

RESEARCH ARTICLE

Analysis of hope level and its influencing factors in patients with decompensated cirrhosis

Yuanyuan Zhang¹  | Ling Xie² | Fen Li³ | Chunyan Huo³ | Yanling Miao³ | Lining Wang¹ | Caiyan Ding⁴

¹School of Medical and Health Engineering, Changzhou University, Changzhou, China

²Nanjing Drum Tower Hospital, The Affiliated Hospital of Nanjing University Medical School, Nanjing, China

³Department of Gastroenterology, The Affiliated Changzhou No.2 People's Hospital of Nanjing Medical University, Changzhou, China

⁴Nursing Teaching and Research Department, The Affiliated Changzhou No.2 People's Hospital of Nanjing Medical University, Changzhou, China

Correspondence

Caiyan Ding, Nursing Teaching and Research Department, The Affiliated Changzhou No.2 People's Hospital of Nanjing Medical University, 29 Xinglong Lane, Tianning District, Changzhou 213000, Jiangsu Province, China.
Email: dingcaiyanczey@163.com

Funding information

Great Subject of Changzhou Commission of Health, Grant/Award Number: ZD201915

Abstract

Aim: The aim of this study was to examine hope level and its influencing factors in patients with decompensated liver cirrhosis.

Design: A prospective observational study.

Methods: We selected 93 patients with decompensated liver cirrhosis from a Chinese university hospital based on the inclusion and exclusion criteria. A general information questionnaire and Herth Hope Index were used, and multiple linear regression identified factors associated with the patients' hope level.

Results: The participants' average hope level was 32.01 ± 6.14 (moderate). The hope score's highest and lowest dimensions were "interconnectedness" (11.29 ± 2.17) and "temporality and future" (10.12 ± 2.28), respectively. Multiple linear regression showed that education level and monthly per capita income were independent influencing factors ($p < .05$). These variables explained 38.3% of the variation in hope.

Conclusion: The participants' hope level was not optimal. Thus, medical staff should pay special attention to patients with low education level and poor economic status, and guide them to adopt a positive attitude.

KEYWORDS

decompensated liver cirrhosis, hope level, influencing factors

1 | INTRODUCTION

Liver cirrhosis is a pathological stage characterized by diffuse fibrosis, pseudolobule formation, and intrahepatic and extrahepatic vascular proliferation. There are no obvious clinical symptoms during the compensatory period. However, the decompensated period is characterized by portal hypertension and severe liver dysfunction, and patients often die of multiple organ failure due to ascites, gastrointestinal bleeding, sepsis, hepatic encephalopathy, hepatorenal syndrome and canceration (Smith et al., 2019). According to

the estimated global liver disease-related mortality in 2015, liver cirrhosis and liver cancer cause approximately 1.16 million and 780,000 deaths every year, ranking 11th and 16th worldwide, respectively; together, they account for 3.5% of total global deaths (Asrani et al., 2019). Because of the long course of disease, poor prognosis, multiple complications and high cost of treatment, patients with liver cirrhosis experience serious physical and mental problems; are prone to anxiety, depression and other negative emotions; and usually adopt negative coping mechanisms to deal with stress events. Such negative psychology may be a huge burden on

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2022 The Authors. *Nursing Open* published by John Wiley & Sons Ltd.

patients and their families, seriously affecting the patients' quality of life (QoL) (Baczewska et al., 2019; Buganza-Torio et al., 2019; Jepsen & Younossi, 2021).

In recent years, with the rise in the importance and development of positive psychology, increasing attention has been paid to its role for patients with chronic diseases. Positive psychology refers to self-confidence to achieve a goal and is an important quality that affects the physical and mental health of individuals. Herein, hope provides a powerful psychological capital and advantage, and it helps patients with chronic diseases cope with their illness (Herth, 1991). Previous studies have shown that high levels of hope can alleviate the negative psychological state of patients and improve their QoL (Alshraifeen et al., 2020; Sun et al., 2014). The extant research on hope level mainly focuses on malignant tumours and chronic diseases, such as chronic kidney disease and acute myocardial infarction (Berendes et al., 2010; Goktas et al., 2019). Few have investigated the level of hope in patients with decompensated cirrhosis.

