



Effectiveness of nursing care pathway on knowledge and fatigue among patient with cirrhosis of liver admitted in selected hospitals at Erode

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Abstract

Background: Cirrhosis of the liver is a progressive chronic illness that leads to significant morbidity and reduced quality of life. Fatigue is among the most distressing symptoms, while inadequate patient knowledge often hampers effective management. Nursing Care Pathways (NCPs) provide structured, evidence-based interventions for improving patient outcomes.

Aim: To evaluate the effectiveness of a Nursing Care Pathway on knowledge and fatigue among patients with cirrhosis of liver admitted in selected hospitals at Erode.

Methodology: An evaluative research approach with pre-test–post-test design was used. The sample included cirrhotic patients admitted under spinal anesthesia. Tools consisted of (i) Demographic data, (ii) Knowledge assessment questionnaire, and (iii) Modified Fatigue Impact Scale (MFIS). Validity and reliability were established ($r = 0.94$). Ethical approval and informed consent were obtained. Nursing Care Pathway was implemented through structured teaching sessions for the experimental group. Data were analyzed using descriptive and inferential statistics.

Results: Post-test findings revealed significant improvement in knowledge scores and reduction in fatigue scores after the implementation of the Nursing Care Pathway ($p < 0.05$). Knowledge levels improved from poor to good in majority of patients, while fatigue shifted from 'often' to 'sometimes.'

Keywords: Cirrhosis, fatigue, nursing care pathway, knowledge, modified fatigue impact scale

Introduction

The liver is an extraordinary organ, often called the “chemical factory of the body,” owing to its central role in metabolism, detoxification, storage, and synthesis of proteins. It regulates carbohydrate, protein, and fat metabolism, detoxifies harmful substances, and stores vitamins and minerals. However, when the liver is subjected to chronic injury, its regenerative capacity becomes impaired. Continuous damage results in fibrosis, architectural distortion, and nodular regeneration, a condition widely known as cirrhosis of the liver.

Cirrhosis is considered the end stage of chronic liver disease, arising from a variety of etiologies such as chronic alcohol consumption, viral hepatitis (HBV, HCV), autoimmune hepatitis, non-alcoholic fatty liver disease (NAFLD), and metabolic disorders. This disease is irreversible and often progressive, ultimately leading to complications such as portal hypertension, ascites, variceal bleeding, hepatic encephalopathy, spontaneous bacterial peritonitis, hepatorenal syndrome, and hepatocellular carcinoma.

Patients with cirrhosis suffer not only from clinical complications but also from distressing symptoms such as fatigue, anorexia, weight loss, muscle wasting, and psychological disturbances. Among these, fatigue is the most prevalent and debilitating, reducing quality of life and increasing dependency. At the same time, inadequate knowledge of the disease and its self-care measures further worsens prognosis. Lack of awareness about diet, lifestyle,

medication adherence, and early symptom recognition frequently leads to preventable hospitalizations and progression of disease.

In this context, Nursing Care Pathways (NCPs) have emerged as valuable evidence-based clinical tools. An NCP provides structured, multidisciplinary, and patient-centered care guidelines for managing a particular condition. It standardizes nursing interventions, emphasizes patient education, monitors outcomes, and promotes continuity of care. In cirrhosis, where the disease course is complex and unpredictable, an NCP can play a vital role in improving patient knowledge, fatigue management, and overall health outcomes. Cirrhosis is a global health concern, affecting millions worldwide. According to the World Health Organization (WHO, 2022), cirrhosis and other chronic liver diseases together account for 2.1 million deaths annually, making liver disease one of the leading causes of global mortality. Cirrhosis itself contributes to approximately 1 million deaths per year, placing it among the top 15 causes of death worldwide.

In terms of prevalence, the Global Burden of Disease Study (2019) [16] estimated that 112 million people worldwide live with compensated cirrhosis, while millions more remain undiagnosed until the disease advances to a decompensated stage.

In Western countries, alcohol-related liver disease and NAFLD are the major causes.

In Asian countries, viral hepatitis (HBV and HCV) remains a dominant cause, though NAFLD is rising rapidly due to changing lifestyles.

In India, cirrhosis is a significant public health issue. Reports from the Indian Council of Medical Research (ICMR, 2021) reveal that nearly 1 in 5 deaths due to chronic diseases are attributed to liver cirrhosis. Estimates suggest ~10 lakh new cases annually, with mortality rates exceeding 200,000 deaths per year. Cirrhosis ranks among the top 10 leading causes of death in India, affecting individuals in their productive years, thereby causing socioeconomic strain.

Alarming, studies show that nearly 80% of patients present at late stages, when complications have already set in. This late diagnosis is largely due to poor awareness, low health-seeking behaviour, and lack of structured education and preventive programs.

Thus, cirrhosis is not merely a clinical condition but also a socioeconomic and public health challenge that requires urgent attention.

Statement of the Problem

A study to evaluate the “Effectiveness of Nursing Care Pathway on Knowledge and Fatigue Among Patient with Cirrhosis of Liver Admitted in Selected Hospitals at Erode”.

Objective

1. To assess the level of knowledge and fatigue among patient with cirrhosis of liver before and after nursing care pathway.
2. To compare the effectiveness of nursing care pathway on knowledge and fatigue among patient with cirrhosis of liver.
3. To find out the association between the post test scores on knowledge and fatigue among patient with cirrhosis of liver with their demographic variables.

