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Insights of healthcare providers and patients on implementation of dietary/lifestyle intervention for reversal of obesity and type 2 diabetes: a qualitative study

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ABSTRACT

Background: A diet plan that includes limiting eating frequency to twice a day along with other lifestyle modification was implemented as part of a campaign for diabetes reversal. The objective of this study was to identify facilitators and barriers to practice of this self-management regime among adults with type 2 diabetes mellitus (T2DM) living in urban communities.

Methods: Participants included purposively sampled 10 diabetics recruited from 12 Diabetes Reversal Centres (DRCs) located across Maharashtra, Goa, Karnataka and Gujarat in India. Additionally, healthcare providers (including 10 doctors and 10 coordinators) from these centres were interviewed. Data collection employed in-depth interviews using structured interview guides. Thematic data analysis was undertaken to identify themes.

Results: Continued rapport and supervisory role of the healthcare providers in the DRCs was the key facilitator in helping patients to assume responsibility and adhere to the diet regime for self-management. Visible reduction in sugar levels and body weight were other rewarding benefits that motivated sustained compliance. Social and cultural aspects (including social functions and formalities) was a perceived barrier that interfered with adherence to diet regime and goals. A common suggestion from both the healthcare providers and patients was the need to expand this initiative through capitalizing on use of relevant technological devices.

Conclusions: In conclusion, a self-management patient model where there is continued and active involvement of healthcare providers through all stages is a recipe for success. However, this initiative can be further strengthened through complementing it with individualized, context-driven solutions to address the barriers.

Keywords: Obesity, Diabetes, Self-management, Facilitators, Barriers and lifestyle intervention

INTRODUCTION

Diabetes is a major public health problem across the world with estimated increase in prevalence from 425 million people in 2017 to 629 million by 2045.¹ The Global Burden of Disease Study carried out in 188 countries attributes diet as a major risk factor and evidence show that both composition and quality of diet in addition to volume plays a crucial role.²⁻⁵ Further,

available evidence suggest significant association between physical inactivity and T2DM with possible biological pathways explaining protective mechanism.⁶ Thus, focus on dietary modifications and behavioural changes promoting healthy lifestyle forms the mainstay of T2DM management strategies. While this concept of selfmanagement has been in existence for many years, yet it is complex and often not well understood from the patient's perspective and interpretation making diabetes management still a major concern faced by both healthcare providers and beneficiaries.

Sustained compliance to lifestyle modifications, family support, work schedules, lack of adequate knowledge, and financial limitations restricting use of healthy foods are often cited as barriers to self-management of T2DM.⁷⁻⁹ Further, many of these innovative disease management strategies are not contextualized to the cultural milieu and this may further compound the failure of self-management initiatives.

In 2012, the "India free of obesity and diabetes" campaign (later named as "World free of obesity and diabetes campaign") was initiated that recommended a diet plan that limited eating frequency to reduce the insulin level with subsequent reversal of diabetes. The plan prescribes two meals a day when hungry along with other lifestyle modifications.¹⁰⁻¹² Thus, to get an insight into the experiences of the provider as well as the beneficiaries as stakeholders of the initiative the current study aimed at understanding the barriers and facilitators, and future directions of this programme and provide insights into the range, depth and complexities of the subjective perspectives. The objectives of the study were to determine the perceived barriers and facilitators that people with T2DM and healthcare providers experience when trying to adhere to and implement a diet plan that recommends reducing frequency of eating respectively.

METHODS

Study design

This study used a qualitative approach, in particular, indepth interviews to explore barriers and facilitators of a diet plan that recommended reduction in the frequency of eating habit (along with other lifestyle modifications) to adults living with T2DM. The in-depth interviews involved assessing the perceptions of both the healthcare provider and target beneficiaries in an open-ended way so that participants were given the opportunity to express for a wide range of feelings and opinions on a topic asked.

Study setting

The study was conducted in partnership with the 12 Diabetes Reversal Centres (DRCs) under the Initiative in India namely across Maharashtra (Nagpur, Solapur, Nashik, Thane, Pune, Kalyan, Aurangabad, Hingoli, Kolhapur), Madgaun (Goa), Belgaum (Karnataka) and Surat (Gujarat).

Selection criteria

The selection of participants was purposeful and participants were selected such they were best inform to enhance our understanding of the research questions. Thus, participants included key stakeholders from the aforementioned centres including service providers (like physicians and coordinators) as well as diabetics enrolled in these centres and prescribed the diet plan (irrespective of their adherence to the programme).

Study duration

Data collection was carried out from August to September 2020.

Data collection

A semi-structured interview guide in accordance with the outlined objectives where participant perspectives regarding the facilitators and barriers of the programme on diet modification constituted some of the assessment areas. The interview guide contained open-ended questions on experiences and challenges of the physician on implementing the diet programme, physician's perceived reasons behind a patient's adherence/non adherence to the diet plan, barriers and facilitators of implementing such a programme from perspective of both the health provider and target beneficiary, suggested recommendations for improvement of patient's adherence, positive and negative experiences of the patients on this programme, motivation behind a patient adhering to the programme, surrounding environmental factors at home/workplace that affect their lifestyle choices, and physician's recommendation on solutions to addressing quality care in the prevention and management of T2DM and obesity. A decision was taken to conduct interviews telephonically amid the COVID-19 pandