

# Experiences and Perceptions of Chinese Elderly Dry Eye Patients Seeking Health Behavior Management: A Qualitative Study Based on a Health Belief Model

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**Aim:** This study aims to explore the life experiences and health behavior management experiences of elderly patients with dry eye disease, and to provide a reference for improving the health status of patients with dry eye disease.

**Methods:** A qualitative phenomenological design was employed to collect data from 16 dry eye patients who visited the eye clinic of a tertiary hospital in Shanghai, China, from October to December 2024, by conducting face-to-face semi-structured interviews, and analyzing the data using the Colaizzi 7-step analysis method. Interviews were transcribed verbatim, and themes were coded and extracted using NVivo 14.0.

**Results:** The participants, aged between 60 and 78 years, mostly had mild to moderate levels of dry eye. Based on the theoretical model of the Health Belief Model, five main themes and eleven sub-themes were summarized from the analysis: (a) Perceived threat of disease (Perceived severity, Perceived susceptibility); (b) Perceived benefits (Perceived sense of gain, Improved quality of life); (c) Perceived barriers (Lack of willingness to manage behavior, Insufficient intrinsic motivation, Cognitive misconceptions); (d) Low self-efficacy (Lack of confidence in responding, Negative coping style); (e) Perception of behavioral cues (Lack of external support, Perception of self-management).

**Conclusion:** This study found an interaction between reduced threat perception and inadequate health behavior management in elderly dry eye patients, and future research is needed to develop more specific and feasible intervention programs to encourage patients to move from passive treatment to active management.

**Keywords:** elderly, dry eye disease, health behavior, qualitative research, relevance to clinical practice

## Introduction

Dry eye disease (DED) is a chronic ocular condition caused by numerous factors.<sup>1</sup> It is mainly characterized by an imbalance in tear film homeostasis, accompanied by increased tear osmolarity and inflammation of the ocular surface, which in severe cases can lead to corneal opacity, ulceration, or even more serious ocular disease and visual impairment. The global prevalence of DED ranges from 5% to 50% and the incidence of DED is closely associated with increasing age.<sup>2</sup> Previous studies have shown that the prevalence of elderly DED patients in China has reached 34.4%.<sup>3</sup> With the ageing of the Chinese population and factors such as increased life expectancy, environmental changes and increased hours of screen time, the incidence of DED is increasing significantly.<sup>4</sup> According to the World Health Organization, dry eye has become the third most common cause of visits to eye clinics after refractive errors and cataracts, and DED will be one of the main reasons for patient visits in the future, with a particularly high prevalence among long-term users of electronic devices and post-menopausal women.

DED not only leads to physical symptoms such as dry, painful eyes and fluctuating vision, but is also closely associated with psychological problems such as anxiety and depression, which seriously affects patients' occupational performance, social participation and overall quality of life.<sup>5</sup> Long-term patients may experience corneal abrasion or even perforation in the later stages of the disease, which can impair vision and increase the risk of blindness, severe visual impairment, and substantial vision loss. According to studies, the effects of moderate to severe DED on patients' lives are comparable to those of illnesses like hip pain and severe angina, which is extremely inconvenient for both their personal and professional lives.<sup>6–8</sup> The treatment model for DED is still based on “symptom relief” and clinical practice relies on short-term interventions such as artificial tears, anti-inflammatory drugs or physiotherapy.<sup>9</sup> As a chronic disease, DED adapts to a chronic disease management system that emphasizes the long-term nature of the treatment process, and patients can suffer a huge financial and psychological burden this makes DED a major global health issue.<sup>10,11</sup>

Long-term control of DED is highly dependent on the patient's self-management of health behaviors, including scientific eye habits, environmental adjustments, regular medication use and emotional regulation, etc.<sup>12</sup> For participants, managing their health over the long term might be difficult. Additionally, managing one's mental well-being, maintaining a healthy diet and exercise routine, and taking medications as prescribed are all important aspects of managing and preventing chronic diseases.<sup>13</sup> All these strategies call on patients to become more proactive in their everyday health management and for individuals to take ownership of their own health. This means that responsibility for daily disease management is gradually shifting from healthcare professionals to patients themselves. Health behavior management focuses on behavioral change and cognitive self-adaptation. By creating a dynamic and ongoing process of self-adaptation and change, it helps patients manage their health and deal with the different challenges they face in their daily lives. It also helps patients become more self-aware of their health issues and increase their subjective initiative by giving them the skills and confidence to manage their health behaviors on their own. According to the current study, the majority of DED patients are aware of the need to alter their health-related behaviors and take steps to do so once the disease has struck. However, there are several issues with life management and the process of changing health-related behaviors, and there is a lack of in-depth analysis of their behavior management.<sup>10,14,15</sup> Consequently, further qualitative research is warranted. We will use the interview method to explore the specific experiences of DED patients from the perspective of the Health Belief Model, extending the scope and content of the study.