Methodology

In this study, Modified Fatigue impact scale (MFIS), in which Sample size of 30 was selected and grouped into Group-A: Control group (15 no's) and Group-B: Experimental Group (15 no's) using “Purposive Sampling Method”. Pretest was conducted for both groups and Intervention (Nursing Care Pathway) was given to experimental group after pretest and Post test was conducted to control and Experimental group after giving the intervention (nursing care pathway). The Data was analyzed using SPSS Version on Descriptive data including Mean, Standard Deviation, Mean Percentage and Inferential data including Paired and Unpaired “t” test, Chi-Square.

Development of the Tools

The tool which consists of three sections. They are,

Section A: Demographic characteristics: It consists of demographic characteristics of patients under spinal anesthesia, i.e., Age, Gender, Child-Pugh classification, Duration of illness, Associated conditions. Previous H/hospitalization.

Section B: Knowledge assessment questionnaire: The knowledge assessment questionnaire items contained 20 items and the score of each item as (1) for don't know/wrong answer and (2) for correct answer. These items were as follow: assessment of patient's knowledge regarding liver cirrhosis, symptoms, manifestation and its management the cirrhotic patients Scoring procedure: The total score of each

patient was categorized into —Poor knowledge when the patient achieved less than or equal $\leq 50\%$ of the total score and —good knowledge was considered when the patient achieved more than $> 50\%$ of the total score.

Level of knowledge	Actual scores	Percentage
Poor	1-40	$\leq 50\%$
Good	41 - 80	$> 50\%$

Section C: Modified Fatigue impact scale (MFIS) (Fisk *et al.*, 2010) to measure fatigue related liver cirrhosis symptoms. This instrument provides an assessment of the effects of fatigue in terms physical, cognitive, a psychosocial functioning. The full length MFIS consists of 21 items.

Scoring system

The questionnaire contained, items related to the cirrhotic patient's evaluation regarding Modified Fatigue Impact Scale (MFIS). It consisted of 21 items each was five points Liker scale (0 – 4) as (0) for Never, (1) for rarely, (2) for Sometimes, (3) for Often, and (4) for Almost always. The cirrhotic patients fatigue status was evaluated giving a score of 0-84. The total score of each patient was categorized into —Never — when the patient achieved less than 29 of the total score, —Sometimes when the patient achieved (29 - < 57) of the total score, and —Often was considered when the patient achieved 57 – 84 of the total score.

Validity and Reliability

Validity

The content validity of the demographic variables and knowledge assessment questionnaire and Modified Fatigue impact scale (MFIS) were validated in consultation with guide and field of experts. The experts are physician, gastroenterologist, statistician and nurse specialist. The tool was modified according to the suggestions and recommendations of the experts,

Reliability

The reliability of knowledge assessment questionnaire and Modified Fatigue impact scale (MFIS) was tested by implementing the tool on 4 patients, at Government Head Quarters Hospital, Erode, which is other than the sample area. Split Half method (Spearman Brown Formula) was used to test the reliability of the tool. The tool was found to be reliable, ($r_1 = 0.94$).

Ethical Consideration

The study was conducted after getting the approval from the Institutional Human Ethical Committee. Written permission was obtained from the administrative officer and medical officer of the Erode Trust hospital. Pilot study was executed to check the feasibility and time requirement of the study. Confidentiality of the data was ensured throughout the study.

Data Collection Procedure

Data collection is the gathering of information needed to address the research problem. The word “data” means information that is systematically collected in the course of a study.

Talbot (1995) ^[2] refers to data collection as gathering of information from the sampling units. The researcher plan typically specifies procedure for actual collection of data. The researcher must be sure that enough materials available

to complete the study that the participants are informed that the schedule do not conflict.

Permission from the concerned authority

Prior to collection of data, permission was obtained from Managing Director of Erode Trust Hospital, Erode, (Appendix I and II).

Period of data collection

The data was collected from 11- 06-2025 to 10-07-2025. The investigator collected the data from experimental group.

Pre-test

Consent was obtained from the patient relatives; the investigator administered knowledge assessment questionnaire and Modified Fatigue impact scale (MFIS) for screening the patients with cirrhosis of liver to assess the level of knowledge and fatigue Implementation of nursing care pathway Experimental group The researcher demonstrated the contents of the designed protocol of nursing care in the form of small group of patients teaching sessions, three sessions in addition to preliminary session, these sessions were repeated to groups, the duration of each session ranged from 30 - 45 minutes, including 15 minutes for discussion and feedback, each session usually started by a summary of what had been taught in the previous session and the objectives of the new session.

Post test

Post - test was conducted after 8weeks of the intervention by using knowledge assessment questionnaire and Modified Fatigue impact scale (MFIS) was used to evaluate the knowledge and fatigue

Plan for Data Analysis

- Assess the level of knowledge and fatigue among patient with cirrhosis of liver before and after nursing care pathway was analyzed by using frequency and percentage.
- Compare the effectiveness of nursing care pathway on knowledge and fatigue among patient with cirrhosis of liver was analyzed by using mean, standard deviation, mean percentage and paired 't' test
- Find out the association between the post test scores on knowledge and fatigue among patient with cirrhosis of liver with their demographic variables was analyzed by using Chi-square test.

Summary

Pre-experimental design was carried on 30 patients admitted

in Erode Trust Hospital, Erode, by using purposive sampling technique. Knowledge assessment questionnaire and Modified Fatigue impact scale (MFIS) was used to assess the knowledge and fatigue among patients with cirrhosis of liver. The data was collected after obtaining the permission from concerned personnel of the hospital. Analysis was planned to do by using descriptive and inferential statistics and to be presented in the form of tables, graphs and figures.

Data Analysis and Interpretation

Analysis is a "process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested", (Polit and Hungler, 2003).

Analysis enables the researcher to reduce, summarize, organize, evaluate, interpret and communicate numerical information, (Polit and Hungler, 2004) ^[1].

This chapter deals with the analysis and interpretation of data collected from 30 patient with cirrhosis of liver admitted in Erode Trust Hospital, Erode, "to assess the effectiveness of nursing care pathway on knowledge and fatigue among patient with cirrhosis of liver".

The data were coded and analysed as per objectives of the study under the following headings;

Section A: Description of sample characteristics

Section B: Assess the level of knowledge and fatigue among patient with cirrhosis of liver before and after nursing care pathway Frequency and percentage distribution of pre and post test scores on knowledge among patient with cirrhosis of liver Frequency and percentage distribution of pre and post test scores on fatigue among patient with cirrhosis of liver

Section C: Compare the effectiveness of nursing care pathway on knowledge and fatigue among patient with cirrhosis of liver Area wise comparison of mean, SD, and mean percentage of pre and post test scores on knowledge. Area wise comparison of mean, SD, and mean percentage of pre and post test scores on fatigue Paired t test value of Pre and Post test scores on knowledge and fatigue

Section D: Find out the association between the post test scores on knowledge and fatigue among patient with cirrhosis of liver with their demographic variables Association between knowledge post test scores and demographic variables among patient with cirrhosis of liver

Table 4.1: Frequency and percentage distribution of patients with cirrhosis of liver according to their demographic variables (N = 30)

Demographic Variables		Experimental Group	
		Frequency (N)	Percentage (%)
1. Age (in years)	20–30 years	18	60
	31–40 years	6	20
	41–50 years	6	20
2. Gender	Male	22	73
	Female	8	27
3. Child–Pugh Classification	Type A	20	67
	Type B	10	33
	Type C	0	0
4. Duration of Illness	< 1 year	5	17
	1–3 years	4	13
	3–5 years	16	53

	> 5 years	5	17
5. Associated Condition	Yes	25	83
	No	5	17
6. Previous History of Hospitalization	Yes	23	77
	No	7	23

Association between fatigue post test scores and demographic variables among patient with cirrhosis of liver

Section A: Description of sample characteristics of patients with cirrhosis of liver.

Frequency and percentage distribution of the demographic variables such as Age in years, Gender, Child-Pugh classification, Duration of illness, Associated condition and Previous H/o hospitalization

Distribution of samples according to their age group shows that most percentage (60%) of patients was in the age group of 21-30 years. However similar percentage (20% and 20%) of patients was in the age group of 31-40 years and 41-50 years respectively. (fig 4.1)

Distribution of samples according to their gender shows that, most (73%) of patients were males and only 27% patients were females. It seems that males are affected more than female. (fig 4.2)

Distribution of samples according to their Child-Pugh classification shows that, most (67%) of patients was type A and only 33% patients with cirrhosis of liver had type B. (fig 4.3)

According to the duration of illness among patients with cirrhosis of liver shows that majority (53%) of patients were 3 – 5 years duration of illness and similar percentage (17% and 17%) were belonged to < 1 year and > 5 years respectively. However, only 13% of them were 1 – 3 years duration of illness. (fig 4.4)

With regard to associated condition shows that, majority (83%) of patients had associated condition and however 17% of patients no associated condition. (fig 4.5)

With regard to previous H/o hospitalization shows, majority (77%) of patients had previous H/o hospitalization and however 23% of patients no previous H/o hospitalization. (fig 4.6)

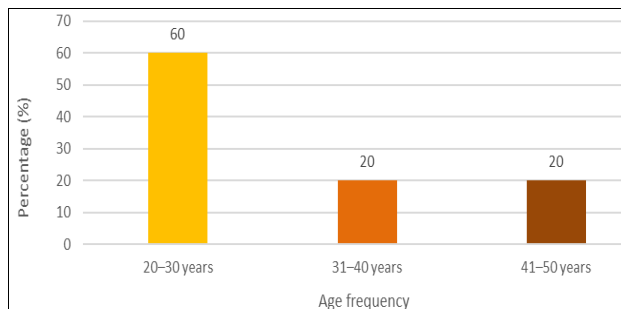


Figure 4.1 – Percentage distribution of samples according to age group

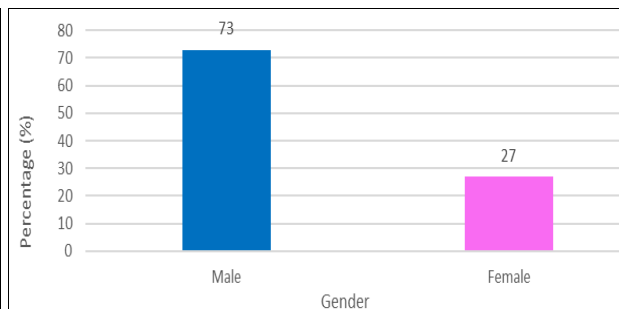


Figure 4.2 – Percentage distribution of samples according to gender

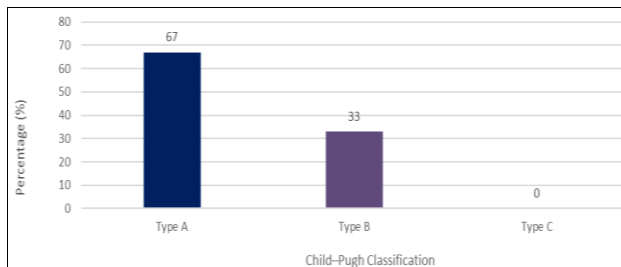


Figure 4.3 – Percentage distribution of samples according to Child-Pugh classification

