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# Type 2 Diabetic Patients: Understanding and Coping Strategies with Dietary Plans in Primary Care Setting

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**Abstract**

The national prevalence of diabetes in Kuwait ranks among the highest in the world. Low adherence to diet plans (DP) among type 2 diabetes mellitus (T2DM) patients is evident and plays a negative role in disease self-management. Understanding patients' perceptions of DP and their difficulties and barriers to following a recommended diet may help support a more successful self-management process. This study aimed to explore the perceptions of DP and the factors that affect compliance in type 2 diabetic patients (T2DP) in Kuwait to help health professionals tackle disease management and outcomes.

Our findings suggest that despite a patient's ability to articulate the composition and perceived benefits of a DP for diabetes management, various elements negatively impact adherence to DP in T2DP in Kuwait. These include influences from sociocultural, religious, intrinsic, and extrinsic factors such as family habits, personal willpower, and the infrastructure of the national healthcare system. Awareness of such limitations allows for early and continuous treatment plan adjustment. Structured educational programs and health care interventions can maximize the potential of self-management by supporting a better adherence rate.

**Keywords:** Diet plan, perception, obstacles to compliance, health care, facilitators to implementation.

## Introduction

Diabetes is a health epidemic in many countries around the world and a rapidly growing concern. T2DM is the most common type of diabetes in Kuwait, and the type is more significantly linked to lifestyle (Organization, 2021). It is also being diagnosed more frequently and earlier in adolescents and in children with obesity. While the global prevalence of diabetes in adults aged 20-79 years is 10.5%, the national prevalence in Kuwait is nearly twice this number at 25.5% (2). Of the 21 countries comprising the Middle East and North Africa, Kuwait ranks 5th highest (Atlas, 2015). The striking difference between diabetic prevalence rates in different countries is thought to be linked to psychological, socio-demographic, environmental, cultural, personal, and governmental factors that influence lifestyle behaviors such as diet and physical activity patterns (Organization, 2021). In the Finnish Diabetes Prevention Study (DPS) (Tuomilehto et al., 2001), the benefits of lifestyle changes persisted long after these trials were completed (Group, 2009; Tuomilehto et al., 2001). These findings prove the success of lifestyle interventions and their significance for all people at high risk of developing diabetes.

Diabetes management includes various components such as medication compliance, adherence to DP, commitment to physical activity, and monitoring of signs and symptoms such as glucose levels and foot care (Bantle et al., 2006; Glasgow & Strycker, 2000). To succeed, these interventions rely on disease awareness, self-management, and the presence of various systems, such as governmental and social charities, patient support groups, and national treatment guidelines that incorporate multidisciplinary teams (MDT) (Ajala et al., 2013). Furthermore, diabetes education requires standardized training of healthcare professionals and T2DP to guide and maximize patients' efforts (Mansour, 2012). Utilizing this training for independent self-care is influenced by personal beliefs, perceptions, and reactions (Khazrai et al., 2014).

In Kuwait, private healthcare, governmental primary care facilities, specialty outpatient clinics, and specialist institutions like the Dasman Diabetes Institute (DDI) all share responsibility for providing diabetes treatment.

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Dietary regimens may be hampered by poor adherence, seeing several medical professionals, inefficient appointment scheduling, or undervaluing the significance of follow-up visits. Furthermore, social and individual variables, including regular restaurant visits, cultural impacts on dietary preferences, and meal schedules, have been identified as impediments to DP adherence in adult Kuwaiti patients (Thanopoulou et al., 2004). Doctors are crucial in tracking the course of an illness, offering encouragement, affirmation, and support, and motivating patients to take charge of their care. Individualized, culturally appropriate, and deeply aware of patient's needs and unique qualities, self-management therapies are typically more successful (Rivellese et al., 2008; Thanopoulou et al., 2004). However, the current approach by GCC countries needs more cultural adaptation when implementing self-care management programs (Rivellese et al., 2008).

A regional systematic review was conducted in Gulf Cooperation Council (GCC) countries between 2013 and 2016 to assess intervention studies on self-management of T2DM and determine the most effective strategies for patients in terms of measuring outcomes such as HbA1c, lipids, body-mass index (BMI) and blood pressure (Rivellese et al., 2008). The review highlighted a meaningful improvement in HbA1c levels reported in five of the eight studies (Al-Mazeedi et al., 2012; Al Asmary et al., 2013; Al Hayek et al., 2013) utilizing self-management interventions such as diet and exercise (summarized in Table 1).