The Health Belief Model (HBM) is one of the most widely used theoretical frameworks in health behavior research to explain the intrapersonal decision-making process of health behavior.<sup>16</sup> It mainly includes perceived susceptibility and severity of illness, perceived benefits, perceived barriers and self-efficacy. Based on this theory, this study explores the health behavior management experience of dry eye patients by analyzing the interview results from the patients' perspective. By exploring patients' cognitive constructs of the disease, dynamic adaptations of self-management strategies, and expectations of the healthcare system, the study explores patients' needs and provides a reference for promoting patients' health behavior management.

## Materials and Methods

### Design

This research is guided by the descriptive phenomenological approach. Descriptive phenomenology focuses on “going back to the thing itself”, collecting experiential data through description, recollection, or observation, and re-description, recollection, or observation, and repeated description of the participant's life experiences, to get close to the true nature of the thing. Participants' experiences and experiences were explored through semi-structured interviews, which are one of the most commonly used data collection methods in qualitative research, and whose core feature is flexibility within a framework of pre-determined themes. The researcher designs the interview outline in advance to ensure that key issues are covered. Through leading questions, such as “Can you describe exactly how you felt at the time?” and digging deeper into the details to explore the essence of the phenomenon under study. The study adhered strictly to the consolidated criteria for reporting qualitative research (COREQ) 32-item checklist.<sup>17</sup>

## Participants and Setting

The study population was recruited from elderly patients with DED attending the ophthalmology outpatient clinic of a tertiary care hospital in Shanghai, China. Purposive and maximum variance sampling methods were used to recruit eligible patients, ensuring a diverse socio-demographic profile and considering disease characteristics and disease duration. The inclusion criteria for elderly dry eye patients included: (a) be between the ages of 60 and 80, (b) patients diagnosed with dry eye disease by clinical examination, (c) good verbal and communication skills, and (d) informed consent and voluntary participation in this study. The exclusion criteria were (a) comorbidity with other acute or chronic ocular diseases, (b) comorbidity with other serious physical diseases, and (c) comorbidity with other psychiatric diseases. The number of participants was determined by the principle of data saturation, according to which no new themes are derived when interviewees reach data saturation. Once 16 participants were recruited, it was found that data saturation had been reached, and in order to further ensure the adequacy of the data and the reliability of the study's conclusions, the two researchers purposely conducted two more consecutive interviews. At the end of these two interviews, the researchers used the Colaizzi 7-step analysis method to scrutinize and analyze the data, which showed that no new themes or ideas emerged. Therefore, sixteen dry eye patients were recruited for the study.

## Data Collection

Based on the HBM theory, literature review, clinical experience, and the study's objectives, an initial interview outline was created. It was then refined in cooperation with a qualitative nurse researcher and a dry eye specialist, and it was finished by pre-interviewing two patients: (1) Could you please tell us how your experience of the disease has affected your day-to-day life in concrete terms and how you feel about it? (2) What ways or behaviors have you adopted to relieve your symptoms since you started having dry eye? Can you tell me how you usually do these healthy things? (3) Have you had any obstacles or problems keeping up these healthful habits? How did you get beyond those obstacles? Have you encountered any difficulties or challenges in adhering to these healthy behaviors? How did you overcome any difficulties? (4) If you were asked to participate in a health promotion education program, what would you focus on? (5) What support and help have you received in managing dry eye? (6) What do you know about the prognostic impact and benefits of health behaviors on dry eye? How important do you think it is to adhere to healthy behaviors?