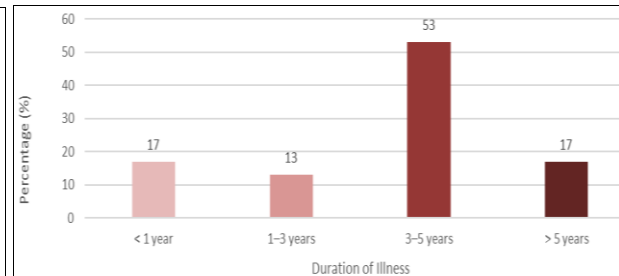


Figure 4.4 – Percentage distribution of samples according to duration of illness

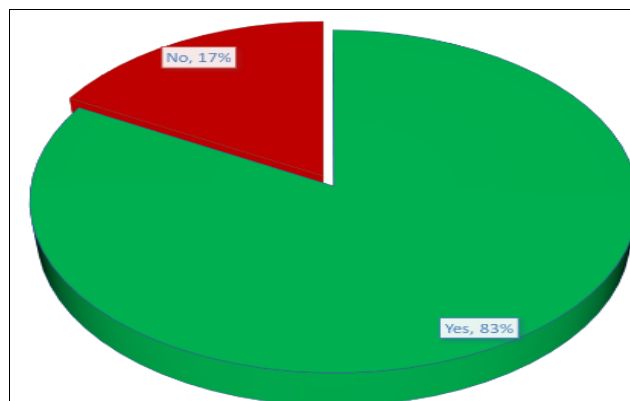


FIGURE 4.5 – PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO ASSOCIATED CONDITION

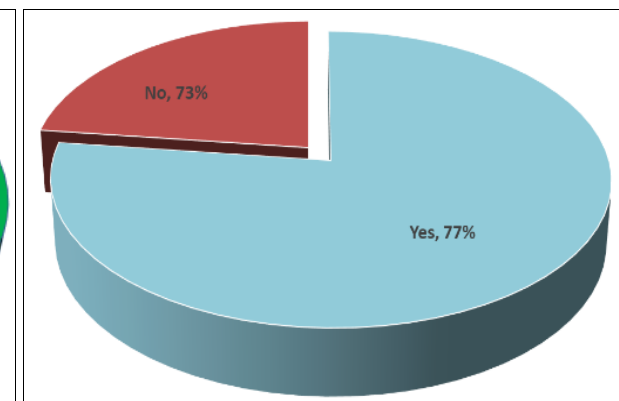


Figure 4.6 – Percentage distribution of samples according to previous hospitalization

Section B: Assess the Level of Knowledge and Fatigue Among Patient with Cirrhosis of Liver Before and After Nursing Care Pathway

Table 4.2: Frequency and percentage distribution of pre and post test scores on knowledge among patient with cirrhosis of liver (N1= 30)

Level of Knowledge	Pre-test		Post-test	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
Poor	27	90	0	0
Good	3	10	30	100

In frequency and percentage distribution of knowledge of cirrhosis of liver reveals that in pretest 90% of them had poor knowledge and 10% of them had good knowledge whereas in post-test all (100%) of them had good knowledge. Hence this shows that nursing care pathway was highly effective in improving the knowledge among patient with cirrhosis of liver.

Table 4.4: Area wise comparison of mean, SD, and mean percentage of pre and post test scores on knowledge and fatigue.

Knowledge and fatigue of cirrhosis of liver	Maximum Score	Pre-test Mean $\pm$ SD	Mean (%)	Post-test Mean $\pm$ SD	Mean (%)	Mean Difference
Introduction	2	0.88 $\pm$ 1.50	44	1.70 $\pm$ 0.31	85	41
Causes	5	2.30 $\pm$ 1.20	46	4.24 $\pm$ 0.75	85	39
Symptoms	7	3.33 $\pm$ 0.81	47	5.96 $\pm$ 0.61	85	38
Prevention & Management	6	2.00 $\pm$ 0.01	33	5.41 $\pm$ 0.81	90	57
Total Knowledge	21	9.01 $\pm$ 0.97	43	19.53 $\pm$ 0.28	93	50
Fatigue (lower = better)	84	71.01 $\pm$ 2.01	85	24.42 $\pm$ 1.08	29	56

Comparison of Mean, SD, and mean percentage of pre and post test scores depicts that, In, pretest the highest mean score was (3.33 $\pm$ 0.81) which is 47%, whereas in post-test the mean score was (5.96 $\pm$ 0.61) which is 85% in the area of symptoms of cirrhosis of liver. It reveals the difference of 38%.

The Lowest mean score in pretest was (0.88 $\pm$ 1.5) which is 44%, whereas in post-test the mean score was (1.7 $\pm$ 0.31) which is 85% in the area of introduction. It reveals the difference of 41%.