In Kuwait, food is frequently rice (Satia et al., 2004) and provided in a style of 'fast food' which, due to its affordability and availability, has become an important and frequent part of the diet in Kuwait, especially among adolescents (Al-Haifi et al., 2013). Additionally, Kuwaiti social behavior emphasizes close relationships with family members through regular social networking circles, usually associated with food consumption and lack of physical activities (Vogrinc et al., 2008). Avoidance of participation may be seen as socially unacceptable. Hence, T2DP may feel particularly pressured to politely accept presented food at home and during social events, even if this aligns differently with their dietary plans. Evaluating patients' perceptions and knowledge about lifestyle choices is paramount during developing evidence-based interventions to manage diabetes and its complications. An effective strategy would identify potential obstacles to compliance early and inform service improvement on methods to increase the effectiveness of and adherence to dietary interventions.

Following the case study approach, an exploratory qualitative study was conducted at the Fouzia Sultan Health Network (FSHN) medical clinic using face-to-face, semi-structured interviews. The design of this project also incorporated an interpretative phenomenology approach (IPA) method, which harmonizes with the aim of the research. IPA is a qualitative approach that helps provide a detailed assessment of personal lived experiences, mainly for complex, vague, and emotionally affected life events (Smith & Osborn, 2015). It investigated patients' reflections, experiences, and perceptions regarding DP.

## Methods:

### Study cohort

A total of 14 Kuwaiti T2DP, aged - 30-70 y, were interviewed for the study, seven non-pregnant females and seven males. All patients were previously diagnosed with T2DM and had been on oral hypoglycemic medications for over 12 months. All participants had HbA1c levels between 53 and 85.8 mmol/mol to exclude T2DP with poor diabetic control.

Recruitment followed a convenience sampling method after an electronic search using the suggested inclusion criteria. The search was run using the electronic health record currently in place, ranging from 2016-2018. Patients with any of the following criteria were excluded from the study: a BMI over 40, use of insulin, immobility, and significant co-morbidities that may affect their psychological or physical abilities to follow a DP.

### Types of Questions

Interviews were conducted uniformly with a script for all patients to minimize any potential effect of doctor/patient previous familiarity (Table 2). Theoretical saturation was followed, and the interviewing process was stopped once no new codes were generated from the responses.

The interviews explored topics related to patients' perceptions regarding their understanding of DP, difficulties, feelings, coping strategies, and suggestions for improvement. They also covered cultural and festive food impact on their ability to adhere to the recommended DP.

### Pilot Interview

A pilot interview was conducted at FSHN in February 2018 to determine the validity of the data

collection methods.

**Procedure**

The validated guide was followed during the interviewing process. Care was taken to maintain a non-judgmental flow during the interview (Smith & Osborn, 2015). Patients were asked to express their feelings and be honest even if the interviewer was or has been their physician. The fact that patients were interviewed by their physicians made establishing rapport a more achievable process but presented a possibility of potential bias (Ross, 2012). Data collection was carried out at FSHN during June and July 2018.

**Benefits and Risks**

The study offered no direct benefit to participants who were informed of the anonymity and confidentiality of the obtained data. All participants signed consent forms. No identified risk was associated with participation, such as a negative effect on their care about their answers.

**Data Credibility**

The credibility of the interviews was checked through the respondent's validation technique (Yanow & Schwartz-Shea, 2015). All interviewees could see the transcribed data before being analyzed, with the possibility of changing any potential misunderstanding. This helped improve the study's validity (Waltz et al., 1991).

**Data Analysis**

The thematic analysis provided a flexible and accessible approach to analyzing qualitative data (Anjalin et al.). NVivo software was used to analyze the data.

**Results**

Details of the patients interviewed are presented in Table 3. Topic areas discussed with identified themes and subthemes are presented in Table 4. Overall, 6 themes and 18 subthemes emerged from the data analysis. These themes expressed interviewees' perspectives of diet composition and its contribution to positive outcomes and sociocultural, intrinsic, and extrinsic barriers to compliance and external facilitators that may support implementation.

