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PSYCHOSOCIAL INFLUENCES ON BEHAVIOURAL ADHERENCE AMONG TYPE-II DIABETIC PATIENTS ON INSULIN: A QUALITATIVE STUDY

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ABSTRACT
Once type-II diabetes diagnosed, the patient's life radically altered due to long-term illness characterized by high blood sugar levels. Type-II diabetes is often called adult-onset diabetes or type 2 diabetes mellitus. Type-II diabetes patients use insulin for survival. However, assessment of psychosocial factors made by the patients to adhere to this behavioural remains unexplored. Current study analyzed qualitatively psychosocial factors that affect the minds and behaviours of type-II diabetes patients adhering to treatment. A purposive sample of 06 male and 06 female type-II patients on insulin was taken and interviewed using thematic analysis. Behavioural adherence becomes known as a foremost theme in current analysis because type-II diabetes patients on insulin adhered to their behaviour with this perspective that behaviour was more beneficial than other diabetes prevention. Sub themes suggested patients realized benefits of their attitude, subjective norms, perceived behaviour control and intentions. Based on these themes and sub themes, it was proposed that type-II diabetes patients on insulin effectively managed by their behaviour and made them feel better. Behaviour adherence will help the health psychologists, social workers, diabetologist, endocrinologist and neurologist to work on curative level by focusing on those factors that reduce the behaviour adherence. Non-adherence led to negative consequences like low quality of life, higher morbidity, healthcare costs, and mortality.
Keywords: *Psychosocial, type-II diabetes, insulin, behaviour adherence, perceived behaviour control, intentions*

INTRODUCTION
Type 2 diabetes (T2D) is a chronic and progressive metabolic disorder marked by insulin resistance and elevated blood glucose levels. It is often referred to as adult-onset diabetes, given its typical onset in middle age or later (American Diabetes Association, 2023). The global prevalence of T2D is alarmingly high, affecting 422 million people worldwide, and it is projected to double in prevalence over the next two decades (International Diabetes Federation, 2023). This rise is particularly significant in low- and middle-income countries, where diabetes management presents additional challenges. T2D contributes to substantial morbidity, and untreated or poorly managed diabetes increases the risk of complications such as cardiovascular disease, kidney failure, and cognitive decline (Ahmed et al., 2025; Joseph et al., 2022; Kumar et al., 2023; Sebastian et al., 2023). The World Health Organization (WHO) projects that

diabetes will be the seventh leading cause of death by 2030, further underscoring the need for effective management strategies (WHO, 2023).

The global prevalence of T2D continues to escalate, particularly in Asia. The region is experiencing rapid urbanization, lifestyle changes, and increasing rates of obesity, which are contributing factors to the rising number of diabetes cases. In Asia, nearly 60% of the world's diabetes population resides, with the largest number of cases found in China, India, and Indonesia. According to the International Diabetes Federation (2023), China alone accounts for more than 120 million cases of diabetes. The growing burden of T2D in Asia is a significant public health challenge, necessitating urgent attention to prevention, treatment, and management strategies.

In Pakistan, the prevalence of diabetes has been rising steadily, with a reported 9.3% of the adult population diagnosed with the condition (WHO, 2023). A recent study highlighted that approximately 7 million people in Pakistan live with diabetes, and the majority of them suffer from type-II diabetes (Aamir et al., 2019; Aslam et al., 2022). The rising incidence type-II diabetes in Pakistan is driven by factors such as poor dietary habits, lack of physical activity, and an aging population. Moreover, the burden is exacerbated by limited access to healthcare, especially in rural areas, making effective diabetes management and treatment adherence a challenge. The rapid urbanization in cities like Karachi and Lahore has further contributed to sedentary lifestyles, increasing the risk of diabetes and its complications.

Effective management of T2D often requires insulin therapy, especially when oral medications and lifestyle modifications are insufficient. However, adherence to insulin therapy remains a significant challenge. Non-adherence not only leads to poorer health outcomes but also increases healthcare costs and reduces patients' quality of life (Ho, Bryson, & Rumsfeld, 2009). Treatment adherence is defined as the degree to which patients follow medical recommendations, and it is influenced by a range of psychosocial factors (Jimmy & Jose, 2011). These factors include social norms, family support, perceived behavioural control, and cultural influences, all of which shape patients' decisions and actions regarding their treatment. For example, family and social norms often influence dietary choices, making it challenging for patients to maintain adherence to prescribed regimens.

