups (P = 0.133), while after the intervention a significant difference was seen between the two groups, favoring the intervention group based on the increased mean score (P < 0.001). In addition, a significant difference was observed between the intervention group's pre and post scores (P < 0.001), while no significant difference was seen in the control group (P = 0.56).
Conclusions: Regarding our results, education based on the PCCC model could be effective in improving knowledge in patients with hepatitis B. Thus, it is recommended that this model be used as a simple method to improve preventive behaviors.

Keywords: Education, Professional Practice, Knowledge, Hepatitis B

1. Background

Hepatitis is defined as inflammation of the liver that can be caused by various factors, including many drugs, alcohol, chemicals, various viruses, autoimmune diseases, and genetic disorders. So far, six types of hepatitis have been introduced: A, B, C, D, E, and G (1). Hepatitis B is one type and is reported as the most common factors of chronic hepatitis, cirrhosis and primary liver cancer (2). According to the world health organization, hepatitis B virus is widespread and today, more than two billion people have faced it and about 30 - 400 million, i.e., 5% of the world's population, are chronic carriers (3). According to available statistics, 600,000 deaths occur annually from hepatitis B (4). In Iran, reports show that an average of 2 - 5% of the population is infected with the hepatitis B virus. The results show that 35% of Iranians have had contact with the hepatitis B virus (5). The prevalence of hepatitis B varies in different provinces varies and is reported in the range of 1.3 to 3.8. In Khuzestan province, the outbreak of this disease is average and the total number of patients with hepatitis B in 2014 was estimated to be 275 (6).

Hepatitis B imposes a significant economic burden on patients and the healthcare system; as such, experts regard the disease as quite costly (7). The results of a study in the United States showed that 3000 - 4000 people die annually due to complications of hepatitis B and more than one billion dollars is spent annually on the costs of hospitalizing patients (8). It has physical and psychological effects on patients and affects their quality of life (9).

The most important way to cope with hepatitis B is pre-

vention. Today, the most important method of disease prevention is training. Training is one of the most fundamental and critical healthcare programs in the treatment systems, which plays an important role in controlling the disease. Training patients and their families is one of the most important activities in nursing and is considered a nursing function in all fields active in (10). Training patients and their families can play an important role in the prevention of hepatitis B, as the data of patients with this disease is reported very low (11-14). Many patients carrying hepatitis B feel healthy because of the lack of visible and evident symptoms, while the lack of awareness among patients and the lack of medical follow-up lead to the disease's progression and may involve other family members (9). Patients, usually due to lack of awareness, discontinue medication after a few days of administration of interferon and therapy do not end the treatment (15). Based on existing studies, most patients refuse to visit a doctor when understanding their disease (positive antigen) or arbitrarily cut their medication (16, 17). If an educational program is based on the educational needs of patients and appropriate to their understanding, it will achieve positive results in the prevention of this disease and will increase patients' awareness (10). Zabihi et al. demonstrated that education is effective in enhancing the knowledge, attitude, and health behaviors of barbers about hepatitis B (12). Eassa et al. also showed that the implementation of a follow-up treatment program through messages to patients with hepatitis significantly increased their awareness on the nature of disease, symptoms, and methods of transmission and prevention (18).

Despite reporting positive results for different training approaches, the state of training patients in our country remains unsatisfactory due to the inefficiency and inappropriateness of training methods, ineffective management, non-compliance of training patterns with the current conditions and position in Iran hospitals, and the incompatibility of educational methods and models with the culture in the clinical environment (19). Therefore, appropriate training methods should be used that address these problems.

One of the new educational models is care-centered professional partnership, which involves four steps: formation, determining the participatory role, playing the participatory role, and empowerment evaluation, which is designed appropriate to the current culture and position of nursing education in Iran. The aim is to involve and assist patients in teaching to provide optimal care to patients and access to effective education. In this training method, researchers, clinical fellows, and representatives of patients work together as a team and patients participate in clinical and teaching practices to enhance their sense of self-esteem and empowerment, thus enhancing their motivation to take responsibility (20). Elahi et al., in a quasi-experimental study, used this model to train patients undergoing hemodialysis. The results showed that training based on this pattern can reduce patients' nitrogen and creatinine levels and can improve systolic and diastolic blood pressure (21).

2. Objectives

Since studies show that patients with hepatitis B have poor knowledge of the disease (11-14), and given the importance of using appropriate instructional methods to improve information provided to patients, this study aimed to determine the effect of care-centered professional participation on the awareness of patients with hepatitis B.

3. Methods

This study is a controlled clinical trial (code number IRCT2015021321056N1) in which the population is patients with hepatitis B who referred to the Imam Khomeini training - health center in Ahvaz and the specialized clinic of Razi hospital in Ahvaz in 2014. Inclusion criteria were a chronic hepatitis B diagnosis confirmed by a physician for at least 6 months, over 18 years old, living in Ahvaz or having the possibility to participate in education sessions, writing and reading literacy, lack of liver cancer and advanced cirrhosis, having the psychological capacity to participate in training sessions, and having a mobile phone (to follow up on their treatment) in all training sessions. Criteria for inclusion were absence in training sessions in two or more sessions.

The sample size was obtained given the results of the pilot study performed on 15 patients (who were part of the main population). Based on the results of the pilot study, which showed a statistically significant difference ($P < 0.001$) in patients' knowledge in the intervention group (4.50 ± 2.80) compared to the control group (6.90 ± 2.90), and given the error $\alpha = 0.05$, $\beta = 0.1$, and power = 0.95, 21 people per group were estimated to be included, and considering a 20% loss of samples, the sample size was increased to 50, i.e., 25 patients in each group.

Data collection tools in this study were demographic and clinical profile forms (age, gender, marital status, education, ethnicity, occupation, type of insurance, income, and duration of hepatitis B, family history of hepatitis B, and a history of other diseases) and a researcher-made checklist to evaluate patients' knowledge. The checklist has 30 three-choice questions evaluating patients' information in the field of preventive behaviors, such as medical follow-ups (checkups), diet, drugs, and risky behaviors.

Responses of "yes," "no," and "I do not know" were scored as 1, 0, and 0.5, respectively, and in total, the maximum and minimum scores for the questionnaire were 30 and 15, respectively. This questionnaire was completed by interviewing the patients and by the researcher himself. The checklist prepared by content validity was used for determining scientific validity. Therefore, after studying the books and available resources in this field, a checklist was prepared and available to 10 professors of the nursing and midwifery faculty, Ahvaz. Their agreement was obtained using the components of the proposed framework, and after identifying problems, the necessary corrections were made and the final checklist was developed. Test-retest reliability of the questions was determined; the questionnaire was initially completed by 10 patients (who were not among the research population) and after 10 days, the questionnaire was completed by the same people and the correlation coefficient was determined to be 0.81.

For sampling, after receiving permission from the ethics committee of Ahvaz Jondi Shapur University of Medical Sciences and coordinating with officials of the mentioned centers, the researcher selected patients who met the criteria for inclusion. Then, he discussed the research objective and patients were told that they were free to decline in every stage of the study and the patients and their families were given the right to ask the researcher questions to clarify any ambiguities they may have. They were also assured that the obtained information would remain confidential and they would not be deprived of routine treatment and should not pay any fees for the trial. Written consent was obtained from all the subjects. Then, they were divided randomly (the first subject using the card No.1, which was selected by himself, was assigned to the control group and other subjects were assigned to control and experimental groups consecutively) placed them randomly (first patient was placed in the control group using bolt No. one selected by him and other patients consecutively were placed in two experimental and control groups) into two groups: experimental (n = 25) and control (n = 25). First, the two groups completed the clinical and demographic information forms and awareness questionnaire. Then, patients in the experimental group were taught through care-centered professional participation and in the control group, patients received normal training.

To train based on the care-centered professional partnership model, researchers (master of nursing) served as the main teacher and used the training supervisor (M.S. in nursing who has two years of work experience in an infectious ward and a history of teaching and research as well) as the clinical fellow and 2 patients (those who received a score higher than 25 in the pre-test and had strong communication skills) as the training partners. In this study, the following four steps were conducted to provide professional education based on the care-centered professional partnership model:

1. Formation: In this phase, the clinical partner and the patient representatives serving as the main members formed an introduction session and discussed the objectives, methodology, and training method.

