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Barriers in Adherence to Diet in Patients with Type-2 Diabetes: A Literature Review

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Abstract

Diabetes mellitus (DM) is one of the most difficult health problems of the 21st century. Poorly managed Type-2 diabetes is regarded as an important public health problem and is often related with negative outcomes. Adherence to prescribed treatment regimens and dietary recommendations are important for achieving positive health outcomes in DM management. Patient nonadherence can be a pervasive hazard to health and well-being, as well as a significant financial burden. This focus of this review paper is on the barriers in adherence to diabetic diet management plan among adults with Type-2 diabetes in India. The objective of the review was to determine the prevalence of Type-2 diabetes and the impact of knowledge, perceptions, and sociocultural factors in adherence to diabetic diet among the people with Type-2 diabetes mellitus (T2DM).

Despite the fact that several research outcomes have demonstrated the importance of diet management and glycaemic control in D2M management, the adherence towards self-care and dietary recommendations among Indian patients remains unsatisfactory. The review clearly revealed the significance of the factors like knowledge, awareness, sociocultural and lifestyles related factors in the adherence to selfcare behaviours including dietary routines in diabetes management.

Keywords

Barriers, dietary adherence, India, patients, self-care behaviours, type 2 diabetes mellitus.

INTRODUCTION

Globally, type -2 diabetes mellitus is considered as the most significant challenge faced by the health care systems of the 21st century. Diabetes mellitus is a significant health problem in the emerging economy like India. The problem of diabetes is high and rising, fuelled primarily by the rising prevalence of overweight/obesity and unhealthy lifestyles among people.[1] Diabetes ranks among the top ten leading causes of mortality in this century among adults, alongside other diseases like cardio-vascular diseases (CVD), respiratory diseases, and other fatal diseases including cancer.[1]

The recent data on the pervasiveness of diabetes and rapid increase in the prevalence of diabetes during the years between 2000 and 2030 is revealing startling information. The global incidence of diabetes mellitus was assessed as 2.8% across all age groups in 2000 and it is expected to increase upto 4.4% in 2030.[2] [3] It is anticipated that the total number of people with diabetes will surge from 1700 lakh in 2000 to 3660 lakh 2030.[2] Of the total diabetic cases, 90% of cases are accounted by Diabetes Mellitus Type 2.

WHO reports that the pervasiveness of diabetes is increasing rapidly in countries with lower and middle incomes (WHO Report). Some of the risk factors attributed to the rapidity in the rise of diabetes included population explosion, poor eating habits, and leading a sedentary lifestyle also play a significant role in the global rise of the diabetes epidemic.[4] Uncontrolled diabetes increases the problems associated with vascular, macro-vascular and micro-vascular diseases including diabetic nephropathy, diabetic retinopathy and neuropathy complications.[5]

Since 1990, the pervasiveness of diabetes in India has increased steadily, and since 2000, it has accelerated dramatically. IDF's Figure 1 depicts the growing trend in diabetes incidences in India over the previous decades. Diabetes prevalence in India has increased from 7.1% in 2009 to 8.9% in 2019.

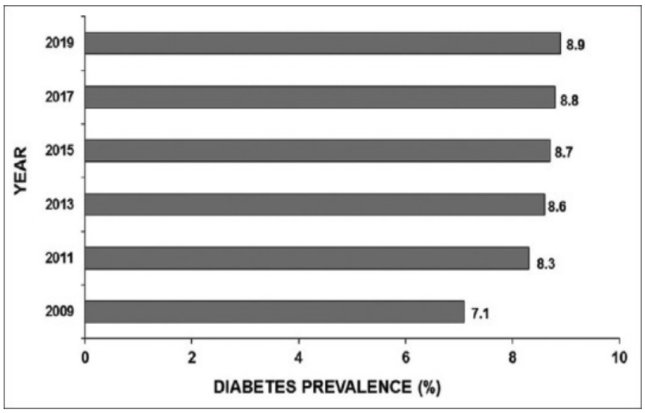

Figure 1. Diabetes prevalence in the recent decade.[3]

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IMPORTANCE OF DIETARY ADHERENCE IN DM MANAGEMENT

The process of following to a diet plan while keeping one's motivation intact and warding off slips into old eating habits is referred to as dietary adherence. Antecedents that enhance diet adherence include motivation, comprehension of nutritional advice, formation of healthy health attitudes, self-efficacy, establishing realistic objectives, and social support. Successful diet adherence has a positive impact on health, as shown by improved clinical parameters specific to T2DM and increased health-related quality of life.[6]