This study thus focused on patients with decompensated cirrhosis to examine their level of hope and its possible influencing factors. This will provide a reference for clinical nursing staff to implement targeted psychological intervention and, ultimately, improve the patients' QoL.

2 | THE STUDY

2.1 | Design

This was a prospective observational study.

2.2 | Method

2.2.1 | Subjects

This study used convenience sampling to prospectively enrol inpatients with decompensated liver cirrhosis from the Department of Gastroenterology of a Grade-A Tertiary Hospital in Jiangsu Province, China. The inclusion criteria included patients who (1) have portal hypertension complications and/or liver dysfunction due to liver cirrhosis (European Association for the Study of the Liver, 2018), (2) can communicate freely, (3) are aware of the condition of the disease and (4) have given informed consent to participate in the study. The exclusion criteria were patients with (1) heart, brain and kidney diseases unrelated to decompensated cirrhosis; (2) mental, speech or cognitive impairment; and (3) malignant tumours. According to the requirements of the multivariate linear regression analysis model, the sample size should be 5 to 10 times the number of independent variables. Therefore, considering an invalid questionnaire rate of 10%, it was estimated that the sample will include at least 60 cases.

2.2.2 | General information questionnaire

Based on a literature review and expert consultation, we designed a questionnaire to record demographic and disease-related information about patients with decompensated cirrhosis. This included data on gender, age, marital status, educational level, occupation, complications, duration of illness, number of hospitalizations, history of drinking and per capita monthly income of family.

The patients' per capita monthly family income was classified according to the average income level of families in Changzhou City (Jiangsu Province) as follows: less than 1,000 RMB (equivalent to UK£120.025); 1,000 to 3,000 RMB (UK£360.0144); 3,000 to 5,000 RMB (UK£600.024); and more than 5,000 RMB.

2.2.3 | Herth Hope Index

This study used the scale of the Chinese version of the Herth Hope Index (HHI), which was compiled in 1991 by American scholar Herth (1992) and introduced into China by Chinese Professor Zhao Haiping (Zhao & Wang, 2000). The HHI scale comprises 12 items in 3 dimensions: (1) temporality and future, (2) positive readiness and expectancy and (3) interconnectedness. Each item is scored at four levels, with points 1–4 respectively representing strongly disagree, disagree, agree and strongly agree; the total score thus ranges from 12 to 48. The patients were divided into three hope levels based on their scores: those who scored 12–23, 24–35 or 36–48 points, represented the low, medium or high level of hope, respectively. The higher the score of the scale, the higher the level of hope. This scale is widely used in China and its Cronbach's α coefficient was 0.85.

2.2.4 | Data collection

The researchers explained the purpose and content of the study to the participants in detail. After obtaining informed consent, the patients filled in the questionnaires. For participants who were illiterate or unable to fill the questionnaires, the researchers read the questions aloud to them, asked for their answers and filled it accordingly. Questionnaires with more than two-thirds of the total items missing or with obvious logical errors were eliminated. A total of 95 questionnaires were distributed, and 100% of the participants consented to participate and filled in the questionnaires. Of the 95, 2 were invalid, resulting in 93 valid questionnaires, with an effective rate of 97.9%. All data were collected between November 2020 and May 2021.

2.3 | Analysis

All statistical analyses were performed using PASW Statistics for Windows, version 22 (SPSS Inc.). Continuous data were expressed as the mean \pm standard deviation, because they were normally

distributed, and categorical data were presented as frequencies or percentages. Independent sample t-test or one-way analysis of variance was used to compare continuous variables. Both univariate and multiple linear regression analyses were performed to identify independent predictors for hope level. Only variables that were marginally significant ($p < .1$) in the univariate analysis were included as independent variables in the multiple linear regression analysis. All analyses were two-sided, and p -values $< .05$ were considered statistically significant.

2.4 | Ethics

This study was approved by the institutional review board and ethics committee of The Changzhou No. 2 People's Hospital (approval number: [2019]KY067-01), which is in accordance with the 1964 Declaration of Helsinki, as revised in 2013 (World Medical Association, 2013). All selected subjects were informed of the purpose of the study, that they could withdraw from the study at any time, and that their personal information would not be disclosed.

