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Original Article

Barriers and Determinants of Diabetes Self-Management Among Palestinian Refugees in Jordan: A Mixed-Methods Study

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ABSTRACT

Introduction: Diabetes mellitus is one of the highest causes of death around the world as one out of eleventh adults have diabetes mellitus. In Jordan, the prevalence of diabetes mellitus was projected to be around 16% in 2020. Our study aims to understand the compliance and efficacy for self-management among refugees living with diabetes mellitus in the Jordanian Nuzha health centers.

Methods: Structured interviews with short questionnaires, focus group discussions (FGDs), and semi-structured interviews with healthcare providers. The study population was based on a sample of patients who visited the Nuzha health centers.

Results: A total of 30 participants at UNRWA Nuzha Health Center participated in the questionnaire. Notably, most participants demonstrated high self-efficacy for controlling one's DM (83%) and high perceived ability to find the support and medical resources for management (87%). Additionally, most participants showed robust knowledge in the importance of diet and exercise for the management of DM (93% for both variables). This study also reports that 11 participants were overweight, 9 had Class I obesity and 6 had Class II obesity.

Conclusion: Limitations of this study included a low number of female patients during FGDs, limited number of Type I DM patients, and limited ages. Our main findings are that patients of Nuzha HC have high perceived self-efficacy and structural support for managing DM, level of education impacts management of diabetes, transportation is a major barrier to receiving consistent care and healthy dietary options are not affordable.

Introduction

Diabetes mellitus is rapidly becoming a leading cause of mortality around the world. About one out of eleven adults have diabetes mellitus, 90% of which have type 2 diabetes mellitus (T2DM).[1] In 2021, 537 million adults were estimated to be living with diabetes, patients in low or middle-income countries accounted for 75% of these cases.[2] The Middle East and North Africa had a diabetic population of approximately 73 million, making it the 3rd

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highest region with diabetes.[2] With diabetes on the rise, efficient self-management practices have been of great concern. Globally, poor patient compliance due to socioeconomic barriers has made diabetic self-management difficult.[3] Social support, financial status, and access to education hinder patient compliance and reduce self- management practices.[4]

The United Nations Relief and Works Agency for Palestinian Refugees (UNRWA) is a non-profit organization that aids displaced Palestinian refugees in Jordan, Lebanon, and Syria. Operating across sites within Palestinian refugee camps in Jordan, UNRWA serves more than 1 million Palestinian refugees.[5] According to the 2021 operational report by UNRWA, the prevalence of diabetes among patients served by UNRWA's Jordan field office was 7.8%, with 24.0% of patients reported to have DM under control.[6] In 2020, the prevalence of diabetes in Jordan was projected to be around 16%.[7] When assessing the HbA1c levels of patients, Momani et al.[8] considered diabetes management in Jordan to be "suboptimal." Consequently, it is critical to study the determinants of compliance and efficacy of self-management among the Jordanian population to implement beneficial programs.

The prevalence of comorbidities of diabetes mellitus among patients serviced by UNRWA Health Centers warrant a closer examination of the compliance and efficacy for self-management among people living with diabetes mellitus. According to a 2014 study involving 1600 people living with DM across the 32 largest UNRWA health centers, 55% of patients had a 2-hour postprandial glucose level above 180 mg/dl, the cutoff UNRWA sets as acceptable control.[9] Comorbid hypertension was seen in 69% of patients, peripheral neuropathy in 52.6% of patients, and a history of myocardial infarction in 9.3% of patients.[9] These findings highlight the need for interventions for DM self-management to minimize adverse short and long-term consequences of uncontrolled DM. Moreover, in 2019, Kishk et al reported outcomes of a 6-month long diabetes mellitus management program implemented by UNRWA in the Near East. The program introduced weekly group sessions that consisted of education on healthy cooking and physical exercise. It resulted in an average weight loss of 2.6 kg in the study population and significant reductions in blood glucose, cholesterol, and waist circumference, $p<0.001$ for all outcome measures.[10]

Our study aims to understand the compliance and efficacy for diabetes self-management among Palestinian refugees serviced by UNRWA in the Nuzha health center. We hope to gain an understanding of the barriers to efficient diabetes self-management as well as explore the determinants that Kishk et al. reported to have such promising outcomes on diabetes management. The findings of the study would inform the mods of change in patient education or health care delivery.