Table 4.3: Frequency and percentage distribution of pre and post test scores on fatigue among patient with cirrhosis of live (N= 15)

Level of fatigue	Experimental group			
	Pre-test		Post test	
	Frequency	Percentage	Frequency	Percentage
Never	0	0	28	93
Sometimes	5	17	2	7
Often	25	83	0	0

In frequency and percentage distribution of fatigue of cirrhosis of liver reveals that in pretest most (83%) of them often had fatigue and 17% of them sometimes had fatigue whereas in post-test majority (93%) of them never had fatigue and 13% of them sometimes had fatigue. Hence this shows that nursing care pathway was highly effective in reducing the fatigue among patient with cirrhosis of liver.

Section C: Compare the Effectiveness of Nursing Care Pathway on Knowledge and Fatigue Among Patient with Cirrhosis of Liver

Similarly, the knowledge overall in pretest the mean score was (9.01 $\pm$ 0.97) which is 43%, whereas in post-test the mean score was (19.53 $\pm$ 0.28) which is 93%. It reveals the difference of 50%.

Similarly, the fatigue overall in pretest the mean score was (71.01 $\pm$ 2.01) which is 85%, whereas in post-test the mean score was (24.42 $\pm$ 1.08) which is 29%. It reveals the difference of 56%. It seems that that nursing care pathway was highly effective in improving the knowledge and reducing the fatigue among patient with cirrhosis of liver.

Table 4.5: Items wise analysis of pre and post test score of knowledge among patient with cirrhosis of liver.

S. No.	Knowledge Assessment Question	Pre-test N (%)	Post-test N (%)
1	The liver is present in right top of abdomen in human body	8 (27%)	24 (80%)
2	Functions of the liver include producing bile	6 (20%)	27 (90%)
3	Cirrhosis converts healthy liver cells into scar tissue	5 (17%)	25 (83%)
4	Alcohol addiction increases cirrhosis	5 (17%)	24 (80%)
5	Viral infections (A, B, C, D) are causes of cirrhosis	4 (13%)	26 (87%)
6	Autoimmune hepatitis, obesity, overweight cause cirrhosis	4 (13%)	26 (87%)
7	Anorexia, weight loss, fatigue are common symptoms	6 (20%)	25 (83%)
8	Abdominal pain, swelling, jaundice are symptoms	5 (17%)	23 (77%)
9	Nausea, vomiting, dark urine are symptoms	5 (17%)	26 (87%)
10	Portal hypertension is a complication of cirrhosis	5 (17%)	27 (90%)
11	Varicose veins in esophagus/stomach are complications	5 (17%)	26 (87%)
12	Splenomegaly and ascites are complications	4 (13%)	27 (90%)
13	Disorientation due to toxins affecting the brain	7 (23%)	28 (93%)
14	Ultrasound confirms cirrhosis	6 (20%)	25 (83%)
15	Cirrhosis patients should undergo ultrasound every 6 months	8 (27%)	26 (87%)
16	Endoscopy detects varicose veins in cirrhosis	4 (13%)	25 (83%)
17	Preventive behaviour: avoid alcohol	5 (17%)	25 (83%)
18	Prevention: avoid hepatitis virus infection	6 (20%)	26 (87%)
19	Diet: low salt, more vegetables, less fat, moderate protein	6 (20%)	28 (93%)
20	Laxatives detoxify intestine in cirrhosis	5 (17%)	28 (93%)

Data presented that during pre-intervention by the whole of 30 participants in experimental group marked the knowledge scores in pretest was ranges from 13 % to 27% 28 whereas

in post intervention it was ranges from 80% to 93%. It seems that that nursing care pathway was highly effective in improving the knowledge among patient with cirrhosis of liver.

Table 4.6: Items wise analysis of pre and post test scores of fatigues among patient with cirrhosis of liver

S. No.	Modified fatigue impact scale MFIS Item	Pre-test N (%)	Post-test N (%)
1	I have been less alert	6 (20%)	26 (87%)
2	I have had difficulty paying attention for long periods	5 (17%)	26 (87%)
3	I have been unable to think clearly	5 (17%)	25 (83%)
4	I have been clumsy and uncoordinated	5 (17%)	26 (87%)
5	I have been forgetful	6 (20%)	28 (93%)
6	I have had to pace myself in physical activities	7 (23%)	28 (93%)
7	I have been less motivated to do anything that requires physical effort	6 (20%)	27 (90%)
8	I have been less motivated to participate in social activities	5 (17%)	25 (83%)
9	I have been limited in my ability to do things away from home	6 (20%)	26 (87%)
10	I have trouble maintaining physical effort for long periods	7 (23%)	27 (90%)
11	I have had difficulty making decisions	5 (17%)	25 (83%)
12	I have been less motivated to do anything that requires thinking	5 (17%)	27 (90%)
13	My muscles have felt weak	6 (20%)	26 (87%)
14	I have been physically uncomfortable	5 (17%)	25 (83%)
15	I have had trouble finishing tasks that require thinking	7 (23%)	26 (87%)
16	I have had difficulty organizing my thoughts at home/work	4 (13%)	27 (90%)
17	I have been less able to complete tasks requiring physical effort	5 (17%)	27 (90%)
18	My thinking has been slowed down	7 (23%)	25 (83%)
19	I have had trouble concentrating	5 (17%)	25 (83%)
20	I have limited my physical activities	5 (17%)	26 (87%)
21	I have needed to rest more often or for longer periods	4 (13%)	27 (90%)

Data presented that during pre-intervention by the whole of 30 participants in experimental group marked the knowledge scores in pretest was ranges from 13 % to 23% whereas in post intervention it was ranges from 80% to 90%. It seems that that nursing care pathway was highly effective in reducing the fatigue among patient with cirrhosis of liver.