To prevent a preference bias in this study, the first author performed all interviews, who was trained in qualitative research. The second author played a facilitating role by recording non-verbal responses, including the interviewees' movements, tone of voice, facial expressions, and body language. The first author screened eligible participants by reviewing medical records or interviewing patients in the clinic. Before the interview, the patient was contacted to explain the purpose, methodology, and content of the interview that the audio recording of the interview would be used primarily for research purposes, and informed consent for the interview was obtained from the patient. The interview was conducted in the waiting room of the eye clinic to ensure a quiet and comfortable environment. We listened attentively, did not ask leading questions, did not evaluate the content of the interview, did not interrupt each other easily, took care to focus on the content of the interview, and asked targeted questions, and the time was limited to 20–40 min.

## Data Analysis

The audio recordings were transcribed verbatim by two researchers within 24 hours of the interviews and validated by a third author. The data were analyzed using Colaizzi 7-step analysis method, which focuses on identifying and integrating interviewees' feelings and understandings to help the researcher extract deep-rooted themes and meanings in seven stages: (1) detailed transcription and careful and repeated reading of all materials; (2) extraction of meaningful statements; (3) generalization and extraction of meanings from repeated and significant statements; (4) searching for common concepts or features of meaning to form themes, theme groups and categories; (5) linking themes to the research phenomenon for a complete description; (6) identifying similar points of view; and (7) returning the results to the respondent to validate the authenticity of the content. The raw data were analyzed and coded independently using Colaizzi 7-step analysis method, and in the event of disagreement, the group discussed the results of the analysis and reached a consensus. The data was analyzed using NVivo 14.0.

# Ethical Considerations

The study project was approved by the Ethics Committee of The Shanghai Tongren Hospital (Ref. No. Tongren Ethics Review 2025–005-01), and in strict adherence to the Declaration of Helsinki. All participants signed an informed consent form before the formal study and participated voluntarily. The informed consent included publication of anonymized responses or direct quotes. All participants were assured of their privacy, as interviews were presented anonymously with names replaced by letters. Each participant is represented by a numerical code.

# Rigor

We adopted the criteria of dependability, credibility, confirmability and transferability as proposed by Lincoln and Guba to ensure the rigor of the results. Dependability was ensured through the researcher’s systematic training in qualitative research methods, solid experience in ophthalmological practice, and strong rapport with the participants prior to the interviews to gain their trust. The researcher-maintained objectivity and ensured fairness during data collection; the researcher listened to the audio recordings several times and repeatedly, compared and analyzed the data, and discussed the group members with each other and solicited feedback to ensure credibility. The study’s confirmability was that all data were recorded throughout the process, and coded and categorized documentation was adequately stored to allow for future validation and verification. Regarding transferability, the interview outlines were constantly reviewed and revised to ensure the feasibility of the study, with detailed descriptions of the socio-demographic profiles of the respondents and the inclusion and exclusion criteria to ensure that the study population was representative and to facilitate the interpretation of the applicability of similar phenomena.

# Results

## Participant’s Characteristics

A total of 16 participants were recruited for this study, ranging in age from 60 to 78 years, with an average age of 69.8 years. The age of the participants was limited to 60 to 80 years old due to the possibility of hearing impairment or slurred speech in those over 80 years old. The general characteristics of the study participants are presented in Table 1. The themes of the interviews are presented in Table 2.

**Table 1** The General Information of the Study Participants (P=16)

No.	Age	Gender	Marital Status	Education	Time of Illness (Years)
P1	66	Female	Married	High school	0.5
P2	73	Male	Married	Undergraduate	1
P3	63	Female	Married	Undergraduate	5
P4	78	Female	Married	Primary school	2
P5	75	Female	Married	High school	4
P6	72	Male	Widowers	High school	1
P7	66	Female	Married	Undergraduate	0.6
P8	70	Female	Married	Undergraduate	1
P9	61	Male	Married	Postgraduates	6
P10	66	Female	Married	Undergraduate	10
P11	78	Female	Widows	Junior high	3
P12	77	Female	Married	High school	7
P13	68	Male	Married	Undergraduate	0.5
P14	73	Female	Married	High school	6
P15	60	Female	Married	Postgraduates	2
P16	70	Female	Married	Junior high	5

**Table 2** Themes, Subthemes Categorized From the Interviews

Number	Themes	Subthemes
1	Perceived threat of disease	Perceived severity Perceived susceptibility
2	Perceived benefits	Perceived sense of gain Improved quality of life
3	Perceived barriers	Lack of willingness to manage behavior Insufficient intrinsic motivation
4	Low self-efficacy	Cognitive misconceptions Lack of confidence in responding
5	Perception of behavioral cues	Negative coping style Lack of external support Perception of self-management

## Perceived Threat of Disease

### Perceived Severity

Participants expressed concern about the impact on all aspects of their future lives, including the possibility of blindness, psychological discomfort, organ damage, complications, and quality of life. The majority of participants had several recurring symptoms of the condition, including pain, dryness, visual disruption, and a sense of a foreign body.

