


RESEARCH ARTICLE

The illness perception and health promotion behaviour of young and middle-aged patients with hyperuricaemia: A qualitative study

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Abstract

Aim: The purpose of this qualitative study was to describe the health-promoting behaviours of patients with hyperuricaemia and influencing factors.

Design: A descriptive qualitative design was used to gain insight into the personal experience of health promotion behaviour in patients with hyperuricaemia.

Methods: Sixteen patients were sampled in face-to-face interviews with maximum variation, and the data were transcribed verbatim. The data analysis was based on the phrases of thematic analysis outlined by Braun and Clarke (2006).

Results: Four main themes were identified in the data: (a) Perception of disease; (b) Motivation to change health-promoting behaviour; (c) Strategies for health-promoting behaviour; and (d) Encounter obstacles to change health-promoting behaviour.

KEYWORDS

health promotion behaviour, hyperuricaemia, illness perception, qualitative research

1 | INTRODUCTION

Hyperuricaemia (HUA) is a metabolic disease characterized by an abnormal increase in blood uric acid levels, which has become a threat to human health. When blood uric acid exceeds the saturation in the blood or tissue fluid, and sodium urate crystals are formed and deposited locally in the joint, it can induce local inflammatory reactions and tissue destruction, leading to gout. In addition, it is linked to the presence and severity of multiple comorbidities, such as hyperlipidaemia, hypertension, diabetes and coronary heart disease. It seriously affects the patient's quality of life and causes a social burden (Zhou et al., 2020). With the rapid economic development and changes related to life style, the prevalence of hyperuricaemia in adults in mainland China increased gradually (Yan, 2018). The total prevalence of hyperuricaemia in Northeast China was 10.9% and was more prevalent in men than in women (15.0 versus 7.3%) (Yu et al., 2016). From 2001–2017, the prevalence estimates of

HUA steadily climbed from 8.5%–18.4% with minor fluctuations (Li et al., 2021). At present, the incidence of hyperuricaemia was substantial and exhibited a rising trend among younger adults, especially among men (Lin et al., 2011; Shan et al., 2021). Thus, the health problems of young and middle-aged patients with hyperuricaemia deserve social concern.

China has started to attach great importance to the prevention of hyperuricaemia. In 2020, China has established a working group on patient practice guidelines with the participation of multidisciplinary experts and patients, 17 opinions on practice guidelines for hyperuricaemia/gout patients were developed according to the international specification process, and questions about the concept of hyperuricaemia/gout, control goals on blood uric acid, diet and exercise considerations were answered (Huang et al., 2020). Practice guidelines provide the evidence quality grading, support for the clinical treatment of hyperuricaemia/gout. It follows that the patient needs are issues to be considered. The patients considered the most

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important things for making treatment satisfactory following as (i) effective physician–patient communication; (ii) diet and lifestyle modification; (iii) serum urate monitoring and target achievement; (iv) pain management and flare prevention; and (v) medication management (Singh and Edwards, 2020). Obviously, from the perspective of patients, they focus on the whole process of service from clinical diagnosis and treatment to continuous management, especially in terms of continuation management. Nevertheless, the current medical system is insufficient, and there is also a lack of such “patient-centred” operable whole process intervention, but less attention was paid to patient’ need, attitude and health behaviour changes to control the disease in present research. More importantly, the patients’ own attitude towards the disease and health promotion behaviour determine their long-term health outcomes, which is a key part in continuation care. Some general practitioners reflect the patient’s low-adherence to both medication and lifestyle changes as major obstacles to hyperuricaemia/gout management (Jeyaruban et al., 2016).

Health promotion behaviours are a group of behaviours manifested by individuals or groups, and it is objectively beneficial to their own and others’ health (Kuipers et al., 2019). Palumbo (2017) showed that the body health, self-realization and self-satisfaction can be enhanced through health promotion behaviours, so as to improve the healthy life quality of individuals. This was also confirmed in the study of Van den roek (2021), and early unhealthy behavioural characteristics of patients with hyperuricaemia, such as drinking behaviour, unreasonable nutritional consumption, low-intensity physical activities can affect the health outcomes of their later years. The relationship between unhealthy lifestyles and the development of hyperuricaemia is widely recognized, and it has been shown that sedentary lifestyle, alcohol consumption and insufficient intake of green vegetables and fruits in patients with hyperuricaemia are closely associated with increasing blood uric acid (Cui et al., 2017; Qu et al., 2013). The importance of dietary behaviour in the management of hyperuricaemia/gout was confirmed (Danve et al., 2021). However, the compliance of patients with hyperuricaemia to lifestyle adjustment at different stages of disease is different, and their health decision-making and behaviour patterns cannot remain unchanged, but few studies describe what changes they have made and what factors affect them. In addition, the predictive role of health knowledge on health behaviours in young people has been discussed (Nagy-Pénczes et al., 2020), although many studies have described patients’ awareness of disease (Seow et al., 2020; Garcia-Guillen et al., 2020), but no researchers have explored the relationship between disease knowledge, attitude and health promotion behaviour in young and middle-aged patients with hyperuricaemia.

Therefore, in order to effectively control hyperuricaemia, patients involved in the management plan are necessary. Meanwhile, it is particularly important to evaluate the attitude and behaviour of patients, which not only clarifies the needs of patients, but also draws their health behaviour patterns, so as to improve management compliance and achieve health goals. To accomplish this, the

personal experience of health promotion behaviour changes in patients with hyperuricaemia needs to be understood.

2 | METHODS

2.1 | Study design

A descriptive qualitative design was used to gain insight into the personal experience of health promotion behaviour and influencing factors in patients with hyperuricaemia. The overall research question was what is the illness perception and health promotion behaviour in people suffering with hyperuricaemia?

2.2 | Sampling Strategy

Researchers selected patients diagnosed with hyperuricaemia through the physical examination centre at a general hospital in Daqing city in Northeast China. The inclusion criteria included fasting serum uric acid levels $>420\mu\text{mol/L}$ (male) / $>360\mu\text{mol/L}$ (female) in a normal diet. Next, the age of patient is in 18 ~ 59 years old. Furthermore, patients with symptomatic high uric acid were selected in this study because they could better describe the changes in health-promoting behaviour from asymptomatic to symptomatic periods. People who indicated willingness to participant in our research were contacted by telephone to receive further information and to check eligibility. If participants were eligible, at the same time of recruitment. Purposive sampling was used to ensure the maximal variation in gender and course of disease. Recruitment continued until it was considered that data saturation had been reached when no more new information or themes emerged from interviews when the two researchers agreed (Sandelowski, 1995). Participated and eventually enrolled 16 patients for interviews. This study was approved by the Ethics Committee of Harbin Medical University (HMUDQ2020091502). It is worth noticing that the researchers had no relationship with the participants.

2.3 | Data collection

All interviews were conducted in a classroom within the rheumatology ward by one researcher and observed and recorded by another researcher. The interview outline was formulated before the interview, and the content was revised by experts in psychology and qualitative specialist. The questions are as follows: “Can you talk about your understanding of the hyperuricemia?” “How did you feel after being diagnosed with hyperuricemia?” “How did you feel at present? What’s the change? Why?”, “Please tell us how hyperuricemia affected you?”, “What measures did you take to promote health? Did they work? Why?”, “What conditions can affect your health promotion behaviour? Can you describe it in more detail?”. Each interview lasted for approximately 30 to 60 min. Data were recorded by

audio tape after each interview, as soon as possible, the researcher transcribed the interview word by word, and each interview text has about 6,000 Chinese characters. Each transcript text needs to be checked to the respondents, and when the participants feel sensitive to the words, the researchers will express it in a different way that make them comfortable. We had no new codes appear when the 14th participant, and 2 interviews were continued, until it was considered that data saturation had been reached when no more new information or themes emerged from interviews when the two researchers agreed. Data were analysed simultaneously until data saturation was reached.

Finally, the interviews included 16 participants, 6 females and 10 males with hyperuricaemia. There were 7 participants under 40 years old and 9 participants over 40 years old. The course of disease was less than 5 years in 5 participants, 5 to 10 years in 7 participants, more than 10 years in 6 participants.

