

Perceptions and Experiences of Self-Management in Patients with Prediabetes: A Qualitative Study in China

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Purpose: This study aimed to investigate self-management experiences among individuals with prediabetes and analyze their potential self-management needs, thereby informing strategies to enhance self-management efficacy and facilitate the development of evidence-based, personalized interventions.

Patients and Methods: Twelve prediabetes patients from a physical examination center in Nanchong, China, were recruited using purposive sampling. An interpretive phenomenological research method was employed. Semi-structured, in-depth interviews were conducted to explore patients' self-management experiences. The interviews were audio-recorded, transcribed, and analyzed thematically to develop the results. In addition, web-based information support and peer support facilitated patient self-management.

Results: Four overarching themes emerged: (1) cognitive limitations, (2) intrinsic motivation, (3) hurdles to overcome, (4) perceived social support. Revealed the debilitating effect of non-medical terminology expression on the potential harm of the disease, neglect of diagnosis and health education by healthcare providers exacerbated the lack of awareness of prediabetes among patients. The complex social environment (unhealthy food environment, heavy work pressure, etc.) confronts prediabetes with self-management dilemmas. It was also revealed that patients' behavioral change motivation was "threat-benefit" dual-driven and was strongly influenced by family ethics, with family culture significantly influencing health decision-making. In addition, web-based information support and peer support facilitate patient self-management.

Conclusion: This study investigated the perceptions and self-management experiences of individuals with prediabetes, proposing targeted intervention strategies. Key recommendations include: (1) Healthcare providers' perceptions and attitudes toward prediabetes significantly influence patient engagement, necessitating standardized diagnostic and treatment protocols that emphasize disease progression risks during initial diagnosis to enhance clinical awareness; (2) Implementation of motivational interviewing (MI) techniques could effectively strengthen patients' intrinsic motivation for behavioral modification; (3) Multidimensional support systems should be established through AI-powered medical question-answering systems, standardized nutritional labeling regulations, family-involved health education programs, and peer-led "health coach" initiatives. These strategies provide a framework for developing comprehensive prediabetes management interventions aimed at improving self-management ability.

Keywords: prediabetic state, patient-centered care, primary prevention, qualitative research

Introduction

Prediabetes, defined as a transitional metabolic state encompassing impaired fasting glucose, impaired glucose tolerance, or a combination of them,¹ represents a critical window for diabetes prevention. Epidemiologic data from China's 2018 National Survey indicate that 38.1% of adults meet diagnostic criteria for prediabetes.² Studies have shown that approximately 74% of people with prediabetes will eventually develop diabetes.³ Beyond its role in diabetes pathogenesis, prediabetes independently elevates risks for cardiovascular morbidity, microvascular complications, neurocognitive decline, and psychiatric comorbidities.⁴⁻⁶ The "Healthy China 2030" initiative underscores the necessity of enhancing standardized management

for populations at elevated risk of diabetes to mitigate disease progression.⁷ For people with prediabetes, self-management centered on lifestyle changes, including dietary management, exercise therapy, weight management, blood glucose monitoring and clinical follow-up, is considered a core intervention for preventing or delaying the development of diabetes and related complications.^{1, 8–10} Landmark trials such as the US Diabetes Prevention Program (DPP) reported 58% diabetes risk reduction through 2.8-year lifestyle interventions,^{11,12} Similarly, China's Daqing Diabetes Prevention Study achieved 43% risk reduction over six years, delaying progression by 3.6 years, and significantly reducing the risk of associated complications.¹³ Furthermore, self-management adherence correlates significantly with enhanced quality-of-life metrics in this population.¹⁴ Despite these evidence-based benefits, implementation of self-management practices among Chinese prediabetic individuals remains suboptimal.¹⁵ Self-management skills of prediabetes patients are closely related to their personality traits, social and psychological factors,¹⁶ Consequently, systematic exploration of patients' lived experiences, perceived challenges, and unmet needs provides critical insights for tailoring evidence-based interventions.¹⁷ Qualitative research provides a more comprehensive and dynamic understanding of patients' health behaviors and the reasons and motivations behind them. Although some foreign scholars have explored self-management experiences in prediabetes patients from a qualitative perspective,¹⁸ notable disparities in diabetes prevention systems limit their generalizability to China.¹⁹ While the United States has implemented national diabetes prevention program since 2010,²⁰ China has yet to establish a standardized national prevention framework and confronts systemic challenges in equitable resource distribution, interdisciplinary workforce capacity building, and systemic integration of public health infrastructure.²¹ Additionally, significant cultural differences may make their self-management experiences less applicable to China. Therefore, this study employs interpretative phenomenological methods to explore the experiences of Chinese adults with prediabetes. The findings from this study will inform future interventions aimed at enhancing the self-management of patients with prediabetes.

