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Cultural Beliefs and Practices Leading to Delayed Diagnosis and Management of Diabetes in Peshawar

Muhammad Abbas Ilyas
Student, Department of Nursing City University of Science and Information Technology
Shabana Isaacs
Lecturer, Department of Nursing City University of Science & Information Technology
Maryam Zaman
Junior Lecturer, Department of Nursing City University of Science & Information Technology

Author Details

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Corresponding E-mails & Authors*:

Abstract

In Pakistan, the prevalence of diabetes mellitus has increased from 5.2 million cases in 2000 to almost 33 million by 2021, making it a serious public health concern. With a focus on Pashtun cultural norms, this study investigates the cultural beliefs and practices that lead to delayed diagnosis and inadequate diabetes management in Peshawar, Khyber Pakhtunkhwa region. The analysis shows that timely diagnosis and treatment adherence are hampered by a number of factors, including reliance on traditional healers (hakeems), misconceptions about insulin, stigma surrounding chronic illness, gender-restricted healthcare access, family-dominated decision-making and misinterpretation of religious teachings regarding Ramadan fasting. According to national data, almost 60% of patients in Pakistan do not take their oral antidiabetic drugs as prescribed and two-thirds of adults with type 2 diabetes experience diabetes discomfort. Particularly in Peshawar, more than 50% of diabetes patients have foot ulcers, over 25% have had amputations and 75% think insulin is the last line of therapy. Increased incidence of neuropathy, retinopathy and nephropathy as well as a greater strain on KPK's healthcare system are among the public health repercussions. The study suggests culturally aware, nurse-led interventions such as family-centred teaching in Pashto, community screening initiatives and cooperation with local jirgas and religious leaders.

Keywords: Peshawar, Pashtun Culture, Diabetes Mellitus, Cultural Beliefs, Delayed Diagnosis, Nursing Interventions, Pakistan

INTRODUCTION

Persistent hyperglycaemia brought on by abnormalities in insulin production, action or both is a hallmark of diabetes mellitus (DM), a chronic metabolic disease. There are two main varieties of this condition Type 2 diabetes mellitus (T2DM) is characterized by growing insulin resistance and relative insulin insufficiency, whereas Type 1 diabetes mellitus (T1DM) is an autoimmune destruction of pancreatic β-cells that results in absolute insulin shortage. About 90 to 95% of all instances of diabetes worldwide are type 2 diabetes (T2DM), which is closely linked to modifiable risk factors such obesity, physical inactivity and dietary habits (Dina et al., 2025).

According to Dina et al., (2025) Pakistan is facing a growing diabetes epidemic. Comprehensive epidemiological data show that the number of adults with diabetes in Pakistan rose from 5.2 million in 2000 to almost 33 million by 2021, making it one of the nations with the largest diabetes populations worldwide. According to the National Diabetes Survey of Pakistan (NDSP 2016-2017), around 27.4 million people over the age of 20 have diabetes, with a prevalence of 26.3% (Ahmad et al., 2025). There are an additional 8 to 9 million people who have not received a diagnosis, indicating that the epidemic's actual scope is significantly underreported.

According to Orakzai et al., (2025) The incidence of type 2 diabetes is thought to be between 9 and 10% in Khyber Pakhtunkhwa, with Peshawar exhibiting greater detection rates because of the concentration of medical services in the city. Approximately 60% of cases nationwide include non-adherence to oral antidiabetic drugs with characteristics such as female gender, lower education and uncontrolled HbA1c levels substantially linked to poor adherence (Arsed et al., 2025). Additionally, almost two-thirds of individuals with type 2 diabetes in Pakistan experience diabetic distress or the emotional burden of treating the illness important associations include female gender, poor education, low income and a lack of social support (Asmat et al., 2026).

Health practices and illness outcomes are significantly influenced by the cultural milieu in ways that scientific models frequently overlook. Health seeking behaviors are

impacted by hierarchical decision making, dependence on traditional treatment systems and culturally imprinted ideas about illness etiology in Peshawar, a city dominated by Pashtun cultural traditions, Islamic religious practices and collectivist family structures. Designing successful treatments that can close the gap between community acceptability and biomedical evidence requires an understanding of these cultural variables. This study looks at the cultural practices and beliefs that cause diabetes diagnosis and treatment to be delayed in Peshawar and suggests nurse treatments that are sensitive to cultural differences.