3 | RESULTS

3.1 | Baseline characteristics

Table 1 shows the general demographic and disease-related information of the patients: 64.50% of patients in this study were male, 78.50% were married, the average age was 67.34 ± 12.88 years, 5.4% had college degrees, 92.5% of the patients' families had a per capita monthly income of less than 5,000 RMB, 55.9% had a history of liver cirrhosis for more than 5 years, and 89.2% were hospitalized more than once. The most common complication in this study was upper gastrointestinal bleeding (83.90%).

3.2 | Score of patients' hope level

The overall hope score of the 93 participating patients with decompensated cirrhosis was 32.01 ± 6.14 ; 21.5% patients had high level of hope; 71.0% had medium level of hope, and 7.5% had low level of hope. In addition, considering the score of each dimension of HHI, the score for "temporality and future" was the lowest (10.12 ± 2.28), while that for "interconnectedness" was the highest (11.29 ± 2.17).

3.3 | Univariate analysis: factors influencing hope level

We used the hope level score of patients with decompensated cirrhosis as the dependent variable and the general information of

TABLE 1 Baseline characteristics of the study patients ($N = 93$)

Characteristics	Study patients (N/%)
Gender	
Male	60 (64.5)
Female	33 (35.5)
Age (years)	
<60	25 (26.9)
≥ 60	68 (73.1)
Educational level	
Illiteracy or primary school	41 (44.1)
Junior high school or high school	47 (50.5)
Junior college or above	5 (5.4)
Marital status	
Unmarried	4 (4.3)
Married	73 (78.5)
Divorced or widowed	16 (17.2)
Per capita monthly income of family (RMB)	
<1000	5 (5.4)
1000–3000	53 (57.0)
3000–5000	28 (30.1)
>5000	7 (7.5)
Residence	
Rural or township	41 (44.1)
County town	39 (41.9)
City	13 (14.0)
Duration of illness (years)	
<1	6 (6.5)
1–5	35 (37.6)
6–10	31 (33.3)
>10	21 (22.6)
Number of hospitalizations	
1	10 (10.8)
2–3	55 (59.1)
>3	28 (30.1)
Complications ^a	
Upper gastrointestinal bleeding	78 (83.9)
Ascites	11 (11.8)
Hepatorenal syndrome	4 (4.3)

^a0 cases with spontaneous bacterial peritonitis (SBP) and hepatic encephalopathy (HE).

patients as the independent variable for univariate analysis. The results are shown in Table 2. Education level, marital status, per capita monthly income of family, residence, time of illness and number of hospitalizations were significantly associated with the hope level of the participating patients ($p < .05$); age was marginally significant ($.05 < p < .1$).

TABLE 2 Univariate analysis of hope level in patients with decompensated cirrhosis (N = 93)

Item	HHI ($\bar{x} \pm s$, score)	F/t	p-value
Gender			
Male	32.15 \pm 5.84	0.293	.770
Female	31.76 \pm 6.75		
Age (years)			
<60	33.76 \pm 6.86	1.682	.096
\geq 60	31.37 \pm 5.78		
Educational level			
Illiteracy or primary school	28.56 \pm 4.23	15.472	.000
Junior high school or high school	34.55 \pm 6.23		
Junior college or above	36.40 \pm 4.51		
Marital status			
Unmarried	36.75 \pm 7.04	7.143	.028
Married	32.45 \pm 6.20		
Divorced or widowed	28.81 \pm 4.37		
Per capita monthly income of family (RMB)			
<1000	26.20 \pm 3.56	14.848	.000
1000–2999	30.26 \pm 4.71		
3000–4999	33.79 \pm 6.30		
>5000	42.29 \pm 2.63		
Residence			
Rural or township	30.29 \pm 5.45	3.899	.024
County town	32.74 \pm 6.21		
City	35.23 \pm 6.73		
Duration of illness (years)			
<1	37.00 \pm 6.42	7.416	.000
1–5	34.63 \pm 6.01		
6–10	30.19 \pm 4.81		
>10	28.90 \pm 5.69		
Number of hospitalizations			
1	34.30 \pm 7.24	5.856	.004
2–3	33.18 \pm 6.18		
>3	28.89 \pm 4.46		
Complications			
Upper gastrointestinal bleeding	32.10 \pm 6.46	1.040	.595
Ascites	30.64 \pm 3.91		
Hepatorenal syndrome	34.00 \pm 4.90		

Abbreviations: F, one-way analysis of variance; HHI, Herth Hope Index; s, sample standard deviation; t, independent samples t-test; \bar{x} , sample mean.