The patient's active engagement in self-care behaviours, such as committing to the suggested diet, participating in regular exercise, and ingesting prescribed medicines, is critical to the treatment of type 2 diabetes.[7] [8] Patients' attitudes, belief toward treatment regimen, and overall perception towards T2DM have an effect on their adherence to diabetes treatment plans and changes in lifestyle.[9] The management of the D2M disease relies heavily on the patients' observance of the prescribed diet.[10] Dietary modification is often advised as the first step in the therapy of type 2 diabetes, however despite the fact that it is considered to be the most difficult component of diabetes management, [11] it has been argued that it is the cornerstone of diabetes management.[12]

Patients' ability to remain committed to a healthy diet may be impacted by elements related to their culture, religion, social environment, and individual choices.[9] A study done by in New Zealand has revealed that only 22% of diabetic patients have reported following the diabetic diet strictly as per the recommendations by physicians. [13]

In a survey conducted in the United States, it was observed that 65% of diabetic participants followed the recommended protein diet, only 28% of diabetic participants followed the recommended saturated fat diet and only 18% of diabetic participants followed the recommended fibre intakes in regular diet.[14]

81.4% of diabetic patients in Jordan, a developing nation, were not adhering to the recommended dietary regimen. [15]

It was reported that inspite of the beneficial effects of lifestyle modifications and dietary adherences programs on diabetes management, adherence decreases over time due to the necessity to alter long-followed lifestyle patterns. [16]

METHOD

Between January 2023 and March 2023, an in-depth literature search was undertaken in several online repositories and medical databases like PUBMED, EMBASE, Google Scholar, National Library of Medicine's (NLM) MEDLINE; Elton B. Stephens CO's (company) (EBSCO) - CINAHL; SCOPUS, ScienceDirect, PsycINFO, Cochrane library, etc. to identify studies that focussed on factors influencing non-adherence to selfcare behaviours in general and non-adherence to diabetic diet in particular among patients with T2DM. As an outcome of the review, several studies related with "Barriers in Adherence to Diet in T2DM Patients" was identified and the key outcome and findings of these studies are discussed in this review.

STUDIES ON BARRIERS IN ADHERENCE TO DIABETIC DIET

An evaluation was done on the barriers preventing patients with T2DM from following dietary recommendations using focus groups (6-12 participants) and surveys (446 respondents) in different medical centres in urban and suburban areas in US. The study extracted all feedbacks pertinent to challenges and barriers that impacted patients' ability to adhere to the suggested diet. The study found that the moderate diabetic diet was perceived to be a greater burden than oral agents, but less burdensome than insulin. On the other hand, a stringent weight loss diet was rated as equally burdensome as insulin. Despite this, self-reported medication and insulin adherence was significantly higher than moderate diet adherence. The study identified that the cost of diabetic diet was the most frequently cited barrier in the focus groups. Other important perceived barriers were small sized portion of diet, support from the family, and quality of life and modification in lifestyle. Patients from the urban region reported higher difficulty interacting with their provider regarding modifications in diet requirements and also social circumstances, as well as a problem with a diabetes diet's regimented schedule. [17]

A study has been carried out with 540 patients with T2DM on dietary habits from six Italian diabetes centres. The study measured three-day diet record of the diabetes patients. Diet records were examined using Italian food composition tables. The study found that the average consumption pattern with regard to different nutrient were near close to the prescribed level. Upon further analysis of the dietary regimen, it was identified that the saturated fat and fiber intakes were the least representative of the dietary target. The analysis revealed that saturated fat was greater than 10 percent of total calories in 43 percent of patients, fiber intake was 20g per 1000kcal in only 6% of patients, and it was 15 g/1000 kcal in 25% of patients (acceptable). These findings suggest that even in Italy, dietary recommendations are not always followed to the letter. Given the diabetic population's high BMI, calorie intake is slightly higher. [18]

Based on the outcome of a focus group study with 516 patients diagnosed with T2DM, Booth et al. [19] have proposed that the obstacles in the self-management of diabetes disease and diet adherence could categorised into six groups: "Challenges involved in breaking long-standing routines", "perceptions that are not positive towards the "new" or advised treatment plan", 'obstacles that are rooted in one's social environment", "inadequate levels of awareness and comprehension", "lack of motivation", and "hurdles stemming from the logistical challenges of implementing lifestyle modifications".[19]

In a research that used a cross-sectional approach, found that 49.2% of patients with T2DM in Nepal had a poor understanding of the suggested diet for their condition. The

research also indicated that male participants adhered to dietary recommendations more than female participants. Those diabetic patients who resided closer to the hospital had a better rate of adhering to the dietary recommendations given to them by their physicians, as well as those given by their nuclear families, rather than those given by their joint or extended families. The degree to which individuals followed dietary recommendations declined with advancing age and was shown to have a positive correlation with their level of diabetes awareness. A positive family history of diabetes was associated with a greater level of physical activity compliance compared to other people. In a similar vein, respondents from extended families or upper middle socioeconomic classes displayed stronger dietary adherence than those from lower socioeconomic classes or nuclear or joint families. Patients who had been divorced were less likely to adhere to dietary management and physical activity recommendations than patients who had been married or widowed. [20]

An evaluation was done on the perceived facilitators, barriers, and patient expectations in T2DM self-management. Patients were recruited at the outpatient clinic of the Portuguese Diabetes Association using a convenient sampling technique. Using video-recorded focus groups, qualitative data was collected. The study has identified three main themes: diet, physical activity, and glycemic control. There are four basic kinds of dietary change barriers that have been discovered, and these include decisional, quality of food, food amount, and dietary routine. In addition to variables relating to decision-making, physical activity was hampered by factors such as exhaustion, discomfort in the muscles and joints, and other co-morbidities. Across all three categories, information and the translation of knowledge, as well as familial and social relationships, were investigated and considered as facilitators in some circumstances and impediments in others. This research highlighted the value of customised counselling by providing fresh insight into the challenges, facilitators, and predicted results of type 2 DM self-management. [21] .

In a study with 385 patients with diabetes, Patients who have diabetes often have problems determining the appropriate diet for them, both in terms of its quality and its quantity. A patient's food choices, adherence to the diet, and overall eating pattern may all be affected by their knowledge of a specified diet. A 67 item Food Frequency Questionnaire (FFQ) was used to examine the dietary routine and pattern of nutrition intake in T2DM patients. [22]

Observational cross-sectional study and identified the significant barriers in adherence to recommended diet in patients with T2DM. 126 volunteers with type 2 diabetes who were overweight or obese and had previously received nutritional counselling for a period of at least one year from two diabetes clinics in Tabriz, Iran were used as the sample in this study. The main components of dietary nonadherence were identified using factor analysis method. Seven barriers in dietary adherence were identified that included situational barriers and the inability to resist temptation; stress-related eating disorder and expense; difficulties with meal and snack planning; perplexity; work-related concerns; small portion size; and the absence of palatability and family support. According to the findings of the research, people with T2DM experienced certain challenges to adhering to their diet. It is expected that increasing dietary adherence among type 2 diabetes patients in Iran would need taking into account and eliminating these obstacles in the context of dietary counselling. [10]

There is a scarcity of information on the amount of adherence to dietary guidelines and the challenges that people with type 2 diabetes face across Africa, especially Ethiopia. They undertook a study with the goal to determine the degree of dietary adherence and associated obstacles among type 2 diabetes patients in northwest Ethiopia. Adherence with diabetic dietary regimen was measured using “Perceived Dietary Adherence Questionnaire” (PDAQ). The findings reveal that a large number of the research participants (74.3%) did not follow the dietary guidelines. The question about eating high-sugar meals had the highest mean score. Based on the mean score, it was found that the participants seldom consumed fruits and vegetables and meals high in omega-3 fats. According to the survey, the most prevalent reasons for poor dietary compliance were a dearth of knowledge, an absence of dietary knowledge, an inability to pay the price of a healthy diet, and an absence of understanding of the advantages of dietary recommendations. In multivariate logistic regression, a poor educational level, the prevalence of co-morbidities, an absence of prior exposure to nutritional teaching, and a low monthly income were all statistically significant factors associated with non-adherence. It was shown that individuals with type 2 diabetes in the northwest region of Ethiopia had a high risk of not adhering to the dietary guidelines. As a result, individualised health education on the possible benefits of good dietary guidelines in blood glucose management is advocated. In patients with T2DM, healthcare practitioners has to be upbeat in encouraging them to follow dietary guidelines . [23]

A study have explored the factors that influence self-management in patients with T2DM. Semi-structured qualitative interviews were conducted with ten patients and four general practitioners as well as three practising nurses in a suburb region of Sydney, Australia. [24]

The interviews were subjected to a theme analysis, and the socio-ecological model was used as a classification framework for the findings. Inductive analysis of the text's meaning allowed for the discovery of additional themes not immediately apparent.

The levels of the socio-ecological model that influenced self-management were individual (literacy in e-health, self-motivation, time constraints), interpersonal (family members, friends, diabetes education, relationship between patient and provider), community (culture, resources for self-management) and organisational (affordability, multi-disciplinary care). To handle this vast variety of elements, which are beyond the purview of specific services or organisations, there is a need for multilayer methods. Examples of such strategies include tailoring health education

and resources to the literacy and culture of e-health, putting an emphasis on social networks and the interaction between patients and healthcare providers, and simplifying access to cost-effective on-site allied health services.[24]

The styudy was conducted qualitative research using content analysis as their method for investigating the factors that prevent patients with T2DM in Iran from adhering to dietary guidelines. Data for the research were gathered by conducting 38 unstructured in-depth interviews with a total of 33 Type 2 Diabetes patients and the treatment supervisors who worked with them. The method known as "thematic analysis" was used in order to identify the categories and themes that emerged from the data. The COREQ Checklist was used to ensure that the research was as rigorous as possible. The findings of the analysis of the collected data have shown the creation of five kinds of perceived barriers, which are as follows: social concerns and disputes, family eating behaviours, inadequate social support, social impasses, and dominant food patterns. [25]

From a tertiary hospital in Singapore have examined the relationship between nutrition knowledge related with diabetes and quality of diet with 42 participants.. Twenty-one semi-structured interviews were recorded, and analysed to determine perceived barriers and enablers in the adherence toward dietary recommendations. The research used theme analysis to identify six barriers that make it difficult to adhere to dietary instructions. These obstacles were an obesogenic situation, an insufficient amount of time, a conflict between instructions and personal beliefs, emotional stress from external factors, a lack of personal motivation. The research also identified the four facilitators in sticking to dietary rules, which are personal drive to better condition, fear of T2DM consequences, adequate DRNK, and the existence of social support. [26]

A qualitative study was carried out to investigate the perspectives, practises, and barriers to self-care practises among urban Pakistani adults with T2DM. The participants of the study included thirty-two adults with T2DM from a hospital in Lahore. Using qualitative research approach and semi-structured interviews, the researcher generated six overarching themes from the thematic analysis. The themes identified were patients' knowledge of diabetes, consequences of diabetes and other comorbidities, the burden of self-care, and living circumstances. The involvement of family and friends was found to be as important as the role of doctors and healthcare providers. According to the findings of the research, some of the most important barriers to self-care are financial restrictions, physical limitations, harsh weather conditions, social events, a passion for food, forgetfulness, a fear of needles, and a hectic schedule. Bukhsh et al. [27]

A Study examined diabetic patients' knowledge of diabetic diet. A cross-sectional survey was carried out with one hundred T2DM patients. The study utilized a validated, and structured questionnaire. The study revealed that participants had limited knowledge about recommended diabetic diet. For the patient to adhere to a healthy diabetic diet, a higher level of knowledge is deemed necessary. [28]

CONCLUSIONS

The review clearly demonstrated that diabetes patients of majority of the studies have inadequate level of awareness and knowledge toward dietary patterns in the management of diabetics. In addition, socio-cultural, lifestyles related factors were identified as the strong barriers in adherence to proper diabetes management practices and dietary recommendations. There is a strong need to embark empirical research to explore the influence of these factors with the management of T2DM among patients.

Majority of the respondents have failed to follow the self-care practices including dietary management prescribed to alleviate the complications of the ailment. The studies on diabetic diet adherence shows that majority of the patients lacked knowledge on diet modification to improve the diabetic recovery. Similarly, diabetes patients of the studies often show negligible interest toward adherence to prescribed diet and practices.

The study recommends that a comprehensive policy may be enacted to educate and train diabetes patients on the awareness, management and control of the diabetes and different methods to keep track of the treatment process. Further, diabetes awareness campaign could be conducted periodically to educate and mitigate the harmful impacts of this disease. This study is a part of the major study on diabetes awareness, knowledge, and adherence to dietary practices among diabetic patients in rural area. The study has major implications in understanding on the actions that could be potentially suggested for modifications in dietary habits, lifestyle changes to T2DM patients in rural areas.

The results of this literature review clearly revealed that the predominant dietary patterns play a significant role in patients' diet adherence. Patients' dietary habits may be traced back to the cultural, environmental, social, and religious influences of their respective societies. Thus, effective health education enhances knowledge, attitudes, and behaviours, especially with relation to dietary habits and lifestyle changes, which leads to improved glycemic control and may delay the onset of diabetes while preventing complications down the line. Providers of healthcare must ensure that patients comprehend the concept of diet adherence and incorporate it into their daily lives.[6] Dietary adherence and its components require additional study in order to develop more effective communication strategies for T2DM patients. Overall, the findings emphasise the need for a multidimensional approach in the control and management of T2DM and the promotion of a healthy diet among diabetics.

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