Original Article

Nurse-Led Preventive Interventions Regarding Hepatocellular Carcinoma Knowledge, Complications and Quality of Life among Chronic Liver Disease Patients

Nimra Saleem, Azeem Kaleem and Madiha Mukhtar

ABSTRACT

Objective: To evaluate the effectiveness of a nurse-led preventive intervention on refining quality of life, disease-related knowledge, and complication lessening among patients with prolonged liver illness associated with hepatitis B, C, and Non-alcoholic fatty liver disease.

Study Design: Quasi-experimental pre–post study

Place and Duration of Study: This study was conducted at the Allama Iqbal Teaching Hospital, Dera Ghazi Khan from 1st July 2025 to 30th September 2025.

Methods: The link between the nurse led preventive education and health improvement was assessed among patients. A total of 24 chronic liver disease patients aged 28–55 years were registered. The data were collected using the Prolonged Liver Illness Questionnaire, the SF-36 Quality of Life Scale, and the HCC Knowledge Assessment Scale.

Results: Males are more with chronic liver disease than females which indicates that they are more exposed to the disease, mostly married**.** 83.3% improvement was seen among patients' symptoms due to following the preventive intervention. Mean difference has been reduced from 14.72 to 3.60. The systemic domain showed the highest mean difference (3.35). Fifteen (62.5%) have a good knowledge level, 8(33.3%) participants have a fair knowledge level, and only 1(4.2%) has a poor knowledge level. A Pearson correlation analysis was performed to check the association between the SF-36 Items. Mean and CLDQ 6 items Mean in which All SF-36 subscales correlated significantly with all scores of CLDQ subscales ($p< 0.05$).

Conclusion: Nurse-led preventive education has a significant influence on patients' chronic health conditions. Organized patient education is a key policy within hepatology facilities to improve long-term predictive markers and avoid the onset of hepatocellular carcinoma.

Key Words: Chronic liver disease, Hepatocellular carcinoma, Nurse-led education, Quality of life

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INTRODUCTION

Chronic liver disease (CLD) and its related problems, including irreversible scarring of the liver and hepatoma, are leading to increased mortality, morbidity, and financial burdens. Hepatitis ranks among the top causes of death, positioned 7th globally[1], and is an increasingly pressing health alarm in Asian nations. Chronic active hepatitis, in terms of the global incidence, has categorized Pakistan as the second.[2]

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There are about 10 million people in the country who are chronically infected with hepatitis.[3] Hepatitis viral hepatitis is one of the major causes of high mortality and morbidity in developing nations.[4]

A study by the Pakistan Medical and Research Council in 2007-2008 found that 13 million Pakistanis are affected by HBV and HCV, with 2.5% being HBV carriers and 4.8% HCV carriers.[5] It is well-known that most viral hepatitis carriers remain unaware of their infection due to the disease's asymptomatic nature, which later contributes to a significant increase in disease burden.[6] In a report, 45% to 85% of virus-related hepatitis cases go unknown despite the availability of diagnostic laboratories. The focal reasons cited for this are money, painful testing environments, and the inconvenient locations of these test centers.[7]

Ranked as the seventh maximum prevalent malignancy and the additional leading reason of cancer-related deaths globally, hepatocellular carcinoma (HCC) is a significant health concern.[8] Histologically, HCC represents of all liver cancer cases are 75%. Worldwide,

hepatitis B virus (HBV) and hepatitis C virus (HCV) are responsible for 80% of HCC cases. In the Far East and Black Africa, 85% of cases occurring with HCC predominantly affect individuals in low- and middle-income countries.[9] The highest frequency rate is in Asia, with China accounting for 47% of the global load. The highest expected prevalence rate is in Mongolia, while the lowest is in Nepal and Morocco, according to GLOBOCAN's 2018 global survey.[10]

A reduction in HBV incidence has been observed in Asian countries (11). In the United States, the increase in numbers is associated with a new rise in HCV dominance, exacerbated by widespread narcotic use.[12]

However, screening rates are suboptimal, ranging from 11% to 64%, due to obstructions at the individual, preventive measures, and healthcare system.[13] The principal liver cancers are Malignant hepatoma and Intrahepatic bile duct carcinoma, with fewer types including liver cancer with soft tissue liver tumor.[14] Approximately 90% of these cases are hepatocellular carcinoma (HCC), the main public form of liver melanoma. A study on HCC death movements from 1990 to 2014 exposed that as in a study[15] "the Nordic countries" experienced an proliferation in HCC deaths, whereas Southern Europe saw a decline. However, even after consistent HCV clearance, cirrhosis patients are still considered at high risk for HCC development.[16]

While significant efforts are undoubtedly necessary to develop initial revealing and treatment of HCC, primary prevention plans designed at decreasing the prevalence of Type 2 diabetes, obesity, and limiting mycotoxin growth are equally critical.[8] In developed countries, chronic liver diseases are predominantly caused by alcoholic liver disease, steatotic liver disease (SLD), iron-overloaded, and lasting viral hepatitis, including hepatitis B and C.[17] The combination of factors such as a lack of disease awareness, insufficient medical knowledge, frequent illness episodes, and ongoing consent to therapeutic health education has become a modern method for medical professionals to diagnose patients' conditions and assess their health and treatment effectiveness.[18] Authorized by this knowledge, they can well cross the complications of healthcare, work in collaboration with their treatment team, and develop their probabilities of survival. Policies to progress education, increase vaccine accessibility, and support public arrangements should be focused on rural and lower-socioeconomic areas, where the needs are most noteworthy. The state of knowledge, complications, and quality of life for adults in Dera Ghazi Khan with prolonged liver illness caused by hepatitis B, C and to inform the creation of directed public health interventions.[19]

METHODS

This quasi-experimental study was conducted in the Allama Iqbal Teaching Hospital, Dera Ghazi Khan from 1st July 2025 to 30th September 2025 vide letter No. 70144891 dated June 30, 2025. The link between nurse-led preventive education and health improvements among patients with chronic liver disease and all its outcomes was observed. A total of 24 patients diagnosed with hepatitis B, C, and non-alcoholic fatty liver disease and age 28-55 years were included. Both male and female individuals were involved and patients who are diagnosed with chronic liver disease for <3 months and primary source of CLD is hepatitis B, hepatitis C were included. Participants with end-stage liver disease, individuals undergoing treatment for HCC or those who have received treatment within the past six months and cognitive impairments or mental health conditions that affect their ability to understand or engage with the educational content were excluded.

An overall of four tools consisted of the socio-demographic, which includes age, sex, education, level of education, family members, and marital status, and the HCC knowledge calculation scale that measures the level of knowledge regarding the hepatocellular carcinoma, Questionnaire Items (SF-36) measures the quality of life with 8 domains separately, and the Chronic Liver Disease Questionnaire used for the symptoms were used for data collection. Qualified participants were advanced during their routine hospital visits. Before the learning intervention, they accomplished a structured pre-intervention questionnaire that involved informed consent, demographic information (age, gender, marital status, education level, language, and family size), and baseline assessment tools. The data was entered and analyzed through SPSS-23. A combined sample T-test was practical to compare the marks of pre- and post-data of knowledge related to HCC, CLDQ, and of 8 domains of excellence of life, i.e. general health, psychological health and social relations. P-value ≤ 0.05 was statistically significant**.**

RESULTS

There were males with age 36-45 years are more affected by chronic liver disease (Tables 1-2). The Shapiro-Wilk normality test was used, in chronic liver disease of the pre- and post-intervention group was found to be statistically significant, $p<0.05$ (Tables 3)

Table No. 1: Demographic characteristics of chronic liver disease patients (N=24)

Variable	No.	%
Age (years)		
28-35	6	25.0
36-45	10	41.7
46-55	8	33.3
Gender		
Male	18	75.0
Female	6	25.0

Marital status		
Married	19	79.2
Unmarried	3	12.5
Education		
Primary	2	8.3
Matric	3	12.5
Intermediate	7	29.2
Children		
3	8	25.0
5-6	18	75.0

The majority of the patients 21(87.5%), have a Poor knowledge level, 1(4.2%) participants have a fair knowledge level, and 2(8.3%) participants have good knowledge in the pre-intervention group. After the intervention, participants' knowledge levels improved, with 15 (62.5%) having a good knowledge level, 8 (33.3%) having a Fair knowledge level, and only 1 (4.2%) having a poor knowledge level (Table 4). The Shapiro-Wilk normality test was used, hepatocellular carcinoma of pre-intervention was found to be statistically significant, $p<0.05$ (Table 5).

The percentage of nurses led preventive classified as Low severity level dropped significantly from 87.5% to 4.2% with an average increase of +14.72 points in low severity. However, the Moderate severity level of participants was from 8.3-12.5% and increased significantly by +29.33.However, the percentage of patients with high severity rose from 4.2-83.3%. The low gain of +3.60 points recorded by the high severity participants indicates that the patients have a moderate severity level (Table 6).

A Pearson correlation analysis were performed to check the association between SF 36 Items Mean and CLDQ 6 items Mean in which All SF-36 subscales connected meaningfully with all marks of CLDQ subscales ($p< 0.05$) (Table 7).

Table No. 2: Mean of different domains of the SF-36 Item Health Survey pre- and post (N=24)

Scale	Pre-intervention	Post-intervention	Difference
General health	25.17±6.44	78.12±6.17	52.95
Physical functioning	38.54±6.16	77.08±7.64	38.54
Role Functioning/Physical	11.45±16.45	84.37±16.17	72.92
Role Functioning Emotional	11.11±18.82	83.33±19.65	72.22
Social functioning	30.20±11.00	77.08±12.03	46.88
Pain	25.83±14.42	65.00±18.17	39.17
Energy/fatigue	44.37±10.96	66.04±9.88	21.67
Emotional well being	38.50±9.49	75.16±7.91	36.66

Table No. 3: Normality test of CLDQ with pre- and post-intervention group (N=24)