I'm somewhat concerned that I may eventually lose my vision because my eyes are constantly dry and unpleasant, almost like there's sand in them (contemplative), and the symptoms persist even after treatment. (P12)

My eyes are often irritated, which makes me feel mentally drained and lose the joy and hope of living. (P15)

Some of the participants, due to the short time since they were diagnosed with dry eye, believed that the symptoms they experienced were mild, controllable and did not significantly affect their daily lives, and they had less knowledge about dry eye. They were less worried about the ocular symptoms and possible problems of dry eye because of their existing medical condition, which minimized the long-term impact of the condition.

For me, dry eye isn't that bad anymore; a small drop goes a long way, and while I do occasionally experience eye pain and redness, it's under control, doesn't seem to bother me too much, and my life hasn't altered. (P1)

### Perceived Susceptibility

Over the course of the condition, participants' understanding of dry eye disease grew, and they became aware of their greater chance of getting the condition themselves. Age, gender, family history, environment, lifestyle, greater use of technological devices, and the participants' overall evaluation of their health state all influenced their perceived health views.

My short sight, lack of eye discipline, and possibly increased use of gadgets since retirement could all be contributing factors to my dry eye. (P16)

Participants experienced psychological sentiments of anger, despair, helplessness, and fear because of the extended clinical response to dry eye, and they became concerned about the possibility of the disease progressing. They believed that controlling habits was necessary to halt the disease's progression and that dry eye was a continuous process.

I often saw things very blurry, which made me feel very angry and worried that it might get worse. I've now reduced my phone use and sedentary behavior and am exercising more in the hopes that my eyes will improve. (P7)

Most participants thought that using mobile video terminals more frequently contributed to or exacerbated the beginning of their dry eye condition.

After I retired, I spent a lot more time staring at my computer and cell phone, and ever since, my dry eye problems have gotten worse. I reduced the amount of time I spent on electronics after following my doctor's advice. (P10)

## Perceived Benefits

### Perceived Sense of Gain

Participants felt the positive benefits and advantages of health behaviors in their self-management of the disease, including lowering the threat of the disease, effectively controlling the onset of ocular symptoms, helping participants understand their own true health status, increasing participants' knowledge of dry eye disease and reducing their families and their own concerns about their health status, and at the same time the process made participants aware of the proper health behaviors to alleviate the symptoms of the disease by promoting lifestyle changes to avoid additional financial and care burdens in the future due to severe disease progression.

My symptoms of dry eyes will improve if I change my sleeping patterns, make sure I get eight hours of sleep, take care of my eyes, exercise, and relax! (P11)

My eyes become painful if I don't take a sleep in the afternoon, so I've developed the habit of napping, I can't eat hot or irritating foods, and I'm searching for eye drops that work for me so that (my eyes) are comfortable. (P15)

Dry eye disrupts the original rhythm and planning of the patient's life, and the participant's success in self-health management through self-medication and lifestyle changes to control the progression of the disease in coping with and resisting the disease motivates a change in the participant's behavior, making the participant happier and more refreshed. Additionally, the positive psychological and emotional impact on the DED patient's attitude towards the disease pushes the participant to achieve healthy self-management behaviors.

My eyes will feel better if I listen to the doctor, use eye drops and nebulization treatments on a regular basis, and exercise more. Being positive about dry eye will also lift your spirits, allowing you to hope for other things. (P3)

### Improved Quality of Life

The participants learnt more about DED from the medical staff and, in order to prevent the disease from worsening and to alleviate the eye symptoms, they took the initiative to change their bad habits, pay more attention to their health, make a positive change in their daily behavior and follow good living habits to improve their quality of life.

In order to lessen the impact of the disease on my life, I now take my medicine as prescribed, pay attention to my conduct, and take care of my eyes, as well as reducing my use of alcohol and tobacco. (P2)

Promoting patient control of the illness may be achieved through increased individualized attention to the condition. In order to alter their disease condition and enhance their quality of life, participants use an active approach to management and therapy, paying attention to and appreciating their illness.