Psychosocial factors such as perceived behavioural control i.e., patients' sense of autonomy over their treatment have been shown to significantly influence adherence to insulin therapy. According to the Theory of Planned Behaviour (Ajzen, 1985), individuals with a higher sense of control over their health management are more likely to adhere to treatment plans. This is supported by findings from Mohebi et al. (2013) and Nugent et al. (2015), who emphasize the role of self-efficacy and perceived control in diabetes management. However, external factors, such as family expectations and cultural norms surrounding food and social gatherings, often create a tension between the patient's treatment regimen and societal practices, leading to potential non-adherence (Patel et al., 2025; Sharma et al., 2025).

Diabetes self-management (DSM), which includes insulin adherence, dietary changes, exercise, and blood glucose monitoring, is essential for maintaining glycemic control and preventing complications. Studies have demonstrated that effective DSM can reduce HbA1c levels, delay the onset of complications, and improve quality of life (Barlow et al., 2002; Chrvala et al., 2016). However, psychosocial challenges such as stress, depression, and inadequate support systems can undermine the effectiveness of DSM, particularly in patients facing additional health issues (Adu et al., 2019; Wang et al., 2023). These challenges are particularly pronounced in patients with comorbid conditions and mental health issues, such as depression and anxiety, which are common in T2D patients (Anderson et al., 2001; Albai et al., 2024; Wen et al., 2023).

The global rise in chronic diseases, including T2D, is compounded by the aging population, with an estimated 22% of the global population expected to be over 60 by 2050 (WHO, 2023). Older adults with T2D face unique challenges, including polypharmacy, cognitive decline, and comorbid conditions, all of which complicate diabetes management (Abdelhafiz & Abdelhafiz , 2025; Abdelhafiz & Sinclair, 2024; Abd. Ghafar et al.,

2022). These challenges necessitate individualized treatment approaches that account for the psychosocial, cognitive, and physical factors that influence treatment adherence (Sugandh et al., 2023; Williams et al., 2022).

This study aims to explore the psychosocial factors influencing insulin adherence in T2D patients through qualitative interviews. By focusing on factors such as social norms, perceived behavioural control, and family support, the study provides insight into how these factors shape patients' adherence behaviors. Through thematic analysis of interview data, we aim to identify key psychosocial influences that can guide healthcare professionals in improving patient adherence and diabetes management. Thus, addressing the psychosocial factors affecting insulin adherence is crucial for improving T2D management. Healthcare providers should consider these factors in creating personalized care plans that improve adherence, reduce complications, and ultimately enhance the quality of life for patients living with T2D.

METHOD

Study Design

A qualitative research design using thematic analysis was used to systemize textual data disclosing thoughts and views of type-II diabetes patients.

Population & Sampling

The population of the study was Type-II patients on Insulin from Swabi and Islamabad. For this purpose, 10 patients on Insulin with 5 male and 5 female were selected through purposive sampling till saturation (Palinkas, et al., 2015) to garner rich information rather than what is statistically representative (Etikan et al., 2016). In order to maintain the homogeneity of the sample, the patients injecting insulin at Islamabad and Swabi were sought, where their age was 18-60 years). All patients on average had been on insulin for three months and injecting insulin two times a day (see Table 1).

INSTRUMENTS

Semi-structured interviews (Braun & Clark, 2006, 2012, 2013) provided themes on the collected data. Thematic analysis is a sensitive and insightful method that explores transcribed text for structure and patterns and organizes analysis and its presentation (Attride-Stirling, 2001). The interview was presented in a non-directive manner, where efforts are made to develop a rapport with patients with nonjudgmental acceptance (not to upset or irritate them), openness, and empathetic attention. Our semi-structured interview schedule consisted of four simple open-ended questions based on type-II diabetes literature and was based on guidelines set by Braun and Clarke (2006). The questions were followed with prompt or sequential questions to explore if answers to main questions needed clarity or verifications. These questions were sensitive to the personal experience of type-II diabetes patients and provided perceptions of patients about psychosocial factors of behavior adherence in detail.

Main questions of the interview consisted of:

1. How do you evaluate your treatment?
2. How do you perceive social norms of treatment adherence?
3. How do you perceive your control on treatment?
4. How do you plan for treatment adherence?

Procedure

Permission was sought from the participants and willing participants were recruited for individual interviews. Participants were informed about the purpose of the study and informed consents were obtained. Each participant was assured that recorded and transcribed data would be kept confidential and anonymous, and all materials associated with the interview will be treated as sensitive. Acronyms for pseudo-names given to patients were used to ensure patients were not identified in any way. Participants had the right to withdraw from the study at any time without providing any reason for it. The interviews were carried out in Urdu and prompts were used when necessary to elaborate the questions. The participants were encouraged to give detailed information in their way. Duration of interviews ranged from 45 to 60 minutes and each participant narrated their experiences in asingle session, which were recorded and transcribed. Interviews with patients took a month to complete and were

recorded using a portable voice recorder. Once the interview was complete, participants were debriefed and encouraged to ask questions. All relevant regulations have been adhered to throughout the study. A brief therapeutic counseling session was also provided if the participants needed it at the end of the interview.