3.4 | Multivariate analysis: factors influencing hope level

Based on the univariate analysis results, we conducted multiple linear regression analysis, and the results are shown in Table 3. Educational level ($\beta = 3.130$, $p = .002$) and per capita monthly income of family ($\beta = 3.638$, $p < .001$) were independent factors influencing the hope level of patients with decompensated cirrhosis, explaining 38.3% of the variation in hope ($F = 27.881$, $p < .001$). Specifically, illiteracy or primary school education and per capita monthly income of family less than 5,000 RMB were independent predictors of low-level hope.

4 | DISCUSSION

As an effective coping strategy, hope can give patients the courage to overcome difficulties and improve prognosis and survival (Baczewska et al., 2019). Previous studies found that patients with high hope levels have increased positive emotions, better physical health, higher ability to cope with diseases and higher tolerance to pain (Chan et al., 2019; Dorsett et al., 2017). Nevertheless, the hope levels in patients with decompensated liver cirrhosis and its possible influencing factors were not yet reported.

Therefore, we conducted a prospective observational study to evaluate the hope level and its influencing factors in patients with decompensated liver cirrhosis. The mean score of hope level in 93 patients with decompensated liver cirrhosis was 32.01 ± 6.14 , which indicates a medium level of hope. The hope level in this study was similar to that in previous studies on patients undergoing haemodialysis (32.3 ± 4.1) (Alshraifeen et al., 2020) and chemotherapy for breast cancer (30.15 ± 4.82) (Li et al., 2021). In our study, patients with decompensated liver cirrhosis had long illness duration, repeated symptoms and poor prognosis—55.9% had been ill for more than 6 years and 89.2% were hospitalized more than twice due to repeated complications. This can easily lead to adverse emotions such as anxiety and depression, further reducing the patients' confidence in the treatment (Hansen et al., 2022). Therefore, the hope level of these patients was similar to that of patients with malignant tumours; thus, it deserves our attention.

Among the three dimensions of HHI, "interconnectedness" scored the highest (11.29 ± 2.17), and "temporality and future" scored the lowest (10.12 ± 2.28). Similarly, Li et al. (2021) investigated the hope levels of 450 women undergoing chemotherapy for breast cancer and found "interconnectedness" (10.64 ± 1.65) and "temporality and future" (9.02 ± 2.00) to be the highest and lowest scored dimensions, respectively. This implies that patients with decompensated liver cirrhosis are willing to communicate with others and maintain a close relationship during their illness, but as the disease progresses, appropriate and reasonable life planning becomes more challenging. The adverse effects of complications on a patient's body and mind may weaken the patient's confidence and hope for the reality and future life (Shun et al., 2011).

TABLE 3 Multivariate analysis of hope level in patients with decompensated cirrhosis ($N = 93$)

Variable	β	SE	β'	t	p-value
(Constant)	18.238	1.924		9.479	.000
Educational level	3.130	0.966	0.301	3.239	.002
Per capita monthly income of family (RMB)	3.638	0.804	0.420	4.524	.000
$R^2 = .383$, Adjusted $R^2 = .369$, $F = 27.881$, $p = .000^*$					

Abbreviations: SE, standard error; β , regression coefficient; β' , standard regression coefficient.

* $p < .05$.

As a psychological resource, hope has previously been claimed to function as a positive modulator of QoL in patients with chronic diseases. Hawro et al. (2014) indicated a positive correlation between hope and QoL in patients with psoriasis ($r = .501$, $p = .000$), and that psychotherapeutic measures aimed at strengthening hope could improve QoL in this condition. Hence, it is suggested that medical staff encourage and help patients formulate a clear future life plan to facilitate a more positive attitude towards liver cirrhosis, as well as alleviate their negative thoughts through psychological counselling to ultimately improve their QoL.