Table 4.7: Paired t test value of Pre and Post-test scores on Clinical parameters in control group (N1=15)

S. No.	Domain	Paired 't' Value	Table Value (df=29)	Level of Significance
1	Introduction	18.08	2.15	P < 0.05 Significant
2	Causes	19.33	2.15	P < 0.05 Significant
3	Symptoms	17.01	2.15	P < 0.05 Significant
4	Prevention & Management	18.62	2.15	P < 0.05 Significant
	Total Knowledge	19.08	2.15	P < 0.05 Significant
	Fatigue	16.99	2.15	P < 0.05 Significant

Df= 14 Table value = 2.15 P<0.05 significant

Paired 't' test was calculated to analyse the effectiveness between pre and post test scores of different aspects on level of knowledge and fatigue of cirrhosis of liver. The paired 't' test score for overall knowledge was 19.08 and fatigue was 16.99 when compared to table value (2.15) it was high. It seems that that nursing care pathway was highly effective in

improving the knowledge and reducing the fatigue among patient with cirrhosis of liver. (Table 4.6)

Section D: Find Out the Association Between the Post Test Scores on Knowledge and Fatigue Among Patient with Cirrhosis of Liver with Their Demographic Variables

Table 4.8: Association between knowledge post-test scores and demographic variables among patient with cirrhosis of liver

S. No.	Demographic Variables	df	χ^2 Value	Table Value (p<0.05)	Level of Significance
1	Age	1	1.32	3.84	p > 0.05 Not Significant
2	Gender	1	0.74	3.84	p > 0.05 Not Significant
3	Child-Pugh Classification	1	1.35	3.84	p > 0.05 Not Significant
4	Duration of Illness	1	0.77	3.84	p > 0.05 Not Significant
5	Associated Condition	1	1.82	3.84	p > 0.05 Not Significant
6	Previous H/o Hospitalization	1	0.88	3.84	p > 0.05 Not Significant

No significant at P>0.05 Chi-square value was calculated to find out the association between the post test score of knowledge with their demographic variables.

It reveals that there is no significant association between post test scores of patients with cirrhosis of liver when compared to age, gender, Child-Pugh classification, duration of illness,

associated disease condition and previous H/o hospitalization (P >0.05). Hence the difference observed in the mean score value was only by chance and not true difference. 31

It seems that nursing care pathway was effective on knowledge and fatigue to all patients with cirrhosis of liver irrespective of their demographic variables.

Table 4.9: Association between fatigue post-test scores and demographic variables among patient with cirrhosis of liver

S. No.	Demographic Variables	df	χ^2 Value	Table Value ($p < 0.05$)	Level of Significance
1	Age	1	0.12	3.84	$p > 0.05$ Not Significant
2	Gender	1	1.02	3.84	$p > 0.05$ Not Significant
3	Child-Pugh Classification	1	0.71	3.84	$p > 0.05$ Not Significant
4	Duration of Illness	1	0.18	3.84	$p > 0.05$ Not Significant
5	Associated Condition	1	0.21	3.84	$p > 0.05$ Not Significant
6	Previous H/o Hospitalization	1	1.05	3.84	$p > 0.05$ Not Significant

No significant at $P > 0.05$

Chi-square value was calculated to find out the association between the post test scores of fatigues with their demographic variables.

It reveals that there is no significant association between post test scores of patients with cirrhosis of liver when compared to age, gender, Child-Pugh classification, duration of illness, associated disease condition and previous H/o hospitalization ($P > 0.05$). Hence the difference observed in the mean score value was only by chance and not true difference. It seems that nursing care pathway was effective on knowledge and fatigue to all patients with cirrhosis of liver irrespective of their demographic variables.

Summary

This chapter deals with analysis and interpretation of data collected to evaluate the effectiveness of nursing care pathway was effective on knowledge and fatigue to all patients with cirrhosis of liver. Findings revealed that knowledge overall in pretest the mean score was (9.01 ± 0.97) which is 43%, whereas in post-test the mean score was (19.53 ± 0.28) which is 93%. It reveals the difference of 50%. In fatigue overall in pretest the mean score was (71.01 ± 2.01) which is 85%, whereas in post-test the mean score was (24.42 ± 1.08) which is 29%. The paired 't' test was ($t = 19.08$ and $t = 16.99$) showed, there was a significant effectiveness of nursing care pathway was effective on knowledge and fatigue to all patients with cirrhosis of liver. Chi square showed there is no significant association between post test scores and demographic variables like age, gender, Child-Pugh classification, duration of illness, associated disease condition and previous H/o hospitalization.