2. Determining the participatory role: In this phase, the role of each member in the training sessions was determined. The researcher developed training programs (providing educational pamphlets and slides), set up training sessions, and led the group. The clinical fellow was obliged to enhance his knowledge and information on the issue and prepare materials to present in training sessions and assist the main teacher in the selection of teaching content. In addition, it was decided that the patient representatives would work together in teaching the group about what they knew.

3. Playing a cooperative role (run): At this stage, according to the learning environment (level of education, location, time, educational purposes), trainers played their role that was defined in step 2 in four training sessions (two sessions per week for 60 minutes and in each session, six patients participated with one person) as follows:

First session: A general background on the types of hepatitis disease, liver function, and the routes of transmission of hepatitis B were presented by the training group through lectures and slide shows.

Second session: At the beginning of the meeting, the subjects were verbally evaluated and the problematic and vague materials were clearly explained again. Then the trainer described a variety of the side effects induced by medicine, coping methods, the rationale for proper nutrition and diet, and how to use herbal medicine. At the end of the session, the subjects were given pamphlets to review at home.

Third session: The material from the previous session was reassessed verbally and in cases of any misunderstanding, the content had to be described again. Then, the prevention methods for hepatitis B in the community (vaccination, public healthcare) as well as those for the transmission of hepatitis B in the family were described (how to use common means, personal communication, and immunization).

Fourth session: As in the previous session, the subjects were first assessed. Then, the trainers described the factors intensifying hepatitis B and other types of hepatitis, diagnostic tests (HbsAg, ALT and HBsAb), and the need for medical follow-up. They also explained addicted and high-risk behaviors by presenting slide shows. Then, in a 15-minute question and answer session (formative evaluation), the

trainers reviewed what had been described previously.

4. Empowerment evaluation: At this point, two weeks after the last training session, the patients and their relatives attended the class again and were asked about their follow-up regarding self-care behaviors (such as vaccinations, medication, and diet) and all vague and difficult questions were addressed by the main teacher.

Finally, four weeks after the last stage, the questionnaire was completed again by patients in the control and intervention groups and to comply with ethical issues, pamphlets and instructional slides were prepared for the control group. The collected data were analyzed using SPSS 22. To describe the absolute frequency, relative frequency, mean and standard deviation, and descriptive statistics, and to compare qualitative and quantitative variables of the two groups, independent t-tests and chi-squared tests were used. To compare the pre- and post-intervention scores in each group, paired t-tests were used. For all the tests, $P < 0.05$ was considered statistically significant.

4. Results

Of the total of 50 patients participating in the study, one in the control group and two in experimental group were excluded due to a lack of follow-up. According to the results shown in Table 1, the number of men and women were almost equal (52.7% male and 47.7 % female). Most of the subjects (87%) were married. The independent t-test showed no statistically significant difference between the two groups in terms of gender ($P = 0.557$) and marital status ($P = 0.479$). Other demographic and clinical variables are shown in Table 1. The chi-squared test showed no significant difference between the two groups.

The mean and standard deviation of knowledge scores in the experimental group pre and post intervention were 21.54 ± 2.15 and 27.15 ± 2.39 and in the control group were 2.67 ± 20.45 and 2.96 ± 20.52. According to a paired t-test, the difference between knowledge scores pre and post intervention in the control group is not statistically significant ($P = 0.560$), but it is significant in the experimental group, as the mean scores post intervention increased ($P < 0.001$). According to an independent t-test, pre intervention, no significant differences were observed between the control and experimental groups in terms of knowledge ($P = 0.133$), but post intervention, there was a significant increase in the experimental group's mean scores ($P < 0.001$) (Table 2).