Because of its multidimensional and dynamic structure, hope is easily affected by several factors (Stevens et al., 2014). It is very important to determine the factors affecting patients' hope because despair is a risk factor for suicide, depression and accelerated death (Rayhall & Hawkins, 2022). We analysed the predictive factors of hope in patients with decompensated liver cirrhosis and found that a higher education degree ($p = .002$) was significantly associated with a higher level of hope. Zeng et al. (2021) demonstrated that education level was an independent predictor of hope level in the parents of patients with retinoblastoma during the coronavirus disease 2019 (COVID-19) pandemic, which is consistent with our findings. This may be because patients with higher education know how to obtain different kinds of information and knowledge and find the right way to solve problems for themselves when dealing with negative events. Research also shows that the higher the level of education, the better the adaptability; the lower the stress, depression and anxiety; and the stronger the ability to solve problems (Ozen et al., 2020). Therefore, in future clinical work, medical staff should focus on patients with liver cirrhosis who have low educational level, use easy-to-understand language and cartoon visual aids to provide health education to them and offer targeted educational schemes to reduce their negative emotions and improve their hope level.

Additionally, we found a positive correlation between monthly per capita income and hope level in patients with decompensated liver cirrhosis. Zhang et al. (2010) conducted a multivariate analysis showing that patients with breast cancer who have higher income levels were likely to achieve a higher level of hope ($p = .0139$). Similarly, Goktas et al. (2019) found a statistically significant difference between the total hope score and income level of patients waiting for organ transplantation. According to an analysis of the national inpatient sample data, hospitalization costs for patients with cirrhosis increased by 30.2% during 2008–2014 to reach US\$7.37 billion (Desai et al., 2019). With the extension of admission and hospitalization

durations in recent years, the economic burden of hospitalized patients with decompensated cirrhosis has increased rapidly; patients from low-income families bear the dual burden of severe complications and treatment costs (Zou et al., 2020). Accordingly, over time, patients develop negative emotions about life and lack sufficient confidence and hope for follow-up treatments.

However, Goktas et al. (2019), through an investigation of 136 patients with end-stage renal failure awaiting organ transplantation, found that the level of hope increased with an increase in social support. Therefore, medical staff should reasonably arrange treatment plans according to the family income of patients with decompensated cirrhosis and provide compassionate care for low-income patients. Importantly, nurses should mobilize the patients' family and relatives to help them form positive disease coping styles to enhance their confidence in the course of treatment.

4.1 | Limitations

Some limitations of our study need to be considered when interpreting the results. First, because of the COVID-19 pandemic, data collection for this study was quite difficult. Accordingly, we could only recruit patients from the Department of Gastroenterology of a University Hospital. This resulted in a small sample size, which could compromise the representativeness of the study population. Therefore, our results may not be generalizable, although our findings are consistent with those of previous reports. We hope that future research can be conducted in multi-centres to generalize the results. Second, our study did not explore the relationship between hope level and symptom burden, or between QoL and the coping style of patients. Future research should focus on this point to explain the importance of hope in helping patients with decompensated liver cirrhosis cope with the disease.

4.2 | Conclusions

To the best of our knowledge, this study is the first to investigate the level of hope and its possible influencing factors in patients with decompensated liver cirrhosis. In this study, the hope level of the participating patients was at the medium level (32.01 ± 6.14), and there were two independent risk factors for lower hope levels ($p < .01$). Therefore, clinical staff should pay special attention to the

psychological status of patients with decompensated liver cirrhosis, provide more targeted psychological intervention to patients with low education and poor economic status and guide patients to adopt a positive attitude to deal with the disease to improve their hope level.

5 | RELEVANCE TO CLINICAL PRACTICE

Gastrointestinal and psychiatric nurses can benefit from the results of this study in clinical practice. The findings can enable nurses to become aware that the hope level of patients with decompensated liver cirrhosis is not optimal. Therefore, medical staff should consider providing easy-to-understand health education programmes for patients who are illiterate or have primary school education; strengthen psychological counselling for patients with per capita monthly family income less than 5,000 RMB; and mobilize all available forces to provide support, thereby increasing the patients' hope level.

AUTHOR CONTRIBUTIONS

In this study, Yuan-Yuan ZHANG and Cai-Yan DING conceived and designed the study. Ling XIE and Fen Li performed the investigation. Yuan-Yuan ZHANG and Ling XIE performed the data analyses. Yuan-Yuan ZHANG and Ling XIE wrote the manuscript. Cai-Yan DING, Chun-Yan HUO, Li-Ning WANG and Yanling MIAO reviewed and edited the manuscript. All authors read and approved the manuscript.