Discussion

The present study was conducted to evaluate the effectiveness of nursing care pathway on knowledge and fatigue among patients with cirrhosis of liver admitted in Erode Trust Hospital, Erode. A total of 30 participants were recruited for the study based on inclusion criteria, and data were collected using a structured questionnaire and a Modified Fatigue Impact Scale (MFIS). The results were analysed and interpreted under four sections: description of sample characteristics, assessment of pre- and post-test knowledge and fatigue levels, comparison of effectiveness of nursing care pathway, and association of post-test scores with demographic variables. This discussion integrates the findings of the present study with existing evidence and explores their implications for nursing practice.

Sample Characteristics

Analysis of demographic data revealed that the majority (60%) of patients were in the age group of 20–30 years, followed by 20% each in the age groups of 31–40 years and

41–50 years. This indicates that cirrhosis of liver is affecting younger adults, possibly due to lifestyle factors such as alcohol consumption, viral hepatitis, and non-alcoholic fatty liver disease. Several studies have reported that the onset of cirrhosis is occurring at an earlier age, particularly in regions with higher alcohol consumption and prevalence of hepatitis B and C infections. This highlights the need for early screening and education to prevent progression of chronic liver disease in this younger population. The gender distribution showed that males constituted 73% of the sample, suggesting a higher prevalence of cirrhosis among males. This finding is supported by previous studies which reported that men are more likely to develop cirrhosis due to higher rates of alcohol consumption and exposure to occupational and lifestyle risk factors. The predominance of male participants also underscores the importance of gender-specific health education and counseling to promote behavioural changes. In terms of Child–Pugh classification, 67% of patients were classified as type A (compensated cirrhosis) and 33% as type B (moderately decompensated cirrhosis). None of the patients were in Child–Pugh class C, which indicates that most patients in this study were in the earlier stages of disease where interventions can be more effective. This is a favorable finding because early intervention with nursing care pathways has the potential to improve health outcomes, delay disease progression, and reduce complications. More than half (53%) of the participants reported a duration of illness between 3–5 years, indicating that cirrhosis is often a chronic condition that patients live with for several years before seeking structured intervention. In addition, 83% of the participants reported associated conditions (e.g., diabetes, hypertension, ascites), which highlights the complexity of managing cirrhosis and the need for a comprehensive multidisciplinary approach. Furthermore, 77% had a previous history of hospitalization, suggesting frequent disease exacerbations and the need for better continuity of care post-discharge.

Effectiveness of Nursing Care Pathway on Knowledge

The study demonstrated a significant improvement in knowledge following implementation of the nursing care pathway. Pre-test results revealed that 90% of participants had poor knowledge, while only 10% had good knowledge. After the intervention, 100% of participants achieved good knowledge scores. This finding clearly demonstrates the effectiveness of structured nursing care pathways in improving patients' understanding of their condition. Area-wise comparison of knowledge scores indicated that the highest improvement was observed in prevention and management of cirrhosis (from 33% to 90%), followed by symptoms and causes. This suggests that patients benefited the most from information related to self-care, dietary modifications, and lifestyle adjustments, which are crucial for long-term management of cirrhosis. Similar findings

were reported by previous researchers, who concluded that structured teaching programs significantly enhanced patients' knowledge and compliance with treatment regimens.

Improved knowledge is likely to empower patients to participate in their care actively, adhere to medication schedules, follow dietary recommendations, and monitor for complications. From a nursing perspective, this outcome supports the use of standardized care pathways as a cost-effective, evidence-based intervention for patient education in chronic liver disease.

Effectiveness of Nursing Care Pathway on Fatigue

Fatigue is a common and distressing symptom among patients with cirrhosis, often impairing their quality of life and daily functioning. In the present study, 83% of participants reported frequent fatigue during the pre-test, while 17% reported occasional fatigue. Following the nursing care pathway intervention, 93% reported no fatigue and only 7% reported occasional fatigue.

The reduction in fatigue levels can be attributed to the comprehensive care provided through the pathway, which likely included dietary advice (adequate calories, moderate protein), education on activity pacing, management of sleep hygiene, and emotional support. Evidence suggests that patient education, along with physical activity planning and symptom management, plays a significant role in reducing fatigue and improving overall well-being.

Statistical analysis using paired t-test confirmed that the observed improvement in knowledge ($t = 19.08$) and reduction in fatigue ($t = 16.99$) was statistically significant ($p < 0.05$). These findings are consistent with prior studies that have reported significant improvements in symptom management and patient outcomes following structured nursing interventions.

Association Between Demographic Variables and Post-Test Scores

Chi-square analysis revealed no significant association between post-test knowledge and fatigue scores with demographic variables such as age, gender, Child-Pugh classification, duration of illness associated condition, and previous hospitalization ($p > 0.05$). This suggests that the nursing care pathway was equally effective across all demographic groups and clinical subcategories. This finding is important from a public health perspective, as it implies that structured nursing interventions can be universally applied to diverse patient populations, regardless of their age, gender, or disease severity. This supports the idea that nursing care pathways can be incorporated as a standard practice in hospitals to ensure consistent and equitable care delivery.

Nursing Implications

The findings of this study have several implications for nursing practice, education, and research. Nurses play a critical role in educating patients, coordinating care, and monitoring clinical outcomes in chronic liver disease management. Implementing nursing care pathways can enhance efficiency, reduce variability in care, and improve patient outcomes.

For nursing education, these results highlight the importance of including evidence-based patient education strategies and care pathway development in nursing curricula. For nursing

administration, hospital policies can be developed to integrate nursing care pathways as part of quality improvement programs to standardize care for cirrhosis patients.