This study explores the barriers and determinants of diabetes self-management among Palestinian refugees in Jordan, focusing on patients served by the Nuzha Health Center under the United Nations Relief and Works Agency (UNRWA). Using a mixed-methods approach, including structured interviews, focus group discussions (FGDs), and semi-structured interviews with healthcare providers, the research identifies significant socioeconomic and systemic barriers, such as food insecurity, transportation challenges, and resource limitations. Despite these obstacles, healthcare providers' dedication

and support play a crucial role in patient care. The findings highlight the need for targeted interventions, including enhanced patient education, increased healthcare resources, and improved accessibility, to improve diabetes outcomes within this vulnerable population.

Methods

This study employed a qualitative design with mixed-methods elements, incorporating structured interviews with predeveloped questionnaires, focus group discussions (FGDs) with patients living with diabetes, and semi-structured interviews with healthcare providers utilizing pre-developed guidelines. The study was conducted from May 23rd, 2023, to May 27th, 2023, at the Nuzha health center in Jordan. The inclusion criteria were patients aged 18 years or older, diagnosed with diabetes mellitus, willing to participate in the study, and identified as Palestinian refugees living in a camp. Exclusion criteria included individuals with cognitive impairments or those unwilling to provide consent. Consent was obtained from all participants prior to their inclusion in the study.

Structured interviews with 30 diabetic patients took place in the Nuzha health centers. These interviews were carried out by medical students who were trained in conducting interviews and utilized short questionnaires consisting of closed-ended and open-ended questions. The interviews were conducted in Arabic, with the patients had access to the questionnaire throughout the interview. The goal of the interviews was to gather the experiences, perceptions, as well as the challenges faced by the participants regarding their perspective on the status of their health with respect to management of their diabetes mellitus, and their existing supporting system.

Part of the interview collected sociodemographic information, including whether the patients lived in or outside refugee camps, household size, gender, highest level of education, marital status, employment status, food insecurity, and access to transportation. Another part of the interview focused on diabetes diagnosis and management, including age at diagnosis, type of diabetes, treatments used, and comorbidities such as hypertension and heart disease. Questions also assessed factors related to diabetes management, including blood sugar monitoring habits, transportation barriers, food insecurity, and confidence in self-management. FGDs were organized with men and women who visited the Nuzha health clinic at in Jordan. These discussions provided an interactive space for participants to engage with each other and the interviewer, ensuring key aspects of compliance and efficacy for diabetes self-management were explored. Conducted in Arabic by trained medical students, FGDs allowed for a deeper exploration of participants' views and experiences regarding diabetes management. The overarching questions covered topics such as the barriers and determinants influencing diabetes self-management among Palestinian refugees in Jordan, strategies to combat diabetes, factors influencing self-management, and the strengths and areas for improvement of UNRWA healthcare services. Participants were also encouraged to share their opinions on challenges and facilitators for better diabetes control.

Semi-structured interviews were conducted with the head clinic officer, senior medical officer, family physician, senior staff nurse, and staff nurse working at the Nuzha health

center. The sample provided a balanced representation of perspectives within the healthcare setting. These interviews were conducted using a mix of Arabic and English, allowing for in-depth discussions on insights, challenges, and observations related to diabetes self-management. The questions paralleled those of the FGDs but were tailored to reflect the providers' viewpoints and experiences in managing diabetic patients.

The collected data were analyzed using thematic analysis for qualitative components, identifying recurring themes and patterns across the interviews and FGDs. For quantitative data, descriptive statistics were calculated to summarize demographic and clinical characteristics, providing a comprehensive understanding of the study population.

Results

The results of this study provide insights into the demographics and self-management practices among Palestinian refugees served by UNRWA with diabetes at the Nuzha Health Center, including factors influencing their understanding of diabetes management. Additionally, qualitative findings highlight key barriers and strengths in diabetes care.

A total of 30 patients participated, with 57% (n=17) female and 43% (n=13) male. Most participants (53%) were 60 years or older, while 37% were between 30 and 59 years (Table 1). Type 2 Diabetes Mellitus (T2DM) accounted for 90% of cases, with the remaining 10% reporting Type 1 Diabetes Mellitus (T1DM) (Table 1). Educational attainment was generally low, with most participants having a middle school education or less, potentially impacting their engagement with diabetes education (Table 1).