To make my eyes a little better, I take precautions to protect them, such wearing shades when I go out, taking lutein, getting more sleep, taking my prescription on time, etc. I now adore my eyes. (P15)

In order to cope with the illness, participants slow down their own pace of life, employ a range of coping mechanisms, and adopt optimistic outlooks. Positive experiences create a positive feedback loop and enhance quality of life by encouraging participants to modify their attitudes toward health behaviors and their readiness to modify their health habits to manage the disease.

Being aware of your lifestyle and not focusing too much on it will give you energy to think and deal with other important things, and your mood will be much more relaxed. (P14)

## Perceived Barriers

### Lack of Willingness to Manage Behavior

When asked about the obstacles or challenges they faced when seeking health behavior management, participants said that while they understood the advantages of changing health behaviors, they were not very prepared to make the change,



they were psychologically lazy, they did not understand the long-term benefits of changing health behaviors, and they were not concerned.

I used to use electronics less when I had eye problems, but now that I'm feeling better, I still prefer to spend a lot of time on my phone, read e-books, and utilize my eyes even more than before. It's a little out of hand. (P13)

For participants who have chosen to change their unwanted behavior and are actively doing so, not being able to get the benefits and advantages of health behavior management feedback in real time can reduce enthusiasm and confidence in the participant's willingness to change their behavior.

Will my dry eye condition improve if I change my usual routine? The improvement shouldn't be substantial enough, in my opinion, for me to continue. (P5)

Some participants believed that medication and physiotherapeutic means could help with the symptomatic discomfort and negative disease experience of dry eye, leading to a reluctance to change adverse health behaviors.

Since dry eye medication and eye drops can currently slow the course of my condition, I see no point in engaging in other activities, such as playing on my phone, and as I get older, I don't want to go outside and work out! (P11)

### Insufficient Intrinsic Motivation

One major obstacle that the participants cited was a lack of motivation. Even if they intended to alter their health-related behaviors, they thought that self-management would not help their conditions. Their self-behavioral transformation was hampered by a lack of consistent motivation and useful assistance, which left them lacking in confidence and drive to maintain their healthy habits.

Although I've already done it and it hasn't improved my dry eyes, I don't want to worry about it even if I know it's helpful. (P6)

After receiving a diagnosis, participants make some modifications to their health-related habits, but they struggle to maintain these changes, lack patience, do not believe the time commitment is worthwhile, and have doubts about the benefits of these changes.

There are times when you're busy at home and don't have time to deal with dry eye. It can feel like a waste of time. (P4)

I've already reached this age; life is short, I don't want to change, and I don't generally take the initiative to do so. Right now, things are going well, huh? (P2)

### Cognitive Misconceptions

Age, literacy, lack of access to information, and other factors all contribute to participants' cognitive biases regarding DED health management. Additionally, patients' management of health behaviors is influenced by their own innate perceptions and habits, as they base their decisions on their prior knowledge and habits.

Dry eyes, in my opinion, are a minor condition that shouldn't require any kind of treatment; wouldn't it be preferable to spend less time on your phone? (P7)

I also try to go to bed and wake up earlier, exercise more, and take care of my eyes, but I don't feel like I'm making much progress. It would be better to order eye drops, which is quite nice. (P8)

Perceptions of health habits among participants are typically shaped by prior experiences, and there is a personal cognitive bias that suggests self-management is not an effective way to enhance health behaviors.

I don't believe I need to change anything, I'm fine the way I am, regular medication and check-ups are enough, I don't need to do anything else. (P2)

## Low Self-Efficacy

### Lack of Confidence in Responding

After being diagnosed with DED, participants change their health-related behaviors in a variety of ways. However, even if these modifications lessen the impact of the symptoms, they are likely to recur, which can cause further distress to those who may lack confidence or mistrust behavior management.

Since there is nothing to do at home anyhow and life would be pointless without checking my phone, I feel like these health behaviors are kind of impractical. It's also too difficult to accomplish. (P12)

I followed my doctor's advice and tried the precautions, but I didn't feel like they were working, and the effects only lasted a few days. (P3)

Participants' patience and confidence are undermined by long-term disease management; they suffer from negative emotional reactions such worry, fear, and anxiety and decide to make fewer adjustments or accept the status quo.