LITERATURE REVIEW

There is a noticeable rising trend in Pakistan's diabetes epidemiology. over 5.2 million persons were diagnosed with diabetes in 2000 by 2021, that figure had soared to over 33 million. Due to improved detection rates, urban regions show increased prevalence, but rural areas have substantial obstacles to diagnosis and treatment. Unhealthy lifestyles (bad eating habits and physical inactivity) and restricted access to healthcare, especially in rural and underserved regions, are the two main factors contributing to Pakistan's growing diabetes mellitus burden (Dina et al., 2025).

According to Orakzai et al., (2025) a study done in Khyber Pakhtunkhwa between February 2024 and January 2025 at the Complex Medical Laboratory and Diagnostic Center in Peshawar, of 400 T2DM patients, the age group of 41 to 50 had the highest percentage of cases (36.5%), followed by the age group of 51 to 60 (31.5%). Of the sample, 69.5% were female and 76.5% had a family history of diabetes. According to these results, middle aged people are most at danger, especially women who have a hereditary tendency.

The health seeking journey in Peshawar usually starts with home cures, moves on to traditional healers and only ends with biomedical providers. This order which is ingrained in culture takes into account both epistemological trust and economic factors. Hakeems and herbalists are thought to comprehend the body's humoral balance the notions of "garm" (hot) and "thand" (cool) temperaments which align with regional reasons for sickness. Faisal et al., (2025) discovered that mistrust of public health institutions and reliance on traditional medicines regularly lower adherence to biomedical guidelines throughout Pakistan.

In Peshawar, early diabetic symptoms are often misdiagnosed as "garm mizaj" (hot temperament) or transient weakness (kamzori) by the community. Instead of metabolic malfunction, fatigue which may be a sign of hyperglycemia is frequently linked to physical overexertion, insufficient sleep or spiritual reasons. Aslam et al., (2025) found that Pakistani patient's interpretations and reactions to diabetic symptoms are greatly influenced by their cultural beliefs and values, with many first attributing their ailment to transient or spiritual reasons. Orakzai et al., (2025) revealed that 76% of T2DM patients in Peshawar had frequent urination, excessive thirst and hunger, but many had put off getting help since their symptoms had become typical.

The stigma associated with chronic illness has a significant impact on diabetes diagnosis in Peshawar. A diagnosis of diabetes bears implications of personal failure, implying that the person has overindulged in sugary foods or neglected to engage in sufficient physical activity. The qualitative results by Aslam et al., (2025) showed that social isolation, stigma, and shame and guilt are major issues impacting people in Pakistan who have just received a Type II diabetes diagnosis. Because of the Pashtun culture's focus on honor (ghairat) and upholding a positive public image, families may choose to hide illness, which delays diagnosis even further.

Another obstacle to prompt testing is fear of what a diabetes diagnosis would mean. The false belief that using insulin indicates a serious illness or impending death is very common. Insulin is often considered a "last resort" medication, and some members of the community think that initiating insulin causes issues to worsen more quickly or is addicted. According to a research done by Hayat et al., (2019) at Rehman Medical Institute in Peshawar with 210 Patients, 75.2% of patients agreed that insulin was the last choice in therapy, and 66.2% thought that starting insulin meant they had reached the end stage of treatment.

According to Hayat et al., (2019) the majority of patients properly disagreed with false beliefs like insulin being addicted (79.5%), causing social shame (77.6%), failing to manage blood sugar (78.1%), or curing diabetes with short term usage (81.4%). With the exception of "insulin being the last treatment" ($p = 0.038$) and "insulin therapy being a social embarrassment" ($p = 0.020$), responses to the majority of misconceptions were

not significantly influenced by education level. This suggests that misunderstandings are not only dependent on literacy but are also ingrained in culture.

Women's access to diabetes diagnosis and treatment is severely hampered by gender dynamics in Peshawar. The customs of female seclusion (purdah) upheld by Pashtun society restrict women's freedom to travel outside the home without a male companion. When visiting medical facilities, women may need their husbands' or fathers-in-law's consent, which may be denied for non-emergency issues. Tariq et al., (2022) discovered that societal limits on outdoor mobility and family responsibilities emerged as major issues impacting Pakistani women with diabetes and that gender inequity reduced female autonomy in nutrition and exercise.

Orakzai et al., (2025) revealed that 69.5% of T2DM patients in their Peshawar-based research were female, indicating either a higher incidence or more worrisomely a later diagnosis with a more severe condition at presentation. According to a countrywide research by Arsed et al., (2025) female gender was substantially related with lower non-adherence compared to males. This suggests that women who do seek care may be more adherent, but the underlying problem is still that many women encounter obstacles when trying to get care at all. The persistence of gender discrimination in Pakistani society, which restricts women's autonomy in health-related decision-making, was highlighted by Ali et al., (2022).

In Peshawar, health choices are rarely made on an individual basis instead, they are collective family issues that need to be discussed with elders, especially the elderly male. There are several delays caused by this hierarchical decision making structure the symptomatic person must first admit the issue, persuade family members of its gravity, wait for a family conference to decide on a course of action, and then obtain clearance for medical expenses. Ansari et al., (2022) discovered that fatalistic religious interpretations and a heavy dependence on family caregivers had a substantial impact on Pakistani diabetes patients' decisions to take care of themselves.

Married people were more likely to exhibit non-adherence than single people, according to a countrywide research by Arsed et al., (2025). This finding may indicate how conflicting priorities and family obligations might impede or delay health seeking activities. The significance of family centered therapies that involve the entire household

in diabetes care is highlighted by this study. Barolia et al., (2019) discovered that social gathering demands and food cost limitations were barriers to diet modification among Pakistani patients, underscoring the importance of social networks and family in managing diabetes.

Diabetes care in Peshawar's Muslim community is particularly difficult when religious teachings on fasting during Ramadan are misinterpreted. In Pakistan, between 70 and 75 percent of people with type 2 diabetes fast throughout Ramadan, which translates to about 24 to 26 million people nationally, even though the majority do not get a pre-Ramadan medical evaluation or medication modification (The News International, 2026a). Experts caution that fasting without medical supervision can result in diabetic ketoacidosis, hypoglycemia and hyperglycemia all of which are potentially fatal conditions.

According to The News International, (2026a) Many patients mistakenly think that taking medicine or measuring blood sugar breaks the fast; nevertheless, medical professionals stress that glucose monitoring does not invalidate fasting. During Ramadan fasting, patients who use insulin are more vulnerable to severe hypoglycemia, acute renal damage from dehydration and an increased risk of infection (The News International, 2026b). In The News International, (2026a) Prof. Javed Akram, former president of the Pakistan Society of Internal Medicine, stated that "The real danger is that most people do not consult their doctors before Ramadan to assess whether they are fit to fast".

Patients with diabetes face a serious risk to their health and well being from diabetic foot problems. Ahmad et al., (2025) evaluated patient's knowledge of diabetic foot care at three tertiary care facilities in Peshawar Lady Reading Hospital, Hayatabad Medical Complex and Khyber Teaching Hospital. The research, which included 187 people, produced concerning results 23.0% had had a toe, foot or leg amputated, 52.9% had had a foot ulcer and 52.4% had wounds or sores that required longer than two weeks to cure. 90.9% of participants reported having diabetic neuropathy related numbness, tingling or pins and needles in their feet 82.9% reported tightness, heaviness, pain or cramps 67.9% reported having an ulcer, sore or blister on their feet and 63.6% reported blood or discharge on their socks. Only 44.4% of people dried their feet

thoroughly between their toes and only 40.6% applied moisturizing lotion, despite the fact that 67.4% of people cleaned their feet every day and 74.9% could reach and view the soles of their feet. Additionally, just 19.3% had read foot care handouts and only 47.1% had ever attended a lesson on the subject. Nonetheless, there is a clear need for health education as seen by the 99.5% who said they would want to get informative handouts.

According to Orakzai et al., (2025) the significant prevalence of comorbidities among Peshawar's T2DM patients. 91% of patients had depression which was the most prevalent comorbidity. It was followed by delayed wound healing (88%), tiredness (86%), excessive hunger, thirst and frequent urination (76%), hypertension (72%), osteoarthritis (72%), heart disease (69%) and visual problems (56%). Physical evaluations showed that 58% of patients had lower physical endurance and 64% of patients had decreased muscular strength which had a significant negative influence on quality of life and functional independence.

To determine the pooled prevalence of diabetic distress (DD), a systematic review and meta-analysis of seven studies including 1,560 persons with T2DM in Pakistan were conducted by Asmat et al., (2026). Diabetes distress is the substantial emotional load that prevents people with type 2 diabetes from managing their condition on their own. The estimated pooled prevalence of DD was 66.8% (95% CI: 52.3% to 79.8%), meaning that around two thirds of Pakistani T2DM patients had a substantial emotional burden associated with their condition. Female gender, low income, low education, poor glycemic control, longer illness duration, complications, limited social support, low self-efficacy and insufficient self-care activities were all linked to greater levels of diabetes distress.

METHODOLOGY

In order to synthesize peer-reviewed studies on cultural beliefs and behaviors that contribute to delayed diabetes diagnosis and care in Peshawar, this report uses a thorough literature review process. Several electronic databases, including PubMed, Scopus, Web of Science, Google Scholar and PakMediNet, were used in a methodical search of the literature. MeSH terms and keywords were combined in the search strategy, such as ("Diabetes Mellitus" or "Type 2 Diabetes") and ("cultural beliefs" or

"health-seeking behavior" or "delayed diagnosis") and ("Pakistan" or "Peshawar" or "Khyber Pakhtunkhwa").

Studies that met the following criteria were included:

- Published in peer-reviewed journals between 2019 and 2026.
- Concentrated on diabetes management, cultural beliefs, health-seeking behaviors or prevalence in Pakistan with a focus on Peshawar or KPK.
- All written in English and used mixed methods, quantitative or qualitative designs.

Studies that only addressed Type 1 diabetes and had no bearing on cultural influences or that were case studies or editorials devoid of factual data, were disqualified. Prevalence trends, cultural beliefs leading to delayed diagnosis, cultural attitudes impacting treatment and management, insulin misconceptions, gender and family dynamics, religious practices (Ramadan fasting), diabetic foot care and nursing interventions were the main topics of the thematic extraction of data.

ANALYSIS

According to research conducted in Peshawar, women make up over 70% of patients with type 2 diabetes which primarily affects middle aged people (41 to 60 years). The Pashtun community has a substantial genetic propensity to diabetes as evidenced by the fact that almost three quarters (76.5%) have a family history of the disease. 34% of patients had insulin dependence, and 49.25% regularly exercised meaning that half of the patients are still not physically active (Orakzai et al., 2025).

A meta-analysis done by Asmat et al., (2026) that revealed significant heterogeneity amongst studies (I^2 = 96.96%) which is probably due to variations in research environments, methods of assessment and sample features. Egger's regression test revealed no significant publication bias (p = 0.21). Suboptimal glycemic control, longer illness duration, comorbidities, female gender, poor education, low income, limited social support, low self-efficacy and insufficient self-care were all factors that were consistently linked to greater levels of diabetic discomfort.

Arsed et al., (2025) conducted a countrywide study and found that there was non-adherence in 59.9% of instances. Female gender, just primary or secondary education not being hospitalized, taking fewer drugs daily, less frequent dose regimens and uncontrolled HbA1c levels were all factors linked to decreased adherence. Having

many comorbid conditions, being married, not smoking and having no family history of diabetes were all associated with higher adherence. Significantly, compared to other ethnic groups, Pashtun ethnicity was linked to decreased non-adherence, indicating that cultural characteristics within the Pashtun population may encourage greater adherence when care is sought.

Another study by Hayat et al., (2019) found that the most common misunderstandings in Peshawar are that insulin is the final treatment choice (75.2%) that starting insulin signifies the end of therapy (66.2%) and that insulin injections are expensive (53.3%). Positively, the majority of patients accurately disagreed with false beliefs like insulin being addicted (79.5%), causing social shame (77.6%), failing to regulate blood sugar (78.1%) or curing diabetes with short-term usage (81.4%). The majority of misunderstandings were not significantly influenced by education level when compared suggesting that misconceptions are culturally rooted rather than exclusively reliant on literacy.

Another study by Ahmad et al., (2025) identified serious deficiencies in foot care methods and understanding. Although most people can reach their feet (74.9%) and wash them every day (67.4%), fewer people apply moisturizing lotion (40.6%) or thoroughly dry between their toes (44.4%). Most alarmingly, only 19.3% had read foot care handouts and only 47.1% had ever attended a lesson on the subject. Nonetheless, 99.5% of respondents said that they would want to receive instructional materials demonstrating a high demand for health education that medical professionals may take advantage of.

According to Orakzai et al., (2025) 91% of T2DM patients in Peshawar suffer from depression, with delayed healing (88%), tiredness (86%), hypertension (72%), osteoarthritis (72%) and heart disease (69%) following closely behind. According to physical evaluations, 58% of patients had decreased physical endurance and 64% had decreased muscular strength. In terms of smoking behaviors, 71% did not smoke, 25% smoked every day and 4% smoked sometimes.

NURSING IMPLICATIONS AND INTERVENTIONS

Culturally Adapted Health Education Programs

Peshawar's nurses are in a unique position to provide culturally relevant health education that reconciles local beliefs with biological data. Programs that are effective must go beyond just translating standard diabetic instruction into Pashto; instead, they must be fundamentally modified to preserve cultural values while conveying crucial medical knowledge. Aslam et al., (2025) highlighted the need for healthcare professionals to give supportive, nonjudgmental treatment while being cognizant of the cultural influences and emotional strain related to diabetes. Nurses should address dietary changes in the context of Pashtun hospitality (melmastia) create instructional materials in Pashto utilizing regional idioms and culturally appropriate analogies, and utilize motivational interviewing techniques to investigate patient's own motivations for changing their behavior.

Nurse-Led Community Screening Camps

In Peshawar, nurse-led community screening camps can get around a number of obstacles that stand in the way of facility-based diagnostic testing. Nurses lower transportation and access obstacles by setting up screening in places that are trusted by the community, such as mosques, community centers, schools or jirga gatherings. The presence of female nurses makes it possible to screen women who are unable to visit institutions with mixed genders. Glucose testing should be combined with quick instruction at screening camps. Results should be explained in language that are acceptable for the culture and clear, practical advice should be given. In addition to training Lady Health Workers (LHWs) to identify at-risk patients and conduct preliminary screening, nurses should set up clear referral paths for confirmed cases.

Collaboration with Religious Leaders and Local Jirgas

Working together with local jirgas (councils of elders) and religious authorities (imams, ulema) is a highly effective way to overcome hurdles that are deeply ingrained in the culture. Religious leaders have power that nurses by themselves cannot exercise when they preach health-related themes. Imams can explain that blood glucose monitoring does not invalidate fasting that Islam allows and even mandates breaking the fast when health is at risk and that medication adjustments can allow many patients to fast more

safely. By enlisting jirgas to promote diabetes screening and treatment at the community level, health habits can shift from personal preferences to societal standards.

Addressing Insulin Misconceptions

Considering that 75.2% of diabetes patients in Peshawar think insulin is the last line of treatment and 66.2% think starting insulin signals the end of the illness (Hayat et al., 2019). There is an immediate requirement for focused nursing interventions. Insulin is a normal physiological hormone not a "last resort" and nurses should emphasize this in tailored counseling. Positive experiences can be shared by peer educators who are insulin-using patients who have attained good control. To lessen stigma and boost support, family members should participate in insulin education. Additionally, nurses should educate patients about generic alternatives and subsidized insulin programs in order to address cost concerns.

Diabetic Foot Care Education

Considering Peshawar's concerning rates of foot problems—52.9% with foot ulcers, 23.0% with amputations, and 90.9% with neuropathy (Ahmad et al., 2025). A thorough knowledge on foot care is crucial. Structured foot care education programs that include daily foot examination, suitable footwear, correct washing and drying, and moisturizing should be implemented by nurses. Patients almost universally (99.5%) want simple illustrated handouts in Pashto. Nurses should set up routine foot screening clinics at primary health centers and teach family members to help with foot inspections for patients with vision impairment or mobility constraints.

Psychosocial Support for Diabetes Distress

Psychosocial support has to be incorporated into standard diabetic care because 66.8% of individuals with T2DM in Pakistan experience diabetes distress (Asmat et al., 2026). During routine visits nurses should screen for diabetes distress using validated tools (DDS-17 or PAID) offer compassionate, nonjudgmental counseling that normalizes emotional challenges create peer support groups where patients can share coping mechanisms and experiences, work with mental health professionals to treat patients with severe distress or comorbid depression and combat stigma by portraying diabetes as a manageable chronic condition rather than a personal failure.

Family Centred and Gender Sensitive Care

Family-centred and gender-sensitive interventions are crucial since married people are more likely to be non-adherent and women encounter substantial access hurdles (Arsed et al., 2025; Tariq et al., 2022). Nurses should train Lady Health Workers to provide home based support for women with limited mobility, invite husbands and male elders to education sessions for female patients hold separate education sessions for women led by female nurses in women-only spaces, address household dynamics that affect medication purchasing and dietary adherence, and empower women with diabetes self-management skills while respecting cultural norms.

Pre-Ramadan Counselling

Pre-Ramadan nursing counselling is crucial since 70 to75% of T2DM patients in Pakistan fast throughout Ramadan without seeking medical advice (The News International, 2026a). Four to six weeks prior to Ramadan, nurses should perform pre-Ramadan assessments to determine patient's suitability for fasting modify medication regimens in consultation with doctors to facilitate safer fasting, instruct patients on how to recognize hypoglycemia symptoms and break the fast when necessary, make it clear that blood glucose monitoring does not invalidate the fast, and give patients and their families written, Pashto-language fasting guidelines.

CONCLUSION

In Peshawar, cultural attitudes and practices that impede diabetes treatment and postpone diagnosis have been investigated in this research. The research shows how conventional therapeutic hierarchies, symptom misinterpretation, stigma, gender dynamics, family decision-making patterns, and religious practices, such as Ramadan fasting, all influence diabetes in this setting.

The idea that insulin signifies "last stage" treatment (affecting three-quarters of patients), the use of traditional healers as a first resort, the normalization of symptoms as transient weakness, female seclusion restricting access to healthcare, family dominated decision making delaying care, and misconceptions regarding Ramadan fasting are some of the major cultural barriers. According to statistical data, about 60% of patients nationwide suffer from non-adherence, two-thirds of adults with type 2

diabetes in Pakistan suffer from diabetes distress, and in Peshawar alone, more than half of patients have foot ulcers and nearly a quarter have had amputations.

High rates of foot ulcers and amputations, widespread neuropathy, depression that affects the great majority of patients and severe physical handicap are the dire effects. These results are not, however, certain. Community screening, family centred education in Pashto, cooperation with jirgas and religious leaders and psychological support are examples of culturally competent nursing practices that can help close the gap between evidence-based treatment and community acceptability. As the most accessible and trusted medical experts in many communities, nurses play a crucial role in this bridging effort.

LIMITATIONS

This paper has a number of shortcomings.

- Generalizability to other parts of Pakistan with distinct cultural settings is constrained by the spatial focus on Peshawar.
- There is still a dearth of study on the relationship between diabetes and cultural beliefs in Peshawar.
- The majority of the included research used cross-sectional designs, which make it impossible to prove that cultural beliefs and health outcomes are causally related.
- Memory and social desirability bias may be introduced when self-reported data is used.
- The inclusion was limited to English-language publications.
- A substantial lack in intervention studies evaluating culturally appropriate diabetes care programs in Peshawar was found by the evaluation.

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