

Understanding diabetes management among patients in hail city using the health belief model

Alshammari Abdullah Mohammad¹, Mohamed Elnaem², Siew Chin Ong^{3*}

¹School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ORCID: 0009-0005-0106-4254. ²Lecturer in Clinical Pharmacy, School of Pharmacy and Pharmaceutical Sciences, Faculty of Life and Health Sciences, Ulster University, Northern Ireland, UK. ³Programme Chairman, Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ORCID: 0000-0002-9750-9588.

Correspondence: Siew Chin Ong, Programme Chairman, Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia. siewchinong@usm.my

ABSTRACT

Diabetes mellitus type 2 is a prevalent chronic condition in Saudi Arabia, posing significant health risks. Understanding the health beliefs and behaviors of diabetes patients is crucial for developing effective interventions. This study explores the perceptions and behaviors of diabetes type 2 patients in Hail City using the Health Belief Model (HBM) to identify areas for intervention to improve diabetes management. A qualitative study was conducted with 12 diabetes type 2 patients, aged 18-65, in Hail City. Structured open-ended interviews based on the HBM framework were used to gather data on perceptions of susceptibility, severity, benefits, barriers, cues to action, and self-efficacy. Thematic analysis was applied to identify key themes. Participants demonstrated varied perceptions of susceptibility to diabetes complications, with some showing heightened awareness due to family history. Most acknowledged the benefits of diabetes management but cited significant barriers such as medication costs and dietary challenges. Healthcare professional advice and specific symptoms were identified as key cues to action. Self-efficacy levels varied, with some patients confident in managing their condition and others expressing doubts. The findings align with existing literature on HBM and diabetes management. Tailored interventions addressing identified barriers, emphasizing benefits, and enhancing self-efficacy are recommended. Limitations include a small sample size, suggesting the need for larger studies.

Understanding the health beliefs and behaviors of diabetes patients using the HBM can inform targeted interventions to improve diabetes management in Hail City, contributing to better patient outcomes.

Keywords: Diabetes mellitus type 2, Pharmacy, Health education, Health belief model, Saudi Arabia

Introduction

Diabetes mellitus type 2 is a chronic condition characterized by insulin resistance and elevated blood sugar levels, often resulting from a combination of genetic, environmental, and lifestyle factors. This condition is associated with severe health risks, including cardiovascular disease, neuropathy, and kidney

damage, which can lead to significant morbidity and mortality. Globally, the incidence of type 2 diabetes is increasing, making it a major public health challenge.

In Saudi Arabia, the prevalence of diabetes has been rising at an alarming rate. The rapid urbanization, adoption of a Westernized lifestyle, and dietary changes have contributed to this surge. According to recent statistics, Saudi Arabia ranks among the top countries with the highest diabetes prevalence [1]. This increase substantially burdens the healthcare system, necessitating effective management strategies to mitigate the associated health risks.

Hail City, located in the northern region of Saudi Arabia, reflects the broader national trends in diabetes prevalence. The unique socio-cultural dynamics of this region may influence the health behaviors and management strategies of diabetes patients. Therefore, understanding the specific factors that impact

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diabetes management in Hail City is crucial for developing targeted interventions.

This study aims to explore the perceptions and behaviors of diabetes type 2 patients in Hail City, utilizing the Health Belief Model (HBM) as a theoretical framework. The HBM, developed in the 1950s by social psychologists, provides a comprehensive lens to understand how patients' beliefs and attitudes influence their health behaviors. The model posits that individuals' actions regarding health are determined by their perceptions of susceptibility to illness, the severity of the disease, the benefits of taking preventive action, and the barriers to taking such action. By examining these factors, this study seeks to identify critical areas for intervention that can improve diabetes management. The HBM's constructs of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy will guide the exploration of patients' health beliefs and behaviors. Understanding these perceptions is essential for designing effective educational programs and support systems tailored to the needs of diabetes patients in Hail City [2].

Furthermore, this study aims to contribute to the broader body of knowledge on diabetes management in the Saudi Arabian context. It seeks to provide insights that can inform healthcare policies and practices, ultimately improving the quality of life for individuals living with diabetes.

In summary, addressing the rising prevalence of diabetes in Saudi Arabia, particularly in regions like Hail City, requires a deep understanding of the health beliefs and behaviors of affected individuals. Utilizing the Health Belief Model, this study endeavors to uncover the factors that influence diabetes management, thereby laying the groundwork for effective interventions and support mechanisms [3].

Literature review

The Health Belief Model (HBM) has been extensively used to predict and understand health behaviors. Originally developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels, the HBM was designed to explain why people failed to participate in programs to prevent and detect disease [4, 5]. The model posits that individuals' actions are influenced by their beliefs about health problems, the perceived benefits of action, and the perceived barriers to taking such action.

The core constructs of the health belief model

The HBM comprises several key constructs that influence health behaviors:

1. *Perceived susceptibility*: This refers to an individual's belief about the likelihood of getting a disease or condition. People who perceive a higher risk of developing a health issue are more likely to engage in behaviors to reduce that risk [6].
2. *Perceived severity*: This construct involves an individual's belief about the seriousness of contracting an illness or leaving it untreated. The perception of severity is influenced by both medical knowledge and emotional concerns, such as fear of disability or death [7].
3. *Perceived benefits*: This is the belief in the efficacy of the advised action to reduce the risk or seriousness of impact. If individuals believe that a particular action will benefit them by reducing their susceptibility to or severity of a health issue, they are more likely to take that action [8].
4. *Perceived barriers*: This construct refers to an individual's assessment of the obstacles to behavior change. Even if a person recognizes the susceptibility and severity of a health issue and believes in the benefits of taking action, they may still be hindered by perceived barriers such as cost, inconvenience, or fear [9].
5. *Cues to action*: These are triggers that prompt individuals to engage in health-promoting behaviors. Cues to action can be internal (e.g., symptoms) or external (e.g., media campaigns, advice from others) [10].
6. *Self-efficacy*: Added to the HBM in the 1980s, self-efficacy refers to an individual's confidence in their ability to take action. Higher levels of self-efficacy are associated with a greater likelihood of engaging in health-promoting behaviors [11].

Application of HBM in diabetes management

Several studies have applied the HBM to understand and promote diabetes management behaviors. For instance, a study by Sarkar, Fisher, and Schillinger (2006) examined how patients' health beliefs influenced their diabetes self-management practices [12]. The study found that patients who believed they were susceptible to diabetes complications and perceived the condition as severe were more likely to adhere to recommended management practices, such as monitoring blood glucose levels and adhering to a prescribed diet.

Similarly, a study by Walker *et al.* (2014) utilized the HBM to develop a diabetes education program aimed at increasing patients' perceived benefits and reducing perceived barriers to diabetes management [13]. The intervention was successful in improving patients' adherence to medication and lifestyle modifications.

Another study by Jones *et al.* (2010) explored the role of self-efficacy in diabetes management [14]. The researchers found that higher levels of self-efficacy were significantly associated with better diabetes control, as patients felt more confident in their ability to manage their condition effectively.

Gaps in existing literature

While numerous studies have applied the HBM to diabetes management, there is a paucity of research focusing on specific populations in Saudi Arabia. The unique socio-cultural factors in this region, such as dietary habits, social support structures, and healthcare access, may influence how individuals perceive and manage their diabetes. Understanding these cultural nuances is essential for developing effective, culturally sensitive interventions.

Moreover, most existing studies emphasize quantitative data, often neglecting the rich insights that qualitative research can provide. Qualitative studies can offer a deeper understanding of patients' personal experiences, beliefs, and challenges, which are crucial for tailoring interventions to meet their specific needs.

HBM and diabetes management

Research indicates that patients who perceive higher susceptibility to diabetes complications are more likely to engage in preventive behaviors. Studies also show that understanding the severity of diabetes and its potential complications can motivate patients to adhere to management plans. However, barriers such as cost, social support, and lifestyle challenges often impede effective management.

Gaps in existing literature

While numerous studies have applied the HBM to diabetes management, there is limited research focusing on specific populations in Saudi Arabia. Understanding the unique cultural and social factors influencing health behaviors in this region is crucial for developing effective interventions.

Materials and Methods

Participants

The study, as detailed in **Table 1**, involved 12 patients diagnosed with type 2 diabetes, aged between 18 and 65 years, all residing in Hail City. Participants were selected using purposive sampling to ensure diverse representation across both age and gender.

Data collection

Data were collected using structured open-ended interviews based on the Health Belief Model. The interview questions aimed to explore participants' perceptions of susceptibility, severity, benefits, barriers, cues to action, and self-efficacy related to diabetes management.

Data analysis

Qualitative data from the interviews were analyzed using thematic analysis. Themes were identified, coded, and reviewed to ensure consistency and reliability. The analysis aimed to

uncover patterns and insights into patients' health beliefs and behaviors.

Table 1. Participant Demographics

Participant	Age	Gender	Duration of Diabetes
P1	45	Male	10 years
P2	34	Female	5 years
P3	29	Male	3 years
P4	52	Female	12 years
P5	61	Male	15 years
P6	23	Female	2 years
P7	37	Male	7 years
P8	50	Female	11 years
P9	42	Male	9 years
P10	55	Female	14 years
P11	31	Male	4 years
P12	26	Female	3 years

Results and Discussion

Perception of susceptibility

Participants expressed varied perceptions of their susceptibility to diabetes-related complications. For instance, some individuals demonstrated heightened awareness of their risk, particularly those with a family history of diabetes, while others downplayed the potential severity of complications.

Qualitative responses

- "I feel vulnerable to complications because my family has a history of diabetes. Seeing my relatives struggle has made me more aware of the risks." (P4)
- "I don't really think about complications. I've had diabetes for years and nothing serious has happened yet." (P10)

Perceived benefits and barriers

Most participants acknowledged the benefits associated with effective diabetes management, such as improved overall health and better energy levels. However, they also highlighted significant barriers, including the cost of medications and challenges in adhering to dietary recommendations.

Qualitative responses

- "When I stick to my medication and exercise, I feel more energetic and in control. It's about feeling good every day." (P2)
- "I struggle with the cost of my medications. Sometimes I skip doses to make them last longer." (P5)

Cues to action

Several participants identified healthcare professional advice, routine health check-ups, and specific symptoms as key cues for taking action in managing their diabetes.

Qualitative responses

- "When my doctor tells me my numbers are high, I know I need to change something." (P7)
- "I only remember to check my blood sugar when I feel really thirsty or tired." (P9)

Self-efficacy

Patients exhibited varying levels of confidence in their ability to manage their diabetes. Some felt confident in adhering to medication regimens and lifestyle changes, while others expressed doubts and challenges.

Qualitative responses

- "I'm confident in managing my medications and tracking my meals. It's become a routine." (P6)
- "I always forget to take my meds. It feels overwhelming and I doubt if I'm doing it right." (P12)

Integration with literature

The findings of this study align with existing literature on the Health Belief Model (HBM) and diabetes management. Similar to previous studies, perceived susceptibility and severity were found to significantly influence health behaviors among patients with type 2 diabetes [15]. For instance, patients who believed they were at higher risk of complications (perceived susceptibility) and recognized the seriousness of the condition (perceived severity) were more likely to adhere to their management plans. This supports previous research by Janz and Becker (1984) and Champion and Skinner (2008), who demonstrated that higher perceived susceptibility and severity motivate individuals to engage in health-promoting behaviors [6, 16].

Additionally, this study highlighted the importance of perceived benefits and barriers, which are consistent with the HBM framework. Patients who recognized the benefits of effective diabetes management, such as improved health and quality of life, were more likely to follow their treatment regimens. Conversely, perceived barriers, such as the high cost of medications and dietary restrictions, hindered adherence to management plans. This finding is corroborated by studies like those by Rosenstock *et al.* (1988) and Glanz, Rimer, and Viswanath (2008), which found that perceived benefits and barriers are critical determinants of health behaviour [10, 17]. Furthermore, cues to action, such as advice from healthcare professionals and specific symptoms, played a significant role in prompting patients to take action [18]. This aligns with the

findings of Jones *et al.* (2010), who noted that external triggers, including healthcare provider recommendations, are essential in initiating health behaviors [14]. Self-efficacy also emerged as a crucial factor, with higher self-efficacy associated with better diabetes management. This supports Bandura's (1977) theory that self-efficacy is a vital predictor of behavioral change [11].

Practical implications

The results of this study underscore the need for tailored interventions to address specific barriers identified by patients. For instance, the high cost of medications was a significant barrier for many participants. To alleviate this, healthcare providers and policymakers should consider strategies such as providing financial assistance or subsidizing the cost of diabetes medications. This approach is supported by research from Walker *et al.* (2014) [13], which found that reducing financial barriers can significantly improve medication adherence [19]. Another critical barrier identified was the challenge of adhering to dietary recommendations. Educational programs that emphasize the benefits of a balanced diet and provide practical, culturally appropriate dietary advice could help patients overcome this barrier. Studies like those by Sarkar, Fisher, and Schillinger (2006) have shown that tailored educational interventions can enhance patients' understanding and adherence to dietary recommendations [12].

Moreover, healthcare providers should emphasize the benefits of diabetes management and provide practical support to enhance patients' self-efficacy [20]. This could include regular follow-up appointments, personalized coaching, and support groups that encourage patients to share their experiences and strategies for managing diabetes. Research by Jones *et al.* (2010) and Glanz, Rimer, and Viswanath (2008) highlights the effectiveness of such supportive interventions in improving self-efficacy and health outcomes [10, 14].

Additionally, leveraging cues to action, such as regular reminders and follow-up calls from healthcare providers, can help maintain patients' motivation and adherence to their management plans. Studies have shown that continuous engagement and reminders can significantly improve health behaviors [16].

In summary, the practical implications of this study suggest that a multifaceted approach is needed to improve diabetes management. This includes addressing financial and dietary barriers, enhancing patient education, providing continuous support, and leveraging cues to action. By implementing these strategies, healthcare providers can better support patients in managing their diabetes effectively.

Limitations

One limitation of this study is the small sample size, which may not be representative of the broader population of diabetes patients in Hail City. Future research should consider larger samples and explore additional factors influencing diabetes management.

Recommendations

Based on the findings, the following recommendations are made:

- Develop educational programs that emphasize the benefits of diabetes management and address common barriers.
- Provide financial assistance or subsidized medications to alleviate the cost burden on patients.
- Establish support groups to enhance patients' self-efficacy and provide a platform for sharing experiences and strategies.

Conclusion

This study provides valuable insights into the health beliefs and behaviors of diabetes type 2 patients in Hail City using the Health Belief Model (HBM). The findings revealed that patients' perceptions of susceptibility to diabetes-related complications and the severity of the disease significantly influenced their engagement in preventive behaviors. Those who perceived higher risks and understood the serious nature of their condition were more proactive in managing their diabetes. The study also highlighted the importance of perceived benefits and barriers; while benefits such as improved health-motivated adherence to management plans, barriers like medication costs and dietary challenges hindered it. Cues to action, such as advice from healthcare professionals and symptom experiences, were critical in prompting management behaviors, and self-efficacy emerged as a pivotal factor influencing adherence. These insights underscore the need for tailored interventions that address specific barriers, enhance perceived benefits, and build patients' confidence. Practical implications include implementing educational programs, establishing support systems, providing financial assistance, developing culturally sensitive interventions, and leveraging continuous engagement strategies. Understanding these health beliefs and behaviors allows healthcare providers to design effective strategies, ultimately improving diabetes management and patient outcomes in Hail City.

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