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (<http://www.icmje.org/recommendations/>)]:

- substantial contributions to conception and design, acquisition of data or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

FUNDING INFORMATION

This research was supported by Great Subject of Changzhou Commission of Health (ZD201915).

CONFLICT OF INTEREST

None.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Yuanyuan Zhang  <https://orcid.org/0000-0002-6590-3695>

REFERENCES

Alshraifeen, A., Al-Rawashdeh, S., Herth, K., Alnuaimi, K., Alzoubi, F., Khraim, F., & Ashour, A. (2020). The association between

hope and quality of life in haemodialysis patients. *The British Journal of Nursing*, 29(21), 1260–1265. <https://doi.org/10.12968/bjon.2020.29.21.1260>

Asrani, S. K., Devarbhavi, H., Eaton, J., & Kamath, P. S. (2019). Burden of liver diseases in the world. *Journal of Hepatology*, 70(1), 151–171. <https://doi.org/10.1016/j.jhep.2018.09.014>

Baczewska, B., Block, B., Kropornicka, B., Niedzielski, A., Malm, M., Zwolak, A., & Makara-Studzińska, M. (2019). Hope in hospitalized patients with terminal cancer. *International Journal of Environmental Research and Public Health*, 16(20), 3867. <https://doi.org/10.3390/ijerph16203867>

Berendes, D., Keefe, F. J., Somers, T. J., Kothadia, S. M., Porter, L. S., & Cheavens, J. S. (2010). Hope in the context of lung cancer: relationships of hope to symptoms and psychological distress. *Journal of Pain and Symptom Management*, 40(2), 174–182. <https://doi.org/10.1016/j.jpainsymman.2010.01.014>

Buganza-Torio, E., Mitchell, N., Abraldes, J. G., Thomas, L., Ma, M., Bailey, R. J., & Tandon, P. (2019). Depression in cirrhosis - a prospective evaluation of the prevalence, predictors and development of a screening nomogram. *Alimentary Pharmacology & Therapeutics*, 49(2), 194–201. <https://doi.org/10.1111/apt.15068>

Chan, K., Wong, F. K. Y., & Lee, P. H. (2019). A brief hope intervention to increase hope level and improve well-being in rehabilitating cancer patients: A feasibility test. *SAGE Open Nursing*, 5, 2377960819844381. <https://doi.org/10.1177/2377960819844381>

Desai, A. P., Mohan, P., Nokes, B., Sheth, D., Knapp, S., Boustani, M., Chalasani, N., Fallon, M. B., & Calhoun, E. A. (2019). Increasing economic burden in hospitalized patients with cirrhosis: Analysis of a national database. *Clinical and Translational Gastroenterology*, 10(7), e00062. <https://doi.org/10.14309/ctg.0000000000000062>

Dorsett, P., Geraghty, T., Sinnott, A., & Acland, R. (2017). Hope, coping and psychosocial adjustment after spinal cord injury. *Spinal Cord Series And Cases*, 3, 17046. <https://doi.org/10.1038/scsanc.2017.46>

European Association for the Study of the Liver. (2018). EASL Clinical Practice Guidelines for the management of patients with decompensated cirrhosis. *Journal of Hepatology*, 69(2), 406–460. <https://doi.org/10.1016/j.jhep.2018.03.024>

Goktas, S., Camdeviren, E. K., Gezginci, E., & Kosucu, S. N. (2019). Social support perceptions and hope levels of patients waiting for organ transplantation. *Transplantation Proceedings*, 51(7), 2245–2249. <https://doi.org/10.1016/j.transproceed.2019.01.180>

Hansen, L., Chang, M. F., Hiatt, S., Dieckmann, N. F., Lyons, K. S., & Lee, C. S. (2022). Symptom frequency and distress underestimated in decompensated cirrhosis. *Digestive Diseases and Sciences*, 67(8), 4234–4242. <https://doi.org/10.1007/s10620-021-07216-7>

Hawro, T., Maurer, M., Hawro, M., Kaszuba, A., Cierpiatowska, L., Królikowska, M., & Zalewska, A. (2014). In psoriasis, levels of hope and quality of life are linked. *Archives of Dermatological Research*, 306(7), 661–666. <https://doi.org/10.1007/s00403-014-1455-9>

Herth, K. (1991). Development and refinement of an instrument to measure hope. *Scholarly Inquiry for Nursing Practice*, 5(1), 39–51; discussion 53–56.