2.4 | Data analysis

The data analysis was based on the phrases of thematic analysis outlined by Braun and Clarke (2006). The steps of analysis included the followings: (a) repeat reading the data in an active way and become familiar with the data; (b) an initial list of codes about what is in the data and participants' illness perception and health-promoting behaviours was generated; (c) sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes; (d) refinement of those themes; and (e) defining and naming themes.

2.5 | Rigour

The rigour of this research was achieved in these following ways:

- First, we ensured that respondents had a profound experience of hyperuricaemia and had a more comprehensive description of their health promotion behaviour. All questions were mentioned in the same areas for all the participants.
- Next, participants' various ages and courses of disease, and researches with various perspectives, contributed to a richer variation under study.
- Again, the transcription text is returned to the respondents to ensure that the information truly reflects their inner feelings.
- Finally, when there are differences in the study analysis, the results need to be discussed until agreement is reached.

3 | RESULTS

The hyperuricaemia patients enrolled in this study described their perceptions of disease and factors influencing their health-promoting behaviour. Finally, refining the four main themes: (a)

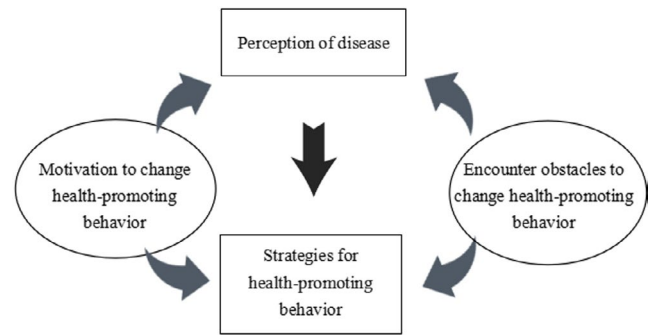


FIGURE 1 The framework of the themes

Perception of disease; (b) Motivation to change health-promoting behaviour, (c) Strategies for health-promoting behaviour, and (d) Encounter obstacles to change health-promoting behaviour. Four topics well reveal the changing trajectory and close links of respondents from disease knowledge–attitude–behaviour. Participants described their awareness and attitudes towards hyperuricaemia, when they perceived the benefits and necessity of controlling blood uric ate, may stimulate its intrinsic motivation and in turn promote their health behaviour in managing the disease. However, this understanding is not stable, which will weaken its health behaviour and become a barrier to change their behaviours, thus puts it in the disease dilemma again, and thereby deepening the understanding of the disease. Therefore, their attitudes and behaviour change dynamically, and motivation and barrier factors cause them to undergo behavioural change. See Figure 1 for synthesized structure of the four themes, and the sub-themes and themes in detail in Table 1. Representative quotations from the transcribed text were shown in report.

3.1 | Perception of disease

In the process of getting along with the disease, although majority of patients have insufficient understanding of the disease, their feelings of the disease are profound and complex. Their beliefs in treatment are unstable and susceptible to multiple factors.

3.2 | “A rich disease”

Most respondents believed that hyperuricaemia was closely related to diet, especially meat, seafood, beer, etc. Therefore, this high-consumption disease is called “rich disease.” For example, one participant mentioned: “I feel that it is a rich disease. I drink too much beer and eat more seafood” (L) This idea is usually influenced by people around, for example: “My families think the reason I got illness was eating too much outside. Rich disease!” (J) In addition, it is also related to rapid economic development, as one participant said: “Maybe because economic conditions in our country have improved, many people have this disease.” (B).