Materials and Methods

Design

This qualitative study employs an interpretive phenomenological research method,²² to explore lived experiences of self-management among individuals with prediabetes. Semi-structured interviews were conducted at participants' preferred times. Through an in-depth exploration of the experiences of prediabetes patients in self-management, the researcher carefully analyzed and explored the patients' inner world and real thoughts to reveal the essence and deeper meaning of the observed phenomena. In this process, the researcher attaches great importance to the uniqueness of individual experiences, which contributes to a comprehensive understanding of the differences and diversities among different patients. Thematic analysis was employed to derive results. The findings are reported following the Consolidated Criteria for Reporting Qualitative Research (COREQ).²³

Setting and Sampling

The study was conducted between August and October 2024 at a tertiary hospital-affiliated physical examination center in Nanchong, China. Inclusion criteria were as follows: (1) diagnosis of prediabetes per 2024 ADA Standards of Care;²⁴ (2) age \geq 18 years; (3) voluntary participation with informed consent; (4) willingness and clarity of mind to share experiences; (5) participants not enrolled in other studies simultaneously. Exclusion criteria included: (1) expressive communication disorders; (2) serious psychological or psychiatric disorders. Participants were recruited using purposive sampling combined with a maximum variation strategy. The researcher identified eligible patients through medical records and called patients to inform them of the objectives and procedures of the study and obtain their informed consent. The sample size was determined by saturation of interview topics; when the interview reached the 10th patient, no more new ideas emerged, and the researcher continued to interview two patients; still, no new ideas emerged, and the theme reached saturation. 12 participants were eventually recruited. A total of 28 patients were invited; sixteen refused to participate due to personal reasons (eg, time conflicts and privacy concerns).

Data Collection Procedure

A semi-structured interview guide was developed through two research team deliberations and pilot-tested with two prediabetic volunteers (excluded from the main study). The main questions included: (1) Can you describe your understanding of your blood glucose status? What are your perceptions of prediabetes? (2) Have you taken any action

regarding this? If so, how did you proceed? (3) What challenges have you faced, and how did you address them? (4) How do you acquire knowledge and information about self-management? (5) How have your family, friends, healthcare providers, or social media influenced your self-management behaviours? (6) Is there anything you'd like to share with me that stands out? Two trained researchers (first and second authors) conducted telephone interviews. The first author is a Master's student and a diabetes specialist nurse with two years of clinical nursing experience. Being a diabetes specialist nurse is more effective in gaining patients' trust and teaching them about self-management, thus making them more willing to express themselves. She was also proficient in understanding most local dialects. The second author, also a Master's student, assisted with field notes and provided additional insights during the interviews when necessary. Ensure the patient has adequate free time and a quiet interview environment before the interview. Open-ended follow-up questions were posed unbiasedly to obtain detailed descriptions and avoid inducing questions. Researchers transcribed all audio recordings verbatim in Chinese and encoded them to maintain participant anonymity Within 24 hours of the interview. Both interview records and text documents were stored on a protected computer to ensure confidentiality.