Groups	Shapiro-Wilk		
	Statistic	Df	Sig.
Pre group	.620	24	.000
post group	.477	24	.000

Table No. 4: Mean Score HCC knowledge level of pre and post intervention group (N=24)

HCC knowledge level Categories	Pre-intervention		Post-intervention		Mean difference
Poor knowledge (<50%)	21(87.5%)	25.71±7.62	1(4.2%)	45.00±0.00	19.29
Fair knowledge (51-74%)	1(4.2%)	60.00±0.00	8(33.3%)	64..37±4.95	4.37
Good knowledge (75-100%)	2(8.3%)	75.00±0.00	15(62.5%)	79.33±4.95	4.33

Table No. 5: Normality Test of HCC Knowledge with pre and post Intervention group

Groups	Shapiro-Wilk		
	Statistic	Df	Sig.
Pre group	.783	24	.000
post group	.939	24	.156

Table No. 6: Comparison of chronic liver disease patients with pre- and post-intervention group (N=24)

CLQD Score Categories	Pre-intervention		Post-intervention		Mean difference
Low severity level (29-100)	21(87.5%)	79.28±7.20	1(4.2%)	94.00±0.00	14.72
Moderate severity level (101-170)	2(8.3%)	135.00±41.01	3(12.5%)	164.33±3.21	29.33
High severity level (171-203)	1 (4.24%)	175.00±0.00	20(83.3%)	178.60±3.21	3.60

Table No. 7: Pearson correlation coefficient between CLDQ domain and SF-36 domains (N= 24)

CLDQ 6 items		PF	PH	EP	Energy	EW	SF	GH	Pain
Abdominal	4.46±1.72	.838**	.786**	.776**	.716**	.744**	.700**	.838**	.627**
Fatigue	4.40±1.74	.859**	.842**	.804**	.683**	.796**	.788**	.871**	.648**
Systemic	4.28±1.89	.873**	.837**	.780**	.698**	.812**	.769**	.861**	.652**
Activity	4.63±1.71	.821**	.772**	.749**	.665**	.774**	.696**	.831**	.614**
Emotion	4.61±1.59	.820**	.813**	.762**	.700**	.776**	.745*	.841**	.621**
Worry	4.57±1.75	.801**	.781**	.701**	.629**	.753**	.731**	.823**	.604**

**Relationship is significant at the 0.01 level (2-tailed).

DISCUSSION

This quasi-experimental study aimed to assess the impact of a nurse-led preventive intervention on patients with chronic liver disease (CLD) at Allama Iqbal Teaching Hospital in Dera Ghazi Khan, Pakistan. Focusing on lifestyle, dietary control, drug adherence, and emotional support has been seen to effectively enhance the outcomes of patients in earlier research by preventive interventions. The present study showed demographic analysis proved helpful to establish the effect of patient factors on the outcomes of interventions, 75% were Urdu speakers and other patients could understand simple English making it easy to pass a message and comprehend in the teaching session. The SF-36 scores have been used to verify a significant improvement in the eight dimensions after the preventive intervention, which is an excellent improvement in the quality of life of patients in general. The general difference was the highest with Physical Functioning (72.92%). The next highest differences were realized in Role Functioning (Emotional Problems), General Health, and Social Functioning. These findings are consistent with previous studies[20], which indicated that controlled health preventive education improved the physical and mental health conditions of chronic liver disease patients. Reliability analysis did verify that all the areas had good to excellent internal consistency, which validated the fact that the instrument was successfully measuring patient-reported change.

The HCC Knowledge Assessment Scale demonstrated that participants' knowledge regarding liver disease and cancer prevention was significantly enhanced following the intervention by a nurse ($p<0.05$). The results concur with a study conducted by a researcher who established that education especially tailored by a nurse immensely enhanced disease-specific knowledge and screening behavior in risk patients.

A Pearson correlation test revealed that all of the SF-36 subscales had a significant relationship ($p<0.01$) with the CLDQ domains. The greatest increase was on physical health item of SF-36, then on role functioning due to emotional reasons, general health, social functioning, pain and energy/fatigue.[20] This means that the patients were not only becoming physically better but also emotionally well and capable of handling their illness after receiving education by the nurses. These results are aligned to the current literature, which has revealed the positive relationship between preventive measures and the quality of life of chronic disease patients such as hepatitis, diabetes, and hypertension.[21] The outcome justifies the status of nurses as effective educators who can be placed to deliver disease-specific information in an easily understood and culturally sensitive manner. This same outcome was reported by Yang et al[22], who demonstrated that community-based nursing education contributes immensely to knowledge and disease compliance behaviors.

CONCLUSION

Quality of life, knowledge associated with HCC, and reduction of problems in patients with long-term liver disease are significantly increased with the help of preventive educational interventions conducted by nurses. To improve the management of chronic diseases, especially in a resource strained setting such as in Pakistan, politicians and healthcare providers should consider utilizing nurse led education plans.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Nimra Saleem, Azeem Kaleem
Drafting or Revising Critically:	Nimra Saleem, Madiha Mukhtar
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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