TABLE 1 Themes and sub-themes

Themes	Sub-themes	Quotes
Perception of disease	<i>"A rich disease"</i>	"I feel that it is a rich disease. I drink too much beer and eat more seafood." (L)
	<i>"Once on shore, one prays no more"</i>	"To tell the truth, I treated as a fluke of 'Once on shore, one prays no more'. I always trust in luck, this support me drink, cause no pain anyway." (A)
	<i>"Not terrible, but tormenting"</i>	"I don't feel scary, but I feel that (hyperuricemia) is quite annoying. For example, when we family go to seaside to eat seafood, only I can't eat! I was very greedy in fact." (F)
Motivation to change health-promoting behaviour	<i>Incurable diseases</i>	"I don't want to go to hospital, it's said to be incurable!" (A)
	<i>Driven by life plans</i>	"For example, my institution to carry out what activities, I have to consider in advance. I told myself that I need be healthy, rather than bothering the other people."(J)
	<i>Forced by disease burden</i>	- "This pain is terrible, not like stabbing pain, not like foot sprain, neither the feeling of cutting, I do not know what state of people get this disease!" (E) - "To put it bluntly, I just dare not think about it (health outcomes). My diabetes could affect the kidney, so I was afraid of adding another disease."(O) - "It's not responsible not only for myself, but also to my family! I don't want to trouble my family, so I still hope not to be sick." (G)
	<i>Forced by physical symptoms burden</i>	
	<i>Forced by prognosis burden</i>	
<i>Forced by family burden</i>		
<i>Companion effect</i>	"Their symptoms are more serious than me, I feel uncomfortable when I see their pain!" (C)	
	<i>Supported by family</i>	"After the onset of symptoms, my wife attaches great importance to it, including from using oil, all exchanged for corn oil, afraid of higher purine in soybean oil." (E)
Strategies for health-promoting behaviour	<i>Lifestyle adjustment</i>	"Now I don't eat seafood any more, completely quit, such as shrimp and crab." (M)
	<i>Access to health information</i>	"I have no concept of the disease, so I checked it online and looked at its pathogenesis. Also I want to know what problems you need to pay attention to in the future." (J)
	<i>Forced to take prescription drugs or folk remedies</i>	"I only take a little medicine when it hurts, as the proverb says 'It is not too late to mend the fold even after the sheep has been lost'." (Some helpless smile) (F)
Encounter obstacles to change health-promoting behaviour	<i>Monitoring of blood uric acid level</i>	"When the physical examination report comes out, it can stop for two months (refers to peace of mood)." (H)
	<i>Lack of health literacy</i>	"At that time, when I found blood uric acid high, I didn't know what 'high' means, nor did I go to hospital for further examination. In fact, if I controlled it earlier, my body should be no problem." (G)
	<i>Escape and re-assessment</i>	"For example, I pay attention to diet these two days, blood uric acid will fall down at the normal level, feel like this disease is easy to control, and then I began to indulge myself. Quite arrogant!" (forced smile) (O)
	<i>Repression and Resistance</i>	"Just like a innocent kid! The more who stops me from eating meat, the more I want to eat!" (P)
	<i>Conflict of Social Needs: "Wine Culture"</i>	"I want to control ah, but in the society, eat, drink, this is no way to (avoid)!" (F)
	<i>Fear of the side effects of drugs</i>	"I worry about the poison of drugs, good diet management is enough." (L)

3.3 | "Once on shore, one prays no more"

Some participants described their attitude towards disease was capricious. When there were no symptoms, they ignored the importance of disease management. For example: "To tell the truth, I treated as a fluke of 'Once on shore, one prays no more'. I always trust in luck, this support me drink, cause no pain anyway." (A) They believe the disease is not life-threatening. For example: "I feel this disease, if it doesn't happen, or there are no too heavy symptoms, it doesn't matter!" (J).

3.4 | "Not terrible, but tormenting"

Some participants felt having hyperuricaemia as tormenting process. First, once was diagnosed, a low-purine diet was told, which affected the patient's eating habits. Many participants expressed the boredom, such as: "I don't feel scary, but I feel that (hyperuricemia) is quite annoying. For example, when we family go to seaside to eat seafood, only I can't eat! I was very greedy in fact." (F) In addition, some respondents were not willing to monitor the blood uric acid situation frequently, expressed their irritability, and looked forward

to more convenient medical services. For example: "I don't always want to go to hospital to test this, is there any simple way to measure this?" (B) For individuals with gout symptoms, they feel tortured because of the uncertainty of the attack time, such as: "I feel bothered that the attack time is uncertain!" (K).

3.5 | Incurable diseases

It is a bothering thing for everyone who suffered from an incurable disease. For example, one participant described: "I don't want to go to hospital, it's said to be incurable!" (A) The idea may be related to personal bad medication experience, as one respondent mentioned: "When I took medicine for a while, it (blood uric acid) fell down, but it will increase again, it doesn't make much sense!?" (B) Furthermore, although the respondents themselves initially attached great importance to controlling blood uric acid, but this persistence was likely to be affected by the resistance of the people around them, for example, a patient said: "I really attach great importance to the disease, but I just don't know how to solve it? Because most people give me a concept that the disease can't be cured." (K).

3.6 | Motivation to change health-promoting behaviour

Nearly all participants have tried to adjust their health status, the possible reason is that to relieve physical symptoms or be forced by life plans. These experiences become motive power for them to adjust their health-promoting behaviours.

3.7 | Driven by life plans

Some respondents began to value the illness by disrupted life plans, such as an early work schedule, travel plans on hold and amateur activities. In order to successfully complete life plans, participants were forced to adjust their health promotion behaviours. As one respondent said, "For example, my institution to carry out what activities, I have to consider in advance. I told myself that I need be healthy, rather than bothering the other people." (J).

3.8 | Forced by disease burden

Forced by physical symptoms burden. The main reason that forced respondents to take attention to value the disease was influenced by somatic symptoms burden, which is a very unpleasant pain experience, such as: "This pain is terrible, not like stabbing pain, not like foot sprain, neither the feeling of cutting, I don't know what state of people get this disease!" (E) This indescribable pain increased the psychological burden of the respondents. Participants described being forced to take measures against hyperuricaemia for fear of

symptoms. For example, one respondent said: "Oh, I'm very careful, cause I am so scared that I haven't been drinking for two months. I am really afraid!" (H).

Forced by prognosis burden. Most of the participants gradually recognized the impact of hyperuricaemia and paid more attention to disease control in order to avoid poor prognosis. During the interview, we felt the prognosis concerns and fear from the respondents, especially from the patients with multiple combined diseases. As one participant with diabetes described: "To put it bluntly, I just dare not think about it (health outcomes). My diabetes could affect the kidney, so I was afraid of adding another disease." (O).

Forced by family burden. When symptoms occur, they often require family care. Respondents decided to make health behaviour changes in order to avoid becoming the burden of family. For example, one participant mentioned: "It's not only responsible for myself, but also to my family! I don't want to trouble my family, so I still hope not to be sick." (G).

3.9 | Companion effect

The real cases around them can better deepen the respondents' understanding of disease, and they can also learn some effective methods from it, on the one hand, because these cases come from the exhortation of patients, on the other hand, because participants witnessed the pain of symptoms. As an interviewee sighed: "Their symptoms are more serious than me, I feel uncomfortable when I see their pain!" (C), moreover, because this common experience is more conducive to mutual understanding and support of each other, such as: "Anyway, I have a few friends with this disease, we comfort each other. When we have dinner together, we each other don't persuade to drink." (F).

3.10 | Supported by family

For individuals with symptomatic hyperuricaemia, family support provides a healthier living environment for patients, such as: "After the onset of symptoms, my wife attaches great importance to it, including from using oil, all exchanged for corn oil, afraid of higher purine in soybean oil." (E) Family support has also played a supervisory role in helping respondents pay more attention to the disease and thus take health behaviours that are conducive to controlling blood uric acid. As one respondent mentioned: "Now I take it seriously! My god! Now my wife controls me drinking every day, now I basically quit drinking." (H).

3.11 | Strategies for health-promoting behaviour

Almost all the participants gradually understood the disease characteristics of hyperuricaemia and tried to reduce the blood uric acid level through some methods.

3.12 | Lifestyle adjustment

Lifestyle adjustment was the main method for participants to reduce blood uric acid levels. In particular, adjusting eating habits is a very important step, such as quitting the high-purine food: "Now I don't eat seafood any more, completely quit, such as shrimp and crab." (M) Of course, not all patients can have such control. For example, in northeast China, hot pot is the best choice for people to dinner; in this case, some patients are difficult to resist the temptation of food, and they mainly limit the high-purine diet: "If I eat hot pot, I rinse with water (meat or vegetables), and then eat, I feel purine dissolved in water." (Laughter) The respondent was clearly satisfied with his approach.

Certainly, more healthier behavioural strategies were also adopted. Some respondents took alcohol restriction or abstinence, such as: "Dare no beer!" (B) Instead of drinking beer, water is a better choice. For example, a participant developed a good habit of drinking water after a high blood uric acid: "I basically don't drink water before, but I change it after hyperhyperuricemia was confirmed, I will basically drink two bottles of water a day, like this bottle (Point to the 550ml mineral water bottle on the next table!)" (C) Some respondents mentioned the habit of drinking Chinese herbal tea: "It is called 'Gegen tea.' My colleague said it's helpful, and I usually drink it after a period of while."(F).