**Perception of Diet Plan & Diet Composition**

Most patients expressed their understanding of a DP in terms of a prescribed set of instructions (subtheme: rules/guidelines) outlining foods they were allowed to eat or as a collection of foods they should refrain from (subtheme: restrictions). All patients interviewed articulated the importance of following these rules and guidelines.

While interviewees expressed awareness of foods to avoid, they frequently defined DP in restrictive terms, such as "avoid" and "restrict." Almost all reflected a feeling of mental and psychological pressure as a result.

**Contribution to Positive Outcomes**

A common theme identified was the positive impact of a recommended diet on participants' physical, biological, and mental status. Regarding direct physiological benefits, interviewees agreed that following a DP decreases blood glucose levels; some even believed it helps with weight loss (subtheme: weight control).

**Obstacles to Compliance**

***Sociocultural Factors***

This theme comprises perceived difficulties reported by participants, mainly related to their cultural and religious practices, social environments, and food habits. The majority named Ramadan and related events as negatively impacting their diabetic DP (subtheme: holiday rituals). A small minority of patients considered the fasting period a supporting factor to their DP.

Almost all interviewees named influence from friends and family as a major negative factor in adhering to a DP (subtheme: societal pressure). During group meals at restaurants, interviewees stated experiences of being urged to eat or being perceived as rude if declining multiple times. Regardless of the food preparation method, the majority mentioned Kuwait's cultural food type as a negative factor in their DP journey, mentioning high amounts of carbohydrates and sugars (subtheme: cultural cuisine).

***Intrinsic Factors***

Within this theme, willpower and daily routines (self-discipline, subtheme: eating habits) largely contributed to adherence to a DP. Most interviewees named lack of self-discipline as negatively impacting their ability to follow a DP.

***Extrinsic Factors***

Multiple external sources were identified as influencing the interviewee's success or failure with a DP. One major response was the accessibility of food (subtheme: accessibility). Almost all enrolled participants

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reported no difficulties when asked about healthy food availability. While some stated a need to travel to particular markets for specific items, these responses agreed that obtaining the necessary ingredients for their DP was not an obstacle.

Almost all patients had responses highlighting a lack of healthcare professionals' support (subtheme: healthcare support). These answers included primary healthcare, nutritional, and mental health support. Family meals were cited as an obstacle, as the customary dishes presented at mealtime often needed to align with recommendations for T2DM (subtheme: family eating habits).

### *External Factors*

Most patients felt disconnected from society and family in understanding the necessity of a DP, which negatively impacted their diet adherence (subtheme: societal and family awareness). Patients empathized with the need for more development in healthcare services, particularly in nutrition and psychology (subtheme: healthcare support).

## Discussion

The data on the diet composition subtheme reflected a good awareness of DP. All patients interviewed knew the importance of following a DP and the nature and impact of a healthy diet. This study occurred at a private sector facility, usually accessed by higher-income people. A Kuwait-based study in 2004 REF found that higher income was typically associated with stronger awareness and knowledge of T2DM. However, out of 5,114 T2DP patients interviewed from 24 primary care centers, only 9.7% displayed good diabetes knowledge (Al-Adsani et al., 2009). DP was perceived as constraining and unsatisfactory for many of the participants. Such observation necessitates more internal motivation and psychological support for T2DP to reduce the emotional burden of following a diet recommendation. In the same regard, Backman et al. (Brug et al., 2005) reported that personal attitudes, ethnicity, perceived behavioral control, and subjective norms mainly influence dietary practices in T2DP. Therefore, observations may vary between patients depending on their circumstances and personalities.

Almost half of the patients interviewed linked diabetes management with adhering to a good DP and participating in exercises. The exercise component was not part of the data to be explored but appeared in the captured responses. It was relevant to the overall diet adherence process being part of the recommended lifestyle changes for diabetic self-management.

Despite the positive effects of behavior change interventions on T2DM, lifestyle modification is challenging (Brug et al., 2005) and faces many financial and health structural barriers (Rosal et al., 2008). More in-depth work on lifestyle behavior change may lead to more effective interventions (Rosal et al., 2008). However, behavior change in DM self-management needs further studies (Simmons et al., 2010). According to the current research, lifestyle awareness and combining exercises with DP appear to be an area that needs further understanding and support by the health authorities.