RESULTS

The analysis was divided into three stages of breakdown, exploration, and integration of text (Attride-Strilling, 2001). Interviewswere transcribed by the researcher to an appropriate level of detail and for accuracy, the transcripts were checked against the recordings. Reading and re-reading of the data were done by noting down initial ideas. In the second phase coding of prominent, interesting components of the entire data were systematically carried out by collating relevant code to other similar codes and were counted. Efforts were made to ensure that the coding process was thorough, inclusive, and comprehensive. In the third phase, codes were converted into potential themes that were internally coherent, consistent and distinctive and consolidated into sub-themes, which were synthesized into a singular supra theme, *behavior adherence* (see Table 2)

PERCEPTION OF PSYCHOSOCIAL FACTORS

For most patients following the prescribed medication, insulin, diet and exercise led to better management of the condition. As one patient stated:

"I feel that medication, exercise and diet will what keeps me feel healthy and in control. And I see it as something that will empower me rather than holds me back..." (HM).

Such a threatening view of the symptoms is not only negatively reinforcing, but leads patients to strict adherence to treatment in their battle for survival and reduction in the burden of symptoms. The extract above is a clear example of the reduction in symptoms like pain, urination, thirst was reduced when body sugar level in control through medication, diet and exercise.

"I think, why not just eat whatever I want? Diabetes is a lifelong thing. I will tell myself that I will be managing diabetes through medication, diet and exercise, a little extra here and there would not hurt. Enjoy without worrying about food..." (MK & RB).

The above excerpt is a cautionary voice directed to other diabetic patients and the patient himself and suggests negligence from medication or other forms of therapeutic regimentations would lead to worsening of health conditions.

"Some people constantly remind not to eat certain foods and try to offer specific diabetes friendly options. I will be watched or restricted..." (HK).

Similarly, the above extract presents the patient's satisfaction and his positive feelings of being closely monitored by others in their efforts to manage their diabetes particularity in relation to food choices and medication. While these reminders and the offering of diabetes friendly options are meant to be helpful.

"In our culture, food is such a big part of gatherings and celebrations and it will hard to say no. People often told its fine nothing will happen just enjoy. Everyone feel pressured to join in, even everyone know it might not be best for health..." (KK & MB).

This excerpt indicates feelings of pressure to join in unhealthy foods. This suggests a tension between the patient's need for support and their desire for autonomy in managing their condition. The complexities involved in balancing external support with personal agency.

"I feel completely in control of my diabetes. I should learn how to manage my medication, watch my diet and make healthy choices. It will become a routine for me and I will stick to it no matter what..." (TA).

The above extract from a patient, culminates the benefits of medication and other treatments in the face of strong sense of confidence and control over their diabetes, highlighting their ability to manage medication, make healthy dietary choices and stick to routine. Patient reflects a positive mindset demonstrating both discipline and pride in their ability to manage the condition effectively.

"I know it should me more in control of what I eat and how manage diabetes but sometimes it will feel like I have little control especially when I surround by unhealthy food, resources, guidance, best doctor and time management ..." (NM).

The above extract illustrates the social and emotional challenges that the patient faces when managing their diabetes in the context of the availabilities of best doctor, sugar free foods, best

medicine and counselling center. The patient expresses frustration with the lack of running tracks, best medicine and resources. It underscores the emotional toll of trying to balance self-care with external environments.

"I will fully commit to manage my diabetes. Every day I will make sure to take medication, follow my meal plan and stay active because I know it's essential for my health. I will set clear goals for myself no matter what... "(AU).

The patient above is concerned that diabetes could affect his health. Such thoughts constantly goal focused the patient. Many patients with diabetes are afraid of the physical and mental health if they not follow treatment. Adherence to medication and other treatments becomes more likely.

"Everyone try to manage diabetes but sometimes it feels like I will not able to follow through. I have the intention to stick to my treatment but there are days where I should in to cravings or forget to take medication. It's hard to stay consistent..." (DS).

The above quote presents an excuse not to take medicine or follow treatment like diet. Because everyone will have cravings to eat unhealthy food during functions or traveling. In addition, the patient claimed that during traveling or in home forgets to take diabetes medication.