Data Analysis

The interviews were transcribed verbatim within 24 hours after each session, ensuring both the accuracy of the transcription and the researchers' awareness of their potential personal assumptions.^{25,26} Participants confirmed that the transcribed data were correct, which was then imported into NVivo 11 software. Two researchers independently analyzed the data using the Colaizzi seven-step analysis method:²⁷ repeatedly read the interview data, extracted statements related to patients' experiences of self-management and perceptions of self-management from the data, respectively, merged and categorized the recurring similar statements to obtain 38 initial codes; the coded views were aggregated and common features were searched for to initially form 11 thematic nodes, which were then summarised to form four core themes. Subsequently, the research team reviewed each theme to ensure that the meanings derived from the data were accurately represented.

Ethics

Ethical clearance for this study was obtained from the Ethics Committee of the Affiliated Hospital of North Sichuan Medical College (2024ER480-1). Written informed consent was obtained, and oral consent was audio-recorded from all participants before the interviews began; this included explicit agreement to the publication of anonymized responses and direct quotes. All interview materials were securely stored. Participants could refuse to answer any question and withdraw at any time without repercussion. This study was conducted following the Declaration of Helsinki.

Results

Patients

Twelve prediabetes patients, six men and six women, aged between 25 and 68, were interviewed in this study. The Self-Management Ability Scale for Prediabetic Patients, developed by GuoGe,²⁸ was used to assess patients' self-management ability, with higher scores indicating higher self-management ability. Table 1 provides the demographic characteristics of the twelve participants.

Themes Identified

Analysis revealed four main themes from the participant narratives: (1) "Cognitive limitations", highlighting how deficient disease awareness and risk comprehension impeded health behavior adoption, with preventive measures for diabetes risk factors deprioritized in multimorbidity management protocols. (2) "Intrinsic motivation", confirms the critical function of perceived disease threats as behavioral catalysts, while identifying family responsibilities and physiological gains as motivators to pursue health. (3) "Hurdles to Overcome", revealing that structural healthcare deficiencies amplified self-management competency gaps, while social circumstances (eg, occupational pressures, regional dietary norms) greatly influence the sustainability of health behaviours. (4) "Perceived social support", revealing that family, peer, and online information support alleviated patients' barriers to self-management to some extent. All themes are displayed in Figure 1.

Table 1 Participant Demographics (n = 12)

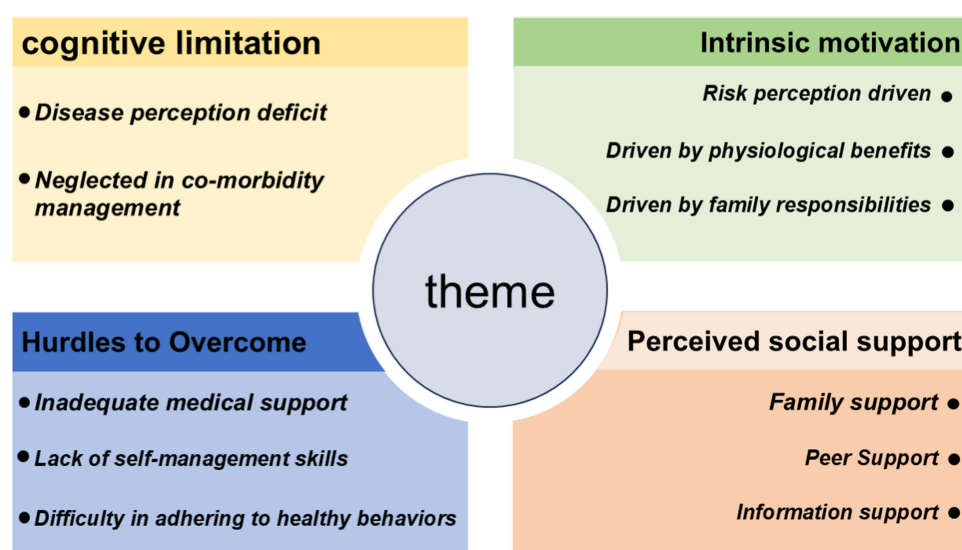
	Sex	Age	Living Status	Educational Status	Duration of Prediabetes (Year)	Self-Management Ability Score
P1	Female	44	With purpose	Senior high school	Two months	116
P2	Male	27	With purpose	Bachelor	Two months	105
P3	Male	55	With purpose	Junior high school	Two years	94
P4	Male	25	Alone	Bachelor	One year	100
P5	Male	53	With purpose	Junior high school	Three years	111
P6	Female	37	With purpose	Bachelor	Four years	121
P7	Female	55	With purpose	High school	Two months	113
P8	Male	62	With purpose	Junior high school	Thirteen years	133
P9	Female	65	With purpose	Primary school	One year	86
P10	Female	68	Alone	Junior high school	Three years	101
P11	Female	31	Alone	Senior high school	Six months	74
P12	Male	34	Alone	Senior high school	One year	68

Cognitive Limitation

Individuals with prediabetes tell of their different understandings of the disease situation and severity, the lack of disease perception, and the lack of awareness of potential harms, superimposed on the misplaced priorities of health issues under the pressure of co-morbidity management, which make patients' health behavior initiation impaired.

Disease Perception Deficit

Prediabetes is often asymptomatic, two participants reported screening fasting glucose at physical exams but not being told they are prediabetic; they are unaware that they are in prediabetes, a high-risk stage of diabetes, and their lack of

**Figure 1** Theme.

perception of the disease prevents them from moving into the patient role. P4: “No doctor told me I had a health problem with high blood sugar. Maybe it was on the medical report card, but I didn’t see it”.

In addition, patients diagnosed with prediabetes often used the term “blood sugar is a little high” to describe their current health status and were not sufficiently aware of the potential dangers.

P10: Prediabetes, I haven’t heard of it; I just have a little bit of high blood sugar; I don’t have any discomfort; the doctor said it’s not diabetes; I don’t care much about it.

Neglected in Co-Morbidity Management

Patients with other diseases may focus their attention on the diagnosed disease, while the management of prediabetes as a high-risk factor for diabetes is often neglected.

P10: Look at my medical report, there are problems everywhere, prediabetes is the least of them, it’s impossible to manage everything.

Intrinsic Motivation

The fear of the potential harm of prediabetes and the reversibility of prediabetes are intrinsic motivations for patients to establish healthy behaviours. On the contrary, “Cognitive limitation” is an important factor in patients’ lack of motivation for self-management. In addition, the strong sense of family responsibility, influenced by traditional Chinese family culture, motivates patients to pursue good health to reduce the burden on their families.

Risk Perception Driven

Some patients associate prediabetes with diabetes and its complications, and the fear of diabetes motivates patients to make behavioral changes to prevent diabetes.

p6: Others say diabetes is an “undead cancer”, I am really scared of getting it, I have to do something to prevent it.

Driven by Physiological Benefits

In addition, recognizing the benefits of self-management and the reversibility of prediabetes motivated patients to make lifestyle changes.

P1: I went to the hospital for a blood glucose recheck and found that my blood glucose was slightly lower than before! My doctor said that my blood sugar is now just a bit above the normal range, and I now feel confident that I can get my blood sugar back to normal. I feel full of energy after leading a healthy life. Being diagnosed with prediabetes reminded me to take my health more seriously.

Driven by Family Responsibilities

Influenced by the traditional Chinese concept of “family ethics”, people regard the family as the center of gravity in their lives, and a strong sense of family responsibility stimulates patients’ awareness of self-management. The prevalence of prediabetes is high among young and middle-aged people, and they often shoulder the burden of the family.

P12: Our generation has elderly people and children to feed, so we can’t afford to let our bodies develop health problems.

Patients were concerned about the care and financial burden the illness would place on their families. They, therefore, took the initiative to establish healthy behaviors to reduce the overall burden on their families.

P9: I can’t do much else for being old, and being healthy is the biggest help to my children.

Hurdles to Overcome

Prediabetes patients lack knowledge of self-management due to insufficient medical support, coupled with the constraints of regional food culture and social inertia, and the conflict between workload and health management, making it difficult to maintain health management amidst the dual dilemma of cognitive bias and lack of behavioral compliance.

Inadequate Medical Support

Medical support plays a crucial role in patients' self-management, and patients were generally eager to receive professional guidance and support from healthcare professionals. Unfortunately, some participants reported that they did not receive health education from their healthcare providers.

P11: When I had a medical check-up, I found my blood glucose was a little high, but the doctor didn't tell me what to do about it

In addition, some participants reported that communication with healthcare providers was mostly ineffective, even when they took the initiative to go to the clinic for counseling.

P6: When I went to the hospital for a review and asked the doctor what I should pay attention to, they just told me to pay attention to my diet and exercise more, exactly what I can and can't eat, and what I should do for exercise was not mentioned, it was really simple to say. They have to see a lot of patients in a day, and they don't have the time to talk to us in detail.

Lack of Self-Management Skills

Due to the lack of health guidance from healthcare professionals, patients' self-management knowledge mainly comes from fragmented self-learning, which led to some misconceptions about self-management. Prediabetes patients generally valued dietary management but usually regarded "eating less" as the main form of dietary management. However, a balanced diet (eg, fat and protein intake) was often overlooked. p1:

P1: I hardly eat rice now; I eat less meat and a lot of vegetables every day, and I am often hungry.

For exercise, patients viewed work as a form of exercise and gave less consideration to the intensity and duration of exercise.

P11: My work is physically demanding, and I think it is considered exercise.

Some patients also reported that some self-management knowledge was more abstract and theoretical, making it difficult to apply.

P2: I know that I have to control the total calories, but I can't count the calories I eat. I only have to control myself to eat less, and I don't know if it's appropriate.

The complexity of the living environment also posed a challenge to patients' self-management. p2: "Nowadays, many food bags in supermarkets carry labels such as "sugar-free" and "0 fat", and drinks also have "0 calories", so I wonder if I can eat those.

Difficulty in Adhering to Healthy Behaviors

Influenced by the unique dietary culture of Sichuan regions, people generally prefer heavy oil and salt cuisine. However, this dietary habit is very different from the dietary management principles of pre-diabetic patients.

P1: It is hard to get out of such a dietary environment when I am used to eating heavier food and everyone around me eats like this.

Meanwhile, get-togethers are indispensable in life as an important part of social activities, and they are often accompanied by eating high-calorie and high-fat foods.

P12: There are times when I have to go out for get-togethers with my friends, and I eat hot pots and barbecue meats, which are high-calorie foods.

People with prediabetes also take on a variety of social roles, and there can also be some competition between the behavioral demands of these roles and their need for self-management, making it difficult to adhere to healthy behaviors.

P12: I'm in the construction and engineering industry, and I cannot work without socializing, so it's not realistic for me not to drink.

In addition, the heavy work pressure left them with little time and energy to exercise or maintain a healthy diet.

P2: Work is tiring, and when I go home, I want to rest well; there's no spare energy.

Perceived Social Support

Social support refers to the support individuals can obtain from social networks, such as relatives, friends, colleagues and social workers, covering material assistance and emotional comfort. Prediabetes patients can build a multifaceted social support network through family care, emotional motivation, peer experience sharing and information support, which helps them overcome the difficulties mentioned above.

Family Support

A loving and supportive family environment positively affects patient self-management, which cannot be ignored. The caregiving function provided by the family is directly involved in the process of patient self-management and facilitates the patient's self-management.

P1: My mother knows that my blood glucose is a bit high, and she takes better care of me in cooking, putting little oil and salt in those.

In addition, the emotional comfort provided by family members was also an important motivation for patients to adhere to self-management.

P6: I sometimes want to be lazy and don't want to exercise, but my husband will encourage me and sometimes go running with me.

Peer Support

Patients' self-management skills can be enhanced through peer experience sharing and communication.

P7: There are colleagues on the unit who have diabetes, and they share some of their experiences of blood glucose management with me, which has been very helpful.

Information Support

Acquiring knowledge about disease management is a prerequisite and guarantee for effective self-management of pre-diabetic patients, and the interviews found that with the development of the Internet, patients can obtain information support through diversified channels.

P1: Nowadays, the internet is very convenient. I can often find videos on 'Dou Yin' about controlling blood glucose, and sometimes I will search on Baidu to see if I can eat it when I eat something.

However, multiple sources of information support have drawbacks; such information is not rigorously verified, and its scientific validity is difficult to guarantee.

P5: I learned from the TV that if I filter the water used to cook rice when I cook it, my blood sugar will not rise.

Discussion

This study provides insight into the experiences of Chinese patients with prediabetes in terms of self-management, and the findings emphasize that a lack of awareness of prediabetes is an important factor hindering patients' self-management, which is in line with the findings of several previous studies.²⁹ Some Chinese patients often view prediabetes with overly optimistic attitudes, in contrast to the negative emotions of surprise, distress, and concern

about future quality of life that Joiner reported most patients in the United States experience when they are diagnosed with prediabetes.³⁰ This cognitive bias may stem from the far-reaching influence of the traditional medical concept of “treating the already sick” in China, as well as the long-standing neglect of disease prevention in the primary healthcare system. Notably, this study reveals that non-medical terminology expression leads to disease perception bias, patients and healthcare providers in China commonly use the term “blood glucose is a bit high” as a substitute for the medical term “prediabetes”, which fundamentally diminishes the Risk perception. Whereas the perceived potential threat of disease is an important motivator for patients to establish healthy behaviors,³¹ this study confirms this idea. Diagnosed prediabetes can lead to a positive coping attitude, which is an important opportunity to establish self-management behaviors.^{32,33} However, this study found a tendency to “focus on testing rather than educating” in Chinese healthcare institutions. Prediabetes is a low priority in primary health care, and how healthcare professionals treat prediabetes can also have a profound impact on people’s response to prediabetes and their subsequent actions.^{34,35} Therefore, the establishment of standardized diagnostic and treatment processes and the emphasis on the potential harms of prediabetes at the time of diagnosis can profoundly impact the importance that people place on prediabetes. On the other hand, there are few reports on prediabetes at the social level, leading to a lack of awareness of the potential harm of prediabetes among the Chinese people. In implementing the National DPP in the United States, lifestyle coaches have used local community forums (including local radio programs and Facebook live streams) to deliver presentations, which have gone a long way towards raising awareness of prediabetes among the local population.¹⁹ Therefore, the implementation of awareness programs on diabetes prevention and its strategies in the community and online platforms may help to raise awareness of prediabetes among our population.

Some participants in this study reported that benefiting from self-management motivated them to maintain a healthy lifestyle. This supports the notion that positive health outcomes and feedback encourage individuals to establish and maintain healthy behaviors.^{36–38} Motivation, as an intrinsic motivation to stimulate patients’ health behaviors, influences patients’ adherence to self-management behaviors. As an effective psychological intervention, motivational interviewing can guide patients to form positive perceptions of self-management and enhance their confidence, thus prompting them to construct and practice self-management behaviors on their initiative. It is suggested that healthcare professionals can use motivational interviewing techniques to implement psychological motivation interventions to enhance patients’ intrinsic motivation for self-management.