Almost all interviewees agreed that following a DP decreases blood glucose levels; some also believed it helps them lose weight. Nearly half of the participants were obese, which increases the risk of DM complications (Ross et al., 2005). Highlighting this awareness is useful as studies have shown that knowing the advantages of change can be a potential motivational factor in T2DP (Al-Maskari et al., 2013).

The participants reported their belief that following a diabetic DP helps reduce complications and negative symptoms. This reflected a good awareness of the positive effect of DP on both short- and long-term complications. However, this observation may present due to a potential bias stemming from care provided by a private practice family doctor, where higher income may reflect high education and the medical focus will be on the physiological effects of T2DM (Steele et al., 2017). Almost all participants reported that successfully following a DP increases positive feelings mentally and physically, but they still struggle to adhere. The positive effect of successfully following a diet regimen was evident in the participants in the current study. Still, it was not enough to help them persevere on the journey of diet adherence, hence the need for continuous support.

The sociocultural subtheme comprises perceived difficulties reported by participants, mainly related to their social environments, sociocultural food practices, and religion. The pressure arising from social-related factors was the most commonly reported obstacle by patients and significantly impacted patient adherence. The role of social gatherings in the Kuwaiti culture is an important positive factor in the psychological and emotional wellbeing of the society and presents an enjoyable experience. However, this has evident negative effects on DP followed by patients as reported by participants and as reflected in the literature

(Friedl et al., 2021).

The negative effects of cultural food practices were clear in the current study and highlighted the importance of raising awareness and taking measures to make appropriate changes. The study's findings agree with national studies about the problems cultural dietary practices may have on dietary compliance (Friedl et al., 2021). Most participants named Ramadan time and social events like weekend gatherings and restaurant dining as hurting DP. They mentioned the variety of sweets and food as one factor and the cultural and religious rituals/habits like Ghabga and Sohour as other contributing factors exclusive to the Ramadan period.

Whether done by patients or helpers, food preparation and healthy availability were not perceived as major obstacles.

## Conclusion

The study showed that most participants were aware of the advantage of following a DP regarding results, symptoms, and complications, resulting in a feeling of wellbeing following adherence. DM patients see DP as a list of foods to avoid rather than a systematic approach to nutrition, and it is labeled as a restrictive method of treatment that can be discouraging. However, there was also a difference in findings on patient's perception of DP that may be attributed to the different psychosocial background of the interviewees, their gender, access to good medical care, age, and personal attitudes. As per study results, the main barriers to adherence were socially related, such as lack of family and community awareness, obligation and peer pressure at social events, and negative traits of cultural rituals.

T2DP has also blamed the DP as a cause for frustration and stress. They blamed their lack of willpower, resilience, self-discipline, and difficulty in behavior changes as the main internal factors for low adherence. Given the perception of restriction, patients are falling back on their willpower as the primary source of strength to adhere to the treatment. This need is to remain on the DP and overcome extra obstacles patients face while pursuing diet control. MI helps explore a patient's individualized reasons and needs for change. Considering and addressing these barriers will likely increase the dietary adherence for T2DP.

***Table1. Coding of the content of the DSME interventions used in the eight included studies.***

| Authors/ *Year* | Interventions Utilized | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Healthy Eating | Physical Activity | Monitoring Glucose | Taking Medication | Diet Guidance | Physical Activity Guidance | Coping Strategies | Monitoring and Feedback | Psycho-logical Support |
| Omer et al[32] *2015* | X | X | X | | X | X | | X | |
| Alasmary et al[33] *2013* | X | | X | | X | | | X | |
| Alhayek et al[34] *2013* | X | X | X | X | X | X | | | X |
| Al-Shahrani et al[35] *2012* | X | X | X | X | X | X | X | | |
| Al Sinani et al[36] *2010* | X | X | | X | X | X | | | |
| Mohammed et al[37] *2013* | X | X | X | | X | X | X | | X |
| Al Daghri et al[38] *2014* | X | X | X | | X | X | | X | |
| Abdulkareem & Sackville[39] *2009* | X | X | X | | X | X | | | |

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*Table 2. Interview Schedule.*

| Main Question | Follow Up Prompts |
|---|---|
| 1. What does a diabetic diet plan mean to you? | *What exactly did you mean by?*<br>*Could you tell me more about? Is that all?* |
| 2. How important do you feel healthy nutrition is? (for example fruit, vegetables and whole grain) | *Can you give more details?*<br>*In what way is that?* |
| 3. What kind of effect do you think your diet has on your diabetes? For example about symptoms, blood glucose levels etc. | *Could you tell me more about that, please?*<br>*Could you help by giving an example?* |
| 4. How well is your meal plan working for you? | *Can you provide me with more details?*<br>*Why did you say that?* |
| 5. What do you like/don't like about your diet plan? | *How good would you say it is?*<br>*How did you feel about that?* |
| 6. What, if any, difficulties do you have in pursuing a dietary plan? | *Could you tell me more about?*<br>*Could you help by giving an example?*<br>*What about:*<br>• *Food preparation?*<br>• *Cooking your own food?*<br>• *Fasting period?*<br>• *Having a cook at home?*<br>• *Food selection?*<br>• *Portion size?*<br>• *Meal planning?*<br>• *Eating out?*<br>• *Fast food availability?*<br>• *Food shopping and preference?*<br>• *Calories counting?*<br>• *Cultural food practice impact on diet?*<br>• *Fruit, vegetables, whole grain foods?* |
| 7. Do you face any issues finding certain food which is essential or part of your dietary plan? | *Could you help by giving an example?* |
| 8. Does following a dietary plan make you feel unhappy and how? | *Can you provide more details?*<br>*Why is that?* |
| 9. Do you feel any social pressure as a result of following a dietary plan, for example from family, friends, society? | *Why did you say that?*<br>*Could you help by giving an example?* |
| 10. Do you feel you get enough support from:<br>Your health providers? family? friends? work place?<br>If yes, what are the most helpful measures?<br>If no, how could health providers better serve? | *Could you tell me more about that, please?* |
| 11. What type of support do you wish to have and by who? | *What exactly did you mean by that?*<br>*Could you help by giving an example?* |

*Table 3. Patient demographics.*

| **Gender** | **No.** |
|---|---|
| Male | 7 |
| Female | 7 |
| **Ages (*years*)** | |
| 30-39 | 1 |
| 40-49 | 3 |
| 50-59 | 4 |
| 60-70 | 6 |
| **Employment Status** | |
| Part or Full-time Employment | 12 |
| Retired | 2 |
| **BMI (*kg/m²*)** | |
| 18-24. 9 (normal)24-26 | 2 |
| 25-29.9 (overweight) 27-29 | 5 |
| ≥30 (obese) | 7 |

*Table 4. Themes and Subthemes divided by topic area.*

| *TOPIC* | *THEME* | *SUBTHEME* |
|---|---|---|
| **PERCEPTION OF DIET PLAN** | **Diet Composition** | Rules/Guidelines |
| | | Restrictions |
| | **Contribution to Positive Outcomes** | Weight Control |
| | | Decrease Negative Symptoms/Complications |
| | | Component of Treatment Plan |
| | | Positive Self-Efficacy |
| **OBSTACLES TO COMPLIANCE** | **Sociocultural** | Societal Pressure |
| | | Cultural Cuisine |
| | | Holiday Rituals Food Preparation Practices |
| | | Food Preparation Practices |
| | **Intrinsic** | Self-Discipline |
| | | Eating Habits |
| | **Extrinsic** | Accessibility |
| | | Healthcare Support |
| | | Life Events |
| | | Family Eating Habits |
| **FACILITATORS TO IMPLEMENTATION** | **External** | Societal and Family Awareness |
| | | Healthcare Support |

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**Consent Form:**

TITLE OF PROJECT

Type 2 diabetic patients understanding and coping strategies with dietary plans in primary care settings.

By signing below, you agree that you have read and understood the Participant Information Sheet and that you agree to take part in this research study.

_____ _____

Participant's signature Date

_____ _____

Printed name of person obtaining consent Signature of person obtaining consent

NOTE: The Consent Form should normally be separate from the Participant Information Sheet so that the participant has something they can keep.

**Conflict of interest statement:**

The author declares that he has no conflict of interest.

**Data Statement:**

Data are available on request due to ethical reasons.

**Acknowledgment:**

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