DISCUSSION

The findings from this study reveal critical results about the psychosocial factors influencing insulin adherence among Type 2 diabetes (T2D) patients. The analysis highlighted several key themes, including the evaluation of treatment, social and cultural norms, perceived control, and planning for adherence. These themes reflect the complex interplay of internal and external factors that affect patients' decisions regarding insulin therapy.

A central finding of the study was the evaluation of treatment based on perceived benefits, with many participants acknowledging the positive impact of insulin in managing their condition. Patients reported feeling empowered by insulin use, recognizing improvements in their symptoms such as reduced thirst, pain, and fatigue. Participants like HM and TA indicated that better blood glucose control through insulin provided them with a sense of control over their health, which encouraged them to adhere to their regimen. This finding aligns with previous studies that underscore the significance of perceived treatment benefits in enhancing adherence. For instance, Barlow et al. (2002) and Chrvala et al. (2016) found that when patients perceive positive health outcomes from their treatment, such as symptom reduction or improved quality of life, they are more likely to continue adhering to prescribed regimens. However, while these perceived benefits were significant motivators, some studies (e.g., Ho et al., 2009) suggest that the psychological and environmental barriers to adherence like stress or difficulty accessing care that can lead to non-adherence despite an understanding of the benefits. Therefore, the findings emphasize that emotional barriers or external contextual factors must also be addressed to improve adherence effectively.

Another important theme was the impact of social and cultural norms on adherence. Several participants reported feeling pressured during social events to consume foods that were inconsistent with their treatment plans. This social pressure, particularly in cultures where food is central to gatherings, created tension between maintaining their health and conforming to social expectations. Participants like KK and MB expressed frustration about the difficulty of managing diabetes while being surrounded by unhealthy food options during cultural or family events. This finding is consistent with existing literature, which shows that social influence and cultural norms can significantly impact adherence to diabetes self-management. Greenhalgh et al. (2015) noted that cultural pressures, particularly related to diet, can hinder adherence, as individuals often prioritize social conformity over personal health management. However, the study also revealed instances where family support mitigated these pressures (Busebaia et al., 2023). This supports the idea that family involvement can be both a facilitator and a barrier to treatment adherence, as noted in previous research (DeSouza & Al Sami, 2018). Thus, the findings point to the complex role of family and cultural dynamics in either supporting or undermining adherence, suggesting that interventions should incorporate culturally sensitive approaches and family engagement.

The study also found that perceived control over diabetes management played a crucial role in adherence. Participants who felt empowered to manage their condition, including TA, expressed greater commitment to their insulin regimen, as they believed they could effectively control their diabetes through consistent treatment. This finding aligns with the Theory of Planned Behaviour (Ajzen, 1985), which asserts that individuals who feel they have control over their behaviour are more likely to follow through with health recommendations. Similarly, Gonzalez et al. (2015) and Mohebi et al. (2013) highlighted that self-efficacy and the belief in one's ability to manage diabetes positively influence adherence. However, some participants, such as NM, revealed that despite feeling empowered in theory, external barriers, such as access to healthy foods or time constraints, still reduced their perceived control and made adherence more challenging. This finding resonates with research by Omoleke & Bamidele (2023), which identifies social, environmental, and resource-related barriers as key factors that undermine adherence, particularly in developing regions where access to healthcare resources may be limited.

The final theme, planning for adherence, was also a strong predictor of consistent insulin use. Patients who set clear, structured goals for managing their diabetes, such as AU, reported being more disciplined and focused on adhering to their treatment plans. This finding aligns with previous studies that emphasize the importance of goal-setting in diabetes self-management. Chrvala et al. (2016) found that setting specific, measurable goals can significantly improve adherence to diabetes care practices, including insulin administration. However, while goal-setting proved effective for many patients, external factors such as stress or social situations occasionally led to lapses in adherence, especially when goals conflicted with immediate cravings or the convenience of non-adherent behaviour. This is consistent with the findings, which pointed out that while goal-setting is a valuable tool, it is not always sufficient in the face of external distractions or stressors that interfere with consistent treatment adherence (Gocha, 2025; Yakub, 2024; Yazdani et al., 2025).

In conclusion, the findings of this study reinforce existing literature on the importance of psychosocial factors in insulin adherence among T2D patients. The study highlights the significant role of perceived benefits, social norms, perceived control, and planning in promoting adherence. However, it also identifies barriers that may undermine these factors, such as cultural pressures, social influences, and lack of resources. These results suggest that effective interventions aimed at improving adherence must go beyond educating patients about the benefits of insulin and incorporate culturally sensitive strategies, family support, and resource access. Future research should further explore how external barriers interact with psychosocial influences to provide a more comprehensive understanding of adherence behaviour in Type 2 diabetes management.