5. Discussion

This study aimed to determine the effect of care-centered professional partnership training on the knowledge of patients with hepatitis B regarding preventive behaviors. The results showed that the training had a positive effect on patients' knowledge and their awareness increased following the intervention. Although no previous research has examined the effect of the care-centered professional participation model on hepatitis B patients' awareness of the disease, the results of several prior studies suggest a positive effect of other training methods on their awareness. Zabihi et al. (12), in a study to determine the effect of a health education program on the knowledge, attitude, and preventive behaviors of male barbers in Babol in relation to hepatitis B, concluded that face-to-face training and question and answer in their workplace as well as the provision of 10-page educational booklets on hepatitis for one month significantly increased participant's knowledge of hepatitis B ($P < 0.001$). In their study, prior to the program, 32.5% of the barbers had sufficient knowledge, but after the program, it increased to 93.8% (12). In another study, Adibi et al. examined the impact of multi-stage group training on the awareness of hepatitis patients; a comparison of pre-test (5.86 ± 2.56) and post-test (13.64 ± 2.57) scores showed a significant increase in the knowledge of trainees regarding hepatitis B transmission, prevention methods, and treatment ($P < 0.01$) (22). Amirizadeh et al. examined the effectiveness of training prevention for hepatitis B in pregnant women living in Orumiyeh to enhance family health; the results suggest that training through lectures significantly increased participants' awareness of hepatitis and its transmission post training (40.9 ± 1.69) compared to pre training (4.37 ± 0.520) ($P < 0.001$) (23). The results of the study by Eassa et al., which was done in a single group in Egypt, show that a follow-up care education program provided to patients with hepatitis through the message significantly increased their post-intervention awareness on the disease nature, symptoms, methods of transmission, and prevention ($P < 0.001$) (18). Furthermore, Surjadi et al. demonstrated that hepatitis standard training for 2 hours by a nurse significantly increased patients' awareness ($P = 0.004$) (24).

Given the results of this and other cited studies, it can be deduced that training is effective in improving the awareness of patients with hepatitis B and training programs in this field can have a positive impact on raising awareness. Therefore, it is suggested that members of the healthcare system use training programs and public awareness through the media to educate patients with hepatitis B and take an effective step in reducing high-risk behaviors.

This study is a pre-test and post-test study conducted in a specific time period; during the study period, individual studies and information from other sources (such as media, medical personnel, etc.) other than what are of-

Table 1. Frequency Distribution of Samples in the Control and Experimental Groups in Terms of Demographic and Medical Characteristics[a]

Demographic Characteristics	Test		Control		P Value
	Frequency	Percentage	Frequency	Percent	
Gender					0.557
Female	12	52.2	12	50.0	
Male	11	47.8	12	50.0	
Education					0.340
High school	14	60.9	17	70.8	
Diploma and higher	9	39.1	7	29.2	
Marital status					0.479
Single	3	13.0	2	8.3	
Married	20	87.0	22	91.7	
Ethnicity					0.096
Arab	13	56.5	8	33.3	
Fars	10	43.5	16	66.7	
Job					0.573
Housewives and unemployed	14	60.9	15	62.5	
Employed and retired	9	39.1	9	37.5	
Income					0.225
Less than 500000	5	21.7	10	44.7	
5000000 - 700000	10	43.5	10	41.7	
More than 700000	8	34.8	4	16.7	
Insurance					0.321
Yes	22	95.7	21	87.5	
No	1	4.3	3	12.5	
History of hepatitis					0.155
Yes	11	47.8	7	29.2	
No	12	52.2	17	70.8	
History of other diseases					0.337
Yes	11	74.8	9	37.5	
No	12	52.2	15	62.5	

[a]Chi-squared test, P value < 0.05 was considered statistically significant.

Table 2. Comparison of the Awareness of Patients with Hepatitis B Pre and Post Intervention in the Intervention and Control Groups[a]

Group Knowledge and Awareness	Control Mean (SD)	Test Mean (SD)	P Value[b]
Pre intervention	20.45 (2.67)	21.54 (2.15)	0.133
Post intervention	20.52 (2.96)	27.15 (2.39)	< 0.001
P value[c]	0.560	< 0.001	

[a]P value < 0.05 was considered statistically significant.
[b]Independent t-test.
[c]Paired t-test.

fered in training sessions, can affect the post-test results, which was out of control by researcher; thus, it is suggested to conduct future studies with fewer restrictions. Other limitations of this study are individual (differences in motivation, comprehension and IQ), social, cultural, and economic differences, which can have an impact on their learning. This study involves no conflicts of interest.

The results of this study indicate that training based on care-oriented professional participation pattern can be effective in raising the awareness of patients with hepatitis B. Therefore, the use of this learning model is recommended as an effective and easy way to enhance preventive behaviors.

Acknowledgments

This article is adapted from a master's thesis of nursing, which is sponsored by the University of Medical Sciences, Ahvaz. Thereby, I would like to sincerely thank the respected deputy of research and technology, Ahvaz University of Medical Sciences, as well as the venerable patients; this study would have been impossible without their cooperation. We also would like to thank both Razi and Imam Khomeini hospitals for their collaboration.

Footnotes

Authors' Contribution: Study concept and design, Nasrin Elahi; acquisition of the data, Zenab Ahmadi; analysis and interpretation of the data, Nasrin Elahi, Simin Jahani, Fateme Hardani; critical revision of the manuscript for important intellectual content, Simin Jahani, Pezhman Alavi Nejad; statistical analysis, Mohammadhossein Haghighi zade; study supervision, Nasrin Elahi.

Funding/Support: Ahvaz Jundishapur University of Medical Sciences approved the study and issued a code of ethics.

References

1. Gao S, Duan ZP, Coffin CS. Clinical relevance of hepatitis B virus variants. *World J Hepatol.* 2015;**7**(8):1086–96. doi: 10.4254/wjh.v7.i8.1086. [PubMed: 26052397].
2. Smeltze SC, Bare BG, Hinkle JL, Cheever KH. Bruner and Sudarths Textbook of Medical and Surgical Nursing. 12 ed. New York: Williams and Wilkins; 2010. pp. 1222–5.
3. Hennessey K, Mendoza-Aldana J, Bayutas B, Lorenzo-Mariano KM, Diorditsa S. Hepatitis B control in the World Health Organization's Western Pacific Region: targets, strategies, status. *Vaccine.* 2013;**31 Suppl 9**:85–92. doi: 10.1016/j.vaccine.2012.10.082. [PubMed: 24331026].
4. MacLachlan JH, Cowie BC. Hepatitis B virus epidemiology. *Cold Spring Harb Perspect Med.* 2015;**5**(5):189–96. doi: 10.1101/cshperspect.a021410. [PubMed: 25934461].
5. Sadeghian H, Varasteh N, Esmaeelzadeh A, Nomani H, Alimardani M, Davoodnejad M, et al. Distribution of hepatitis delta virus genotypes in mashhad, northeast iran. *Jundishapur J Microbiol.* 2015;**8**(2):14908. doi: 10.5812/jjm.14908. [PubMed: 25793092].
6. Keshavarz K, Kebriaeezadeh A, Alavian SM, Akbari Sari A, Abedin Dorkoosh F, Keshvari M, et al. Economic burden of hepatitis B virus-related diseases: evidence from iran. *Hepat Mon.* 2015;**15**(4):25854. doi: 10.5812/hepatmon.15(4)2015.25854. [PubMed: 25977694].
7. Puri P. Tackling the Hepatitis B Disease Burden in India. *J Clin Exp Hepatol.* 2014;**4**(4):312–9. doi: 10.1016/j.jceh.2014.12.004. [PubMed: 25755578].
8. Borresen ML, Andersson M, Wohlfahrt J, Melbye M, Biggar RJ, Ladefoged K, et al. Hepatitis B prevalence and incidence in Greenland: a population-based cohort study. *Am J Epidemiol.* 2015;**181**(6):422–30. doi: 10.1093/aje/kwu287. [PubMed: 25721415].
9. Zhuang G, Zhang M, Liu Y, Guo Y, Wu Q, Zhou K, et al. Significant impairment of health-related quality of life in mainland Chinese patients with chronic hepatitis B: a cross-sectional survey with pair-matched healthy controls. *Health Qual Life Outcomes.* 2014;**12**:101–8. doi: 10.1186/1477-7525-12-101. [PubMed: 24928466].