I used to have pretty good habits, and I don't know why I got them, and I don't know how useful you say these things are, at least I don't feel it. (P14)

### Negative Coping Style

DED is a chronic illness that has long hampered their daily life of participants, who reported having attempted multiple approaches with unsatisfactory expected outcomes. Together with ocular issues and bad emotions, patients gradually lose control of their sickness as their feeling of health and cognitive beliefs deteriorate. This leads to anxiety and fear about their future health.

I've tried diet, exercise, and cutting back on electronics, but none of them have had much of an impact, and I'm not sure if there will ever be a cure in the future. (P5)

My dry eye is becoming more difficult to manage, and there's no way to get rid of it. (P14)

I've tried changing my lifestyle, but it's difficult to see benefits, and I've tried to treat my dry eyes, but I'm not quite satisfied with the outcome. (P8)

## Perception of Behavioral Cues

### Lack of External Support

As a crucial emotional connection, external support can give patients comfort, understanding, and care while boosting their self-assurance in adhering to healthy behaviors. The patient's needs for disease management cannot be met if their support for health behavior management wanes, nor can it make up for negative feelings like psychological exhaustion and stress from managing the illness.

I'm not sure how to express my annoyance to those who don't have dry eyes, such as my pals, who aren't in discomfort or aware of what's happening! (P6)

Since I'm the only member of my family with dry eye, they don't really know or care about it and consider it to be a minor ailment. (P10)

Another significant external support source is peer education; patients can receive support from their peers, who share similar illnesses and experiences and frequently have emotional understanding and support for one another, by talking to and exchanging advice with others who have gone through similar things.

I wish there was a platform where we could communicate because nobody around me has dry eyes, and I'm not sure who I should talk to about my thoughts other than when I come here for treatment and share my feelings with the person seated next to me (glancing around the room). (P7)



## Perception of Self-Management

In addition to taking medication, participants with a lengthy history of dry eye and complications were more likely to seek health behavior management to control the condition. They were also more likely to look for self-management resources to help them properly manage the condition, and some participants sought health behaviors for early prevention and management out of fear of potential complications.

After receiving a diagnosis, I went online to find out more about the disease, changed my bad habits and paid attention to disease management, especially as I was afraid of losing my sight. (P9)

When participants perceive health benefits and advantages in self-management, confidence in health behavior management is further enhanced and facilitates the development of self-management behaviors.

For me, reaching the objective of lessening symptom distress will inspire me and increase my likelihood of sticking with it. (P11)

Long-term disease management and control are necessary for dry eye. Although some participants were able to follow the control measures at first, many of them subsequently stopped doing so.

Controlling time spent on gadgets, hygiene, the environment, nutrition, exercise, and other things has been discussed with my doctor, but it's really too difficult to achieve, the benefits seem average, and you've been living this way for so long that it shouldn't really matter. (P5)

## Discussion

The results of this study are similar to those of a European cross-sectional survey in which the majority of respondents reported a lack of knowledge about the disease, resulting in an inability to correctly recognize symptoms and complications, and delays in diagnosis and treatment.<sup>18</sup> They were unable to appreciate the dangers of a delayed diagnosis and the advantages of embracing healthy habits because of misconceptions and a lack of awareness regarding dry eye. A prerequisite for seeking to change one's health behavior is the perception of the threat that dry eye disease poses to oneself. Participants' perceptions of the advantages and disadvantages of seeking health care, as well as how to best utilize their personal strengths to get past these obstacles and take advantage of the advantages, are crucial in managing health-seeking behavior and inspiring them to alter their health-related behaviors and enhance their quality of life. At the same time, behavioral cues help dry eye patients understand the risks of their condition, manage its advantages, or remove obstacles to healthy behaviors, which helps them construct and rationalize health behavior management plans and build positive health attitudes.

## Reshaping the Perception of Disease Improving Health Behavior Management Capacity

The diagnosis and treatment of dry eye patients is thought to be a major factor in the development of their ideas on health-seeking behavior. Patients are typically aware of changes in their condition when they suffer dry eye symptoms or complications. This illustrates how people typically do not actively care about their health. Once diagnosed with dry eye, most patients were overly dependent on medication for symptomatic relief and few had regular check-ups, leading to a delay in diagnosis and treatment, which is consistent with the study by Uchino et al.<sup>19</sup> According to interviews, the actual danger of dry eye, a crippling condition, was greater than the perceived hazard. Long-term, ineffective treatment will cause major consequences that will eventually cause blindness and impair the patient's capacity to live and work. Creating age-appropriate health education resources that graphically illustrate the course of the illness, and the effects of complications can help patients become more knowledgeable and health conscious while also altering their perceptions of threat.