CONCLUSION

In conclusion, this study bears important findings about the psychosocial factors influencing insulin adherence among Type 2 diabetes patients. The findings highlight the significant role of perceived treatment benefits, social and cultural norms, perceived control over treatment, and planning for adherence. While these factors contribute positively to adherence, challenges such as cultural pressures, social influences, and limited resources were identified as key barriers. The results emphasize the complexity of insulin adherence, suggesting that effective interventions should address both psychosocial factors and external barriers to improve adherence and patient outcomes.

IMPLICATION

The findings of this study have important implications for healthcare providers and policymakers. Interventions aimed at improving insulin adherence should consider culturally sensitive approaches, integrate family support, and focus on empowering patients by enhancing their sense of control over treatment. Healthcare professionals should also work to address environmental barriers, such as lack of access to resources, to ensure that patients can fully engage in self-management. By tailoring interventions to the psychosocial needs of patients, healthcare

systems can improve adherence, reduce complications, and ultimately enhance the quality of life for those living with Type 2 diabetes.

Limitations and Suggestions

Study limitations need a mention. This is a mono-method study that may limit the generalizability of the findings as it contains only qualitative data from the participants. Interviews were conducted with theparticipants in an outpatient setting; some of the patients came from rural areas driven by limited access to healthcare services and support mechanisms. As interviews were conducted patients may have been hesitant in responding freely while sharing their experiences. Furthermore, interviews for a research purpose may have facilitated social desirability response, though it was unlikely as wide-ranging viewpoints were expressed. Despite limitations, we used a purposive sampling method to identify participants of different demographic characteristics, and showing different medication-taking behaviors that best represented the perspectives of patients regarding the phenomenon under study. Future research may be mix-method aimed at understanding healthcareprofessionals' perceptions and practices of assessing psychosocial factors in insulin patients that may guide interventions to resolve this significant issue of behavior non-adherence.

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Appendices

Table 1: ***Demographic Factors of Patients (N=10)***

PN	Gender	Age Years	MaritalStatus	Education	Monthly Income inthousands	Insulin (Years)	Co morbidity
DS	Female	31	Married	Grade 08	28	7	HT &CD
RB	Female	48	Married	Primary	30	5	CD
TA	Female	52	Married	BS	40	8 M	Arthritis
MB	Female	27	Married	Grade 12	50	11M	PCO
NM	Female	58	Married	MA	38	11	HT
	Average	**43.2**			**37.2**	**4.91**	
MK	Male	45	Married	Grade 10	45	5	CD
HM	Male	37	Married	Grade 08	85	14	HT & RP
HK	Male	22	Unmarried	BS	28	6	
AU	Male	29	Married	Mphill	90	2	HT
KK	Male	59	Married	HSSC	35	7 M	CD
	Average	**38.4**			**56.6**	**5.51**	

Note. PN = Pseudonym Name of the patient; HT = Primary Hypertension, CD = Cardio Vascular Disease, PCO = Polycystic Ovary Syndrome

Table 2: ***Codes, Sub themes and Theme***

Meaning Unit	Code	Frequency	Sub- theme	Theme
"...medication, exercise and diet will what keeps me feel healthy and in control ..." (HM)	Positive evaluation	7	Evaluation about adherence	Behaviour adherence
"..... little extra here and there would not hurt. Enjoy without worrying about food..." (MK). *"...why not just eat whatever I want...." (RB).*	Negative evaluation	6		
".....remind not to eat certain foods and try to offer specific diabetes friendly options ..." (HK).	Family support	8	Social influence	
".....nothing will happen just enjoy. Everyone feel pressured to join in, even everyone know it might not be best for health..." (KK). *"In our culture, food is such a big part of gatherings and celebrations and it will hard to say n....." (MB)*	Cultural influence	8		
"....learn how to manage my medication, watch my diet and make healthy choices. It will become a routine for me ..." (TA).	Internal behaviour control	6	Behaviour control	
".....little control especially when I surround by unhealthy food, resources, guidance, best doctor and time management ..." (NM).	External behaviour control	8		
".... I will make sure to take medication, follow my meal plan and stay active because I know it's essential for my health ... "(AU).	External facilitating barriers	7	Planning about adherence	
"...sometimes it feels like I will not able to follow through. I have the intention to stick to my treatment butt..." (DS).	Internal facilitating factors	7		