Socioeconomic challenges were common. Only 27% of patients were employed, while 37% were unemployed. Food insecurity affected one-third of the participants, and 40% reported difficulty accessing the clinic due to transportation issues (Table 1). Hypertension was the most prevalent comorbidity (50%),

Table 1. Demographic and Clinical Characteristics of Patients Interviewed

Characteristic	Details
Total patients	T1DM: 5, T2DM: 25
Gender distribution	Males: 43% (13), Females: 57% (17)
Age distribution	<18: 1, 18-29: 2, 30-59: 11, 60+: 16
Educational background	Bachelor or higher: 4, Diploma: 6, Secondary school: 8, Middle school: 9, Primary school: 2, Illiterate: 1
Employment status	Employed: 8, Unemployed: 11, Retired: 6, Housewife: 5
Duration of Diabetes Diagnosis	<1 year: 3, 1-5 years: 10, 5-10 years: 8, 10+ years: 9
Other medical conditions	Hypertension: 15, Heart diseases: 7, Kidney diseases: 3, Others: 5
Regular medication intake	Yes: 28, No: 2
Transportation hindering appointments	Yes: 12, No: 18
BMI	Healthy: 4, Overweight: 11, Obesity Class I: 9, Obesity Class II: 6
Food insecurity	Usually: 2, Sometimes: 8, No: 20
Frequency checking blood glucose	Daily: 8, Weekly: 5, Monthly: 2, Rarely: 6
Type of treatment for T2DM	OHA: 19, Insulin: 3, Both: 3
Emergencies/Hospitalizations	T2DM: Yes: 4, No: 21; T1DM: Yes: 1, No: 4

Table 2. Knowledge & Efficacy of Interviewed Patients

Question	Agree	Neutral	Disagree
I am confident I can control diabetes	25	3	2
I am confident I have the support and medical resources	26	0	4
My eating habits are important in controlling diabetes	28	1	1
Physical activity is important in controlling diabetes	28	2	0

followed by heart disease (23%) and kidney disease (10%) (Table 1). Additionally, obesity was widespread, with more than half of the participants classified as overweight or obese (Table 1). Despite these challenges, most patients expressed confidence in their ability to manage diabetes, with 83% agreeing they could control their condition and 87% reporting adequate medical support (Table 2). However, gaps were observed in self-monitoring practices: only 27% reported checking their blood glucose daily, despite nearly all participants recognizing the importance of healthy eating and physical activity.

Patients shared valuable insights during focus group discussions (FGDs). One patient highlighted the financial burden of accessing healthier food options: "I want to eat healthy, but the cost of sugar-free snacks and nutritious food is too high. Similarly, transportation difficulties were emphasized by another patient: "I live far, and the cost of coming here every week is too much for me." These barriers underline the challenges faced by this population in maintaining optimal diabetes management. Healthcare providers echoed these challenges during semi-structured interviews. A physician highlighted the issue of staff shortages: "Our clinic serves 5,500 clients with only three nurses, and sometimes it's just two. This makes it difficult to give each patient enough time." Providers also emphasized their dedication to care despite limited resources, with one noting, "We give patients strength and confidence. We follow up with them consistently." Proposed solutions included increased funding to hire additional staff, improve diagnostic capabilities, and provide transportation assistance. As one nurse suggested, "If we could offer transportation, it would make it easier for patients to come to the clinic and ensure continuity of care." Home visits for patients unable to access the clinic were also recommended.

This study identifies key barriers to diabetes management among refugees served by UNRWA, derived from structured interviews, focus group discussions (FGDs), and semi-structured interviews with healthcare providers. Structured interviews with patients highlighted quantitative findings, including the prevalence of obesity, hypertension, and gaps in self-management practices (Tables 1 and 2). Focus group discussions revealed common qualitative challenges, such as food insecurity, transportation difficulties, and limited access to educational resources for diabetes management. Insights from semi-structured interviews with healthcare providers emphasized systemic limitations within healthcare delivery, including staff shortages and resource constraints.

Discussion

The findings of this study highlight the complex challenges Palestinian refugees served by UNRWA face in managing diabetes effectively. Socioeconomic constraints, comorbidities,

and systemic healthcare limitations emerged as significant barriers. Participants described struggles with food insecurity, transportation challenges, and inadequate access to diabetes education as persistent obstacles. Despite these difficulties, healthcare providers remain a vital source of support and confidence for patients, emphasizing the need for targeted interventions to address these gaps.

For the demographics of the Nuzha Health Center, of the 30 patients, only 8 were employed, with 11 unemployed, 6 retired, and 5 housewives. 18 of the total sample reported having a household income of less than 1000 Jordanian Dinar (JD) per month (approximately $1400 USD), and the remaining 30% (12 patients) fell in the range of 1000 – 1499 JD ($1400- $2098.60 USD), which was a self-reported value. The low income seen in this refugee population explains their financial struggles to afford a well-rounded diet, which is first line for treatment and prevention of T2DM in the US.[11] Conversely, the eight employed individuals could be experiencing stress or constraints related to their jobs which might influence their management of diabetes.

For age of diagnosis, most of the T1DM patients were diagnosed after 18 years of age, which is uncommon as this condition is typically diagnosed in younger individuals.[12] Only two patients were diagnosed under 18 years of age, while the other 3 patients were over 18. A majority of T2DM were diagnosed over 40 years of age (21 of 25 T2DM patients), which is expected, and the other four may have been due to lifestyle factors or genetic predisposition.

As is the case for standard treatment of early stages of T2DM, most patients were on Oral Hypoglycemic Agents (OHAs) (19 patients), with three relying solely on insulin, and three using a combination of both, which could be due to inadequate control using OHAs, or other comorbidities. Of the most common, 20 of the 25 patients had hypertension (HTN), with three patients not having hypertension, and two unable to provide their blood pressure readings. Certain factors that were apparent in the population include food insecurity, which was reported in 10 of the 30 patients, a factor that can greatly contribute to T2DM, obesity, HTN, among other chronic conditions. Furthermore, 11 of the patients had overweight BMIs, and 15 patients fell into the Class 1 (9 patients) or Class 2 (6 patients) obesity BMI ranges. As the literature suggests, obesity and T2DM go hand in hand, and can complicate things further for patients managing chronic conditions.[13]

Aside from previously mentioned financial and food insecurities, lack of transportation, and self-monitoring has also played hindering roles in the management of T2DM among patients. 12 of the 30 patients reported postponing or neglecting medical follow up appointments due to inability to reach the healthcare centers. During COVID, one of the campaigns that the UNRWA team was able to successfully employ when patients were unable to travel to the healthcare centers were medication drop offs. Since the clinic would be backed up, volunteers would drop medications off to patients, which provided relief in a time that put stress on the UNRWA health centers. As for self-monitoring, only 8 of the 21 patients asked had kept up with daily glucose checks. This could be due to lack of patient education, especially the importance of daily monitoring. Additionally, this could be due to the lack of support at home, as 15 of the 30 reported that they upkeep their health on their own. However, 25 of 30 patients reported they feel confident in their ability to control

their blood sugar, and 26 of 30 are confident specifically in their support and medical resources.

Focus group discussions (FGDs) with patients brought their experiences and opinions to light. Patients highlighted a range of underlying factors from other health complications like hypertension to financial strains affecting their ability to maintain health. They proposed solutions ranging from better health education to the availability of more affordable health products.

In these discussions, patients understood the factors influencing their diabetes, how it relates to other chronic conditions, the importance of preventative measures, and the important of diet and exercise. However, patients also discussed the barriers to access these things, such as lack of food security, inability to access transportation to the healthcare center, and other challenges that keep them from a proper diet and exercise. These discussions lead us away from a lack of patient understanding of their condition, but rather an impact on their health from a direct lack of funding and resources.

Semi-structured interviews with healthcare providers reflected their commitment to the delivery of patient care, with many staff members sharing the same background as their patients. They identified strengths in early detection and compassionate care. However, the absence of specific blood tests, staff shortages, and funding issues were identified as areas that needed to be addressed.

Conclusion

This study highlights the socioeconomic and clinical barriers to effective diabetes management among Palestinian refugees, emphasizing the impact of low income, food insecurity, and limited access to healthcare resources. Patients reported confidence in managing their condition, yet significant gaps in self-monitoring and adherence persist.

The dedication of healthcare providers to delivering quality care under resource constraints is commendable. However, addressing critical issues such as staff shortages, expanding diagnostic capabilities, and enhancing accessibility to healthcare are essential steps forward. Proposed solutions, including transportation assistance and targeted education initiatives, are potential improvements. This research provides insights into the challenges and opportunities for enhancing diabetes management in the UNRWA refugee population. By addressing these gaps through tailored interventions, healthcare systems can significantly improve outcomes for this community and communities like this one.

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Conflicts of Interest

None to report

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