The present study found that the self-management behaviors of prediabetes patients were mainly focused on dietary and exercise management, which aligns with the findings of Shakya’s study.³⁹ Dietary and social culture has been seen as a huge challenge for patients to self-manage. In particular, the dietary flavors of the Sichua prefer spicy and fresh flavors, and the cooking style is mostly fried, which contrasts sharply with the diabetic dietary requirements. At the same time, the social culture is mostly based on potluck dinners, and it is difficult to change the dietary habits of prediabetes individuals in such a social environment. In response to such a specific dietary environment, localized dietary management strategies should be provided, and geographically adapted recipes should be developed to provide more options for the dietary management of individuals with prediabetes. In addition, participants in this study reported that “sugar-free” and “zero-fat” dietary labels in the marketplace created some confusion in their food choices and that such dietary labels lacked strict regulation, with some ultra-processed “pseudo-healthy” foods being mixed in. Some ultra-processed “pseudo-healthy” foods are mixed in. In response to the chaos of food labeling, it is recommended that reference be made to the European Union’s Nutri-Score system and that a culturally adapted Oriental version of the Nutrition Labelling System be constructed and made legally valid.⁴⁰ In terms of exercise, most prediabetes individuals in this study were aware of the importance of exercise for health. Still, most prediabetes individuals could not achieve the goal of >150 minutes of moderate-intensity training a week due to time or physical constraints, which aligns with the findings of several previous studies.^{37,41} Future studies should further validate the effectiveness of lower intensity and lower frequency exercise to provide feasible individualized exercise strategies for prediabetes patients.

The problem of inadequate medical support faced by prediabetes patients is closely related to the reality of the plight of China’s healthcare system. The shortage of human resources and overloading of medical institutions in China have severely limited the effective communication between doctors and patients. The Internet has become an important channel for patients to obtain information, but the quality of information varies, and there are security risks. Against the

backdrop of the rapid development of artificial intelligence technology, it is proposed that intelligent models such as ChatGPT and Deepseek be integrated to build a medical knowledge base and develop an intelligent Q&A system with evidence-based medical support. This innovative model can make up for the coverage gap of traditional medical services and help patients achieve scientific and effective self-management through 24-hour online accurate guidance.

Previous studies have also pointed out the family's important role in self-management.^{29,39} Influenced by traditional Chinese culture, the influence of the family on the individual is more pronounced; the caregiving function provided by the family is directly involved in the patient's self-management activities, and the intergenerational caregiving responsibilities to the family and the emotional support provided by the family become important motivators for self-management. However, some health behavior conflicts may also arise in the family environment, so family participatory self-management education and the formation of a family-centered self-management system can further strengthen social support for individuals with prediabetes. In addition, peer support plays an important role in self-management.^{42,43} Still, one should be wary of the spread of misinformation in the peer community and can refer to the "health coach" system to develop qualified patient leaders.⁴⁴

Limitations

All the results were based on the data provided by twelve individuals with prediabetes, most of whom were from Sichuan Province, an economically underdeveloped region. They might have been restricted within the districts. It is recommended that a wider geographical range of patient interviews be included in the future to understand the self-management of patients in different regions. There is also a limitation of this study is its exclusive recruitment of patients. Future investigations should incorporate perspectives from primary healthcare providers to gain a deeper understanding of the limitations of the Chinese primary healthcare system and inform targeted reform strategies.

Conclusion

This qualitative study examines self-management experiences among Chinese adults with prediabetes, revealing critical sociocultural dimensions for diabetes prevention strategies. Key findings include: (1) Prevalent colloquialization of medical terminology in health communication that attenuates disease severity perception; (2) Structural deficiencies in primary healthcare systems prioritizing diabetes risk screening over sustained management; (3) Sociocultural challenges, unhealthy dietary and social culture and heavy work pressure make it difficult to maintain healthy behaviors. It was also revealed that patients' behavioral change motivation was "threat-benefit" dual-driven and was strongly influenced by family ethics, with family culture significantly influencing health decision-making. Notably, multidimensional support systems emerged as crucial facilitators for overcoming implementation barriers. These context-specific enablers and constraints provide critical insights for developing culturally congruent lifestyle interventions targeting prediabetes management in China.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors declared no conflict of interest.

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