10. Rafii F, Soleimani M, Seyed-Fatemi N. Concept analysis of participation of patient with chronic disease: Use of hybrid model. *Iran j nurs.* 2010;**23**(67):35–48.
11. Yang J. Development and Validation of an Online Program for Promoting Self-Management among Korean Patients with Chronic Hepatitis B. *Nurs Res Pract.* 2013;**2013**:702–9. doi: 10.1155/2013/702079. [PubMed: 23401760].
12. Zabihi A, Hajian K. Assessment of the effect of education program on knowledge, attitude and preventive behaviors of the barbers in Babol about Hepatitis B (2003) [in Persian]. *J Hormozgan Univ Med Sci.* ;**8**(3):133–8.
13. Zamani Alavigeh F, Shafiei A, Ghofranipoo F, Argmandzadegan M. Assessment of the Health Belief Model effect on behavioral intention for hepatitis B prevention among adolescent girls [in Persian]. *Payesh.* 2012;**11**(4):421–511.
14. Zule WA, Costenbader EC, Coomes CM, Wechsberg WM. Effects of a hepatitis C virus educational intervention or a motivational intervention on alcohol use, injection drug use, and sexual risk behaviors among injection drug users. *Am J Public Health.* 2009;**99 Suppl 1**:S180–6. doi: 10.2105/AJPH.2007.126854. [PubMed: 19218179].
15. Woo G, Tomlinson G, Yim C, Lilly L, Therapondos G, Wong DK, et al. Health state utilities and quality of life in patients with hepatitis B. *Can J Gastroenterol.* 2012;**26**(7):445–51. [PubMed: 22803020].
16. Guirgis M, Nusair F, Bu YM, Yan K, Zekry AT. Barriers faced by migrants in accessing healthcare for viral hepatitis infection. *Intern Med J.* 2012;**42**(5):491–6. doi: 10.1111/j.1445-5994.2011.02647.x. [PubMed: 22151101].
17. Noreen N, Kumar R, Shaikh BT. Knowledge about hepatitis B vaccination among women of childbearing age: a cross-sectional study from a rural district of Punjab, Pakistan. *East Mediterr Health J.* 2015;**21**(2):129–33. [PubMed: 25876824].
18. Eassa S, Eissa M, Sharaf SM, Ibrahim MH, Hassanein OM. Prevalence of hepatitis C virus infection and evaluation of a health education program in el-ghar village in zagazig, egypt. *J Egypt Public Health Assoc.* 2007;**82**(5-6):379–404. [PubMed: 18706295].
19. Aziznezhad P, Zabihi A, Hosseini SJ, Bizhani ALI. Nurses and Nurse Managers Opinions about the Patient's Training Barriers. *J Babol Univ Med Sci.* 2010;**12**(1):4–60.
20. Elahi N. The effectivness education model in Nursing -Qualitative study - Grunded Theory: Qualitative study, PhD Thesis [in Persian]. Tehran: Tarbiat Modares University; 2012.
21. Elahi N, Dastom M, Kardaani M. Effectiveness of patient education based on Professional Collaboration of Care Centered Model (PCCC) on self-care in patients on Hemodialysis. *Jundishapur J Chron Dis Care.* 2014;**3**(2):82–7.

22. Adibi P, Nik Kholgh B, Mohammad Alizadeh A, Zali M, Esmaeili A. A Multistage Group Education for Hepatitis B. *Iranian J Med Edu.* 2001;**1**(4):2–8.
23. Amirzadeh J, Amirzadeh N, Vazife Asl M. Study on prevention of hepatitis B in pregnant women living in urban population lab of Urmia to promote family health. *J Urmia Nurs Midwif Facul.* 2006;**4**(2):60–7.
24. Surjadi M, Torruellas C, Ayala C, Yee HF, Khalili M. Formal patient education improves patient knowledge of hepatitis C in vulnerable populations. *Dig Dis Sci.* 2011;**56**(1):213–9. doi: 10.1007/s10620-010-1455-3. [PubMed: 20972850].