Limitations and Recommendations

While the study showed significant improvements, the sample size was relatively small ($N=30$), and the study was conducted in a single hospital, which may limit generalizability. Future studies with larger sample sizes and multi-centre participation are recommended. Long-term follow-up studies could assess whether improvements in knowledge and fatigue translate into better clinical outcomes, such as reduced readmissions, fewer complications, and improved survival rates.

Additionally, the nursing care pathway could be enhanced by incorporating digital tools, such as mobile applications for patient education and follow-up reminders, which could further strengthen adherence and self-management.

Conclusion

In summary, the present study demonstrated that the nursing care pathway was highly effective in improving knowledge and reducing fatigue among patients with cirrhosis of liver. The improvement was statistically significant and independent of demographic variables, suggesting that this approach is universally beneficial. Implementation of nursing care pathways in clinical practice can empower patients, improve self-care, reduce symptom burden, and enhance quality of life. These findings contribute to the growing evidence base supporting structured, evidence-based nursing interventions in the management of chronic liver disease.

Summary

Pre-experimental design was carried on 30 patients admitted in Erode Trust Hospital, Erode, by using purposive sampling technique. Knowledge assessment questionnaire and Modified Fatigue impact scale (MFIS) was used to assess the knowledge and fatigue among patients with cirrhosis of liver. The data was collected after obtaining the permission from concerned personnel of the hospital. Analysis was planned to do by using descriptive and inferential statistics and to be presented in the form of tables, graphs and figures.

Cirrhosis of the liver is a chronic, progressive illness associated with severe fatigue and poor knowledge about disease management.

A structured Nursing Care Pathway was designed, validated, and implemented among hospitalized cirrhotic patients. Tools used: Demographic data, Knowledge questionnaire (20 items), and Modified Fatigue Impact Scale (21 items). Validity was established by expert consultation; reliability ($r = 0.94$) confirmed by pilot testing. Nursing intervention consisted of structured teaching sessions, each lasting 30–45 minutes. Findings showed significant improvement in knowledge and reduction in fatigue after 8 weeks of intervention.

Conclusion

The study concluded that the Nursing Care Pathway is highly effective in improving knowledge and reducing fatigue among cirrhotic patients. It reinforces the importance of structured nursing protocols in chronic illness

care. Nurses play a vital role in patient education, symptom management, and psychosocial support, thereby enhancing the quality of life of patients with liver cirrhosis.

The present study was undertaken to evaluate the effectiveness of a Nursing Care Pathway (NCP) on knowledge and fatigue among patients with cirrhosis of liver admitted in selected hospitals at Erode.

Cirrhosis is a debilitating chronic condition, and inadequate knowledge coupled with severe fatigue negatively influences patients' quality of life and self-management. The findings of this study revealed that structured, evidence-based nursing interventions such as a Nursing Care Pathway can significantly improve patients' knowledge regarding their illness and management strategies, while also reducing fatigue levels.

The pre-test results indicated that most patients had poor knowledge and reported higher levels of fatigue. After the implementation of the Nursing Care Pathway, post-test results demonstrated a statistically significant improvement in knowledge scores and a noticeable reduction in fatigue levels. This emphasizes the crucial role of nurses in providing structured patient education, counseling, and supportive interventions.

Thus, the Nursing Care Pathway can be considered an effective, feasible, and replicable nursing strategy for improving health outcomes in cirrhotic patients.

Implications of The Study

1. Implications for Nursing Practice

Nurses are in a unique position to educate patients and their families about cirrhosis, its symptoms, complications, and lifestyle modifications.

Incorporating Nursing Care Pathways into routine hospital care can help standardize patient education and management, ensuring continuity and quality of care.

Nurses can use the knowledge assessment questionnaire and MFIS as bedside tools to periodically evaluate patients' awareness and fatigue levels.

Ongoing patient education sessions can improve compliance with treatment regimens and empower patients for better self-care.

2. Implications for Nursing Education

Nursing curricula should include evidence-based care pathways as part of clinical training, so that future nurses are well-equipped to deliver structured interventions.

Simulation-based teaching modules can prepare students to conduct educational sessions for patients with chronic illnesses.

Nursing students should be encouraged to participate in patient-centered health education programs to develop teaching and counseling skills.

3. Implications for Nursing Administration

Nurse administrators can develop and implement protocols and guidelines based on the Nursing Care Pathway for cirrhosis management.

Regular in-service education programs should be conducted to train staff nurses in delivering structured patient education.

Administrative support is vital for resource allocation, scheduling patient education sessions, and integrating standardized pathways into hospital policy.

By adopting care pathways, administrators can ensure quality assurance, continuity of care, and cost-effective patient management.

4. Implications for Nursing Research

This study can serve as a baseline for further research on evaluating different aspects of cirrhosis care such as dietary management, medication adherence, and psychosocial support.

Replication of this study with larger samples, different settings, or control groups can further validate the effectiveness of Nursing Care Pathways.

Future studies may focus on developing and testing disease-specific care pathways for other chronic illnesses such as renal failure, COPD, or cancer-related fatigue.

Nursing research should also explore long-term outcomes such as reduction in hospital readmissions, improved quality of life, and cost-effectiveness of care pathways.

Recommendations

Nursing Care Pathways should be adopted as part of routine management of cirrhotic patients.

Larger-scale studies with control groups are recommended.

Continuous nursing education and patient counseling programs should be encouraged.

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