## Stimulating Intrinsic Motivation and Boosting Confidence in Coping

The development of patients' self-management behaviors involves the motivation and competence of health behavior, and behavior change necessitates the stimulation of intrinsic motivation, which in turn improves patients' competence, confidence, and beliefs about health behavior.<sup>20</sup> The findings of this study's interviews revealed that participants lacked

intrinsic drive and confidence to change, were hesitant to practice self-management, and had little faith in their capacity to control their condition. According to the study, creating behavioral treatments based on patients' preferences and expectations gives them more confidence and motivation to change their behavior while also empowering them to take charge of their health journey.<sup>21</sup> Patients' capacity to control their own behavior is also enhanced when health education is given on personal management knowledge and abilities. Negative attitudes toward behavior control and a decline in patients' intrinsic motivation can result from unhealthy psychological variables. Therefore, in order to improve patients' psychological status, reduce the negative emotions brought on by the disease, and boost patients' confidence in changing their health-related behavior, clinical staff must promptly attend to patients' psychological status, offer psychological counseling, and encourage patients to use techniques such as meditation, positive thinking, and other psychological adjustment techniques.

## Setting up Social Support Systems to Help Patients Cope with the Challenges in a Positive Way

DED is a progressive, long-term illness that frequently makes sufferers feel depressed and anxious, which exacerbates their psychological suffering.<sup>22</sup> Families, friends, and the outside world can provide patients with emotional and social support that can help them focus, ease psychological discomfort, and deal well with life's obstacles. According to Pan et al,<sup>23</sup> DED patients who receive a lot of assistance are able to fully mobilize external resources to deal with the difficulties the disease presents and develop healthy coping mechanisms and health management practices. Prioritizing family and friend support is essential for assisting participants in embracing healthy habits. Helping participants to develop a social support network, external support such as emotional support from family and friends, and guidance from clinical professionals help patients to actively manage challenges. Peer support is a crucial component of social support, and peer health education actively contributes to patients' disease management through its practical and efficient aspects. Therefore, peer support and learning can be strengthened through the creation of a peer support group and a health mutual support platform. This will aid in the development of healthy behaviors and the sharing of information about diseases in order to better manage obstacles and develop health management practices.

## Strengths and Limitations

This study employed qualitative methods to explore the development of health behaviors in patients with dry eye disease, providing valuable insights into how patients perceive the disease and seek health behavior management, using a health belief model to help elucidate the factors influencing patient behavior. However, there are several limitations to this study. First, the study sample was small—all participants were drawn from the same hospital—and it was not universally representative, which could have an impact on how thorough the results are. Second, the study solely contained patient interviews; in order to better understand the requirements and experiences of managing DED, future research should incorporate the viewpoints of caregivers and healthcare professionals. Lastly, using self-reported recall data may add bias and may not adequately represent the diversity of management experiences. In the future, similar research might be carried out in other cities to examine the many aspects of health behaviors in other cultural situations. To further investigate this crucial subject in the interim, we advise more study on the mechanisms underlying healthy behaviors in dry eye patients.

## Conclusion

These studies, which were based on the HBM, examined various facets of the experiences and perceptions of health behavior management of elderly Chinese patients with dry eye disease. Of particular interest were the deficiencies in behavior management motivation, disease perceptions, self-management efficacy, and access to external support, as well as the lack of health beliefs and motivation regarding change, which often impeded timely help-seeking behavior. These findings emphasize the need to break through the multiple barriers of “cognition-ability-environment” in the management of health behaviors of elderly patients with dry eye disease, and the need for healthcare professionals to provide early, professional, and personalized assessment, guidance, and intervention in the process of managing patients' health behaviors. Through a variety of active measures such as cognitive empowerment, collaborative support and technological interventions, we have constructed a management model that is “operable, sustainable and warm”, creating a supportive

environment to help patients cope with their disease, reduce adverse symptom experience, improve quality of life and visual well-being, and enhance the ability of self-management of health behaviors.

## Abbreviations

DED, Dry eye disease; HBM, Health belief model.

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## Disclosure

The authors report no conflicts of interest in this work.

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