Herth, K. (1992). Abbreviated instrument to measure hope: Development and psychometric evaluation. *Journal of Advanced Nursing*, 17(10), 1251–1259. <https://doi.org/10.1111/j.1365-2648.1992.tb01843.x>

Jepsen, P., & Younossi, Z. M. (2021). The global burden of cirrhosis: A review of disability-adjusted life-years lost and unmet needs. *Journal of Hepatology*, 75(Suppl 1), S3–S13. <https://doi.org/10.1016/j.jhep.2020.11.042>

Li, Y., Ni, N., Zhou, Z., Dong, J., Fu, Y., Li, J., Luan, Z., & Peng, X. (2021). Hope and symptom burden of women with breast cancer undergoing chemotherapy: A cross-sectional study. *Journal of Clinical Nursing*, 30(15–16), 2293–2300. <https://doi.org/10.1111/jocn.15759>

Ozen, B., Ceyhan, O., & Büyükelci, A. (2020). Hope and perspective on death in patients with cancer. *Death Studies*, 44(7), 412–418. <https://doi.org/10.1080/07481187.2019.1626942>

- Rayhall, C., & Hawkins, D. (2022). Occupational differences in deaths of despair in the United States, using data from the using the national occupational mortality surveillance system. *Journal of Occupational and Environmental Medicine*, 64(4), 356–360. <https://doi.org/10.1097/jom.0000000000002435>
- Shun, S. C., Hsiao, F. H., & Lai, Y. H. (2011). Relationship between hope and fatigue characteristics in newly diagnosed outpatients with cancer. *Oncology Nursing Forum*, 38(2), E81–E86. <https://doi.org/10.1188/11.Onf.E81-e86>
- Smith, A., Baumgartner, K., & Bositis, C. (2019). Cirrhosis: Diagnosis and Management. *American Family Physician*, 100(12), 759–770.
- Stevens, E. B., Buchannan, B., Ferrari, J. R., Jason, L. A., & Ram, D. (2014). An investigation of hope and context. *Journal of Community Psychology*, 42(8), 937–946. <https://doi.org/10.1002/jcop.21663>
- Sun, H., Tan, Q., Fan, G., & Tsui, Q. (2014). Different effects of rumination on depression: Key role of hope. *International Journal of Mental Health Systems*, 8, 53. <https://doi.org/10.1186/1752-4458-8-53>
- World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191–2194. <https://doi.org/10.1001/jama.2013.281053>
- Zeng, C., Cao, W., Zhao, T., Li, L., & Hou, L. (2021). Hope level and associated factors among parents of retinoblastoma patients during COVID-19 pandemic: A cross-sectional study. *BMC Psychiatry*, 21(1), 391. <https://doi.org/10.1186/s12888-021-03401-0>
- Zhang, J., Gao, W., Wang, P., & Wu, Z. H. (2010). Relationships among hope, coping style and social support for breast cancer patients. *Chinese Medical Journal*, 123(17), 2331–2335.
- Zhao, H. P., & Wang, J. (2000). Social support and hope of hemodialysis patients. *Chinese Journal of Nursing*, 35(5), 306–308. (In Chinese).
- Zou, B., Yeo, Y. H., Jeong, D., Park, H., Sheen, E., Lee, D. H., Henry, L., Garcia, G., Ingelsson, E., Cheung, R., & Nguyen, M. H. (2020). A nationwide study of inpatient admissions, mortality, and costs for patients with cirrhosis from 2005 to 2015 in the USA. *Digestive Diseases and Sciences*, 65(5), 1520–1528. <https://doi.org/10.1007/s10620-019-05869-z>

How to cite this article: Zhang, Y., Xie, L., Li, F., Huo, C., Miao, Y., Wang, L., & Ding, C. (2023). Analysis of hope level and its influencing factors in patients with decompensated cirrhosis. *Nursing Open*, 10, 623–629. <https://doi.org/10.1002/nop2.1328>