Other respondents believed that necessity of exercise, such as: "Feeling like sweating should help!" (K) After-meal walking / fast walk, gym exercise, aerobics, playing ball and so on are the common choice for participants to exercise, and evaluation after the exercise is conducive to mastering their own exercise effect, while avoiding excessive exercise. For example: "I usually walk along the lake nearby after dinner, almost 5,000 to 10,000 steps, I check it with WeChat." While it is worrying that they have no idea about the exercise frequency, exercise intensity and points for attention, they just tried to find methods they can tolerate. "Once, I rode my bike but fell down, and it began to hurt that night. Later, I dare not try more intense activity." (G).

3.13 | Access to health information

Although participants tried to seek help for obtain health information, for example, see a doctor in pain, occasionally ask friends or communicate with patients, etc. Their main way to get health information is on the Internet. As one participant described: "I have no concept of the disease, so I checked it online and looked at its pathogenesis. Also I want to know what problems you need to pay attention to in the future." (J) Some participants even have more trust in the internet than access to doctors' specialized guidance. For example: "I think doctors' advice is most likely the internet, so I make myself like a doctor, touch pulse myself. (pulse: respondents here for the meaning of self-diagnosis and guidance)" (H).

3.14 | Forced to take prescription drugs or folk remedies

In general, respondents were not willing to prioritize drugs until symptoms occur. As one participant described: "I only take a little medicine when it hurts, as the proverb says 'It isn't too late to mend the fold even after the sheep has been lost.'" (Some helpless smile) (F) In contrast, one respondent carried the medication with him, the only individual with the highest medication compliance among all respondents, such as: "Anyway, the medicine, I will throw it in my pocket, take it everywhere I go." (J).

However, if participants failed in different methods or were anxious to gain health, they would rather trust in folk remedies unreasonably. For example: "In the past two years, I have used a folk prescription given by my relatives. They told me I could drink beer casually." Fortunately, some individuals were instructed by their doctors: "It is made from Taiwan, because my colleague's father also took that medicine. Then I tried to for less than a month, but this time I went to the hospital, the doctor said the ingredients of medicine were unknown, and advised me to give up." (G).

3.15 | Monitoring of blood uric acid level

To assess the effect of disease management, respondents test the blood uric acid during the physical examination. Some participants' reason is for seeking inner peace. For example: "When the physical examination report comes out, it can stop for two months (refers to peace of mood)." (H) Not all respondents are active to change their health behaviour, being forced to have monitoring of blood uric acid level is much common, such as: "I am random now, I just tested it two or three times until severe pain."(K).

3.16 | Encounter obstacles to change health-promoting behaviour

In the diagnosis and treatment of diseases, respondents also encountered difficulties and challenges to hinder the management of the disease.

3.17 | Lack of health literacy

Although some respondents were also more concerned about their own health problems, they could not actively turn to medical institutions. For example: "At that time, when I found blood uric acid high, I didn't know what 'high' means, nor did I go to hospital for further examination. In fact, if I controlled it earlier, my body should be no problem." (G) Some respondents who refused to go to the hospital because the doctor did not give them adequate guidance, such as: "The doctor said that I need to self-manage this disease, and just

take medicine when I have pain, then the consultation is over, he didn't say anything else ah!" (K) In contrast, some respondents said that they could not fully understand and properly distinguish the health information obtained, and wanted authoritative, standardized disease guidance. For example: "Now I always consult with the people around us, because there is no expert. Some people told me take no medicine, but someone told me I should. The statement is different, I don't know whose advice to listen to." (H).

3.18 | Escape and re-assessment

When the uric acid level of some participants is controlled at the normal level through diet adjustment, they reassess the disease and generate the feeling that they can well control the disease, so they avoid healthy behaviours, such as: "For example, I pay attention to diet these two days, blood uric acid will fall down at the normal level, feel like this disease is easy to control, and then I began to indulge myself. Quite arrogant!" (forced smile) (O).

3.19 | Repression and resistance

Most respondents had poor self-control of disease during the asymptomatic stage. When a participant described the reasons for their poor dietary compliance, he mentioned: "Just like a innocent kid! The more who stops me from eating meat, the more I want to eat!" (P) In order to adapt to disease, patients are forced to change and limit their original living habits. Therefore, through this resistance to authority, they can meet their suppressed psychological needs. This resistance is also manifested as: "I just wanted to have a try, what happened if I ate (high purine food)? In fact, it doesn't matter! The worst result is to treat it!" (N).

3.20 | Conflict of social needs: "Wine culture"

Due to the drinking culture of northern China, namely the indispensable alcohol elements in dinner parties, which may cause great trouble to the participants, forming a huge conflict between this social demand and health management. One interviewee expressed his deep helplessness: "I want to control ah, but in the society, eat, drink, this is no way to (avoid)!" (F).

3.21 | Fear of the side effects of drugs

Side effects of drugs are often the key factor hindering regular medication in participants. The main reasons for the fear of side effects of drugs are as follows: the excessive interpretation of the drug instructions, the real cases of liver injury of the people around them and their own personal feelings. For example: "One of my big brothers had a liver injury, and the transaminase was ten times higher. This is

the case, so I have a sense of this medicine and too dare to take this medicine." (B) In addition, "Drugs are toxic more or less" has been a deep-rooted thought of the common people, so they would rather recuperate than take medicine, such as: "I worry about the poison of drugs, good diet management is enough." (L).

4 | DISCUSSION

Lifestyle adjustment is the main method for patients to control hyperuricaemia. Among them, diet management is the key link. The subjects in the study mainly controlled blood uric acid by low-purine diet, drinking more water, quitting alcohol, etc., but their dietary compliance was relatively poor. Although the management guidelines for gout and hyperuricaemia have put forward relevant dietary recommendations, the composition of food is complex, not composed of a single nutrient. Therefore, scientific and operational dietary norms are necessary for the management of this diet-related disease. Studies have explored that individuals with DASH diet are less likely to suffer from hyperuricaemia, especially in older people (≥ 50 y), women and non-exercise individuals, relative to their peers (Gao et al.,2021; Yokose et al.,2021). This provides new ideas for hyperuricaemia dietary quality and the management of controlling hyperuricaemia, but in the process of implementation, individual diet preference is also a problem to be considered, which determines whether patients can adhere to this dietary pattern. In addition, it is also worth exploring whether a single diet structure is applicable to all people, as nutritional needs are different between groups of ages or gender. Hence, personalized diet patterns may play a certain role in balancing the relationship between nutritional value and disease needs, and helping people benefit over the long term.

The demand for symptom management is the intrinsic motivation for respondents to change health-promoting behaviour. In patients' needs preference, controlling symptoms is one of the best treatment strategies (Jasvinder and Singh, 2020). Physiological symptoms are more likely to awaken the correct cognition of patients' identity. Therefore, in the asymptomatic stage, it is difficult for patients to pay attention to diseases and manage diseases. When gout symptoms such as pain occur, they have to respond to the body situation and are forced to adopt health-promoting behaviours, such as seeing a doctor or taking medicine, but it is puzzling that when symptoms ease or disappear, respondents fall into neglect and fluke of the disease again. This may be related to an insufficient need for symptom management. It fully reflects the relationship between disease attitudes and health behaviours, as the respondents said, "There was no disease when there were no symptoms" and is also an important reason for influencing disease self-management and hindering its long-term rehabilitation.

Moreover, due to the absence of symptoms, they tried to reassess the disease and ignore the importance of disease management, thus avoiding the control of uric acid. This issue was also mentioned in another study. Ingris et al. (2015) pointed out that when

patients cope with health stressors, avoidance strategies are dominant, and emotional/negative and avoidance strategies are related to poor health-related quality of life. This seems to suggest that the analysis of patients' coping mode is conducive to the design of social psychological intervention measures, so as to improve their self-management.

Lack of ability to access, understand and use health information and health resources is an important reason that affects patients' treatment decisions and hinders their health promotion behaviour. The International Union for Health Promotion and Education defines this ability as health literacy. Lack of health literacy is associated with poor health outcomes and negative health behaviours (Berkman et al., 2011; Geboers et al., 2016). In the research, patients obtain health information through peers and Internet, rather than health-care institutions, as the patients' said, "I think doctors' advice is most likely the internet." They could not distinguish the accuracy of these information well, which might mislead their behavioural decisions and even affected the therapeutic effect. This may be related to patients' mistrust of the healthcare system. In the interview, patients mentioned that their negative experience explained this situation. Doctors' false diagnosis, short inquiry time, perfunctory attitude and rough drug guidance prevent patients to get professional knowledge about disease prognosis and benefits from drug treatment, which ultimately affects their value judgement on disease management. This not only affects the respondents' correct understanding of the disease, but also reduces the compliance of health behaviours such as taking medication. Although obtaining information through the Internet is a better way for continuing nursing, regular assessment and guidance by health professionals are still needed to help patients understand and correctly use health resources and improve their health literacy. This is indeed a question worth pondering, because it requires a reasonable allocation of resources, such as the accessibility of the primary healthcare system, but at present, this is a great challenge for north-eastern China.

Social distress is another important reason to hinder their change in health behaviour. This problem is more prominent in male patients. This is closely related to the "drinking culture" in the northern region. China is one of the world's leading wine producers and consumers, and alcohol has injected into all aspects of its culture. Life etiquette in Chinese social culture has always been closely related to wine, and it is an important means for Chinese people to socialize and communicate with relatives and friends (Smith, 2021; Wang, 2021). In this context, it is inevitable to lead to psychological conflicts between social needs and health management needs. Especially at the beginning of drug beliefs, it directly affects the change of health-promoting behaviour. But fortunately, respondents describe the understanding and support of friends and family around them, which helps to alleviate this social distress. But this does not apply to any situation. Obviously, there is a long way to go for the popularization of disease knowledge among ordinary people in the community. Community health interventions based on cultural features may also be the direction of future exploration.

5 | LIMITATIONS

Although the study described the health promotion behaviours of patients with hyperuricaemia, there were still some limitations. First, the participants in the study are from the same region and the same hospital, and the results of this study are not applicable to other countries and regions. Again, in order to describe the process of hyperuricaemia from asymptomatic to symptomatic, we did not include asymptomatic hyperuricaemia patients. Finally, this study is a qualitative research; we have no a deeper discussion on the relationship between the influencing factors of patients' health promotion behaviour.

5.1 | Implications for nursing practice

The results of this study help healthcare personnel to realize the important influence of their normative guidance on behavioural decision-making of patients with hyperuricaemia. In addition, the linkage between community-based healthcare system and hospital resources is very necessary for the management of patients with chronic diseases. Moreover, doctors and nurses should not only pay attention to patients' physical symptoms, but also should learn to listen to their patients, because patients' illness beliefs are closely related to health behaviours, thus affecting long-term health outcomes.

6 | CONCLUSIONS

This study presents the cause, process and motivation/hindering factors of health-promoting behaviour changes in patients with hyperuricaemia. Respondents' attitude towards disease was closely related to behavioural change. Although the vast majority of participants could adopt appropriate health behaviour strategies, such as lifestyle adjustments, their beliefs in managing health are unstable, which can easily affects long-term health outcomes. Besides that, the deficiency of health literacy also affects their effective self-management.

In future interventions, medical staff should provide as much as possible to strengthen health promotion behaviour of patients with interventions, according to the path of disease knowledge-attitude-behaviour and community health workers have the mission on providing personalized targeted health education for patients, but intervention compliance is a matter of consideration, such as patients' demand preferences. Continuous care should be strengthened so that patients and their families can improve health literacy and advance their self-management ability and quality of life.

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CONFLICT OF INTEREST

The authors declare that they have no conflicting interests. LL and LXF: Study design, conducting the interviews, data analysis and drafting of the manuscript. ZYQ, YF and LYR: Data analysis and drafting of the manuscript. All authors read and approved the final manuscript.

ETHICS STATEMENT

The study obtained the consent of the ethics committee of Daqing campus of Harbin Medical University, and written informed consent was obtained from each participant.

DATA AVAILABILITY STATEMENT

The data sets generated and analysed during the current study are not publicly available due to participants' confidentiality but are available from the corresponding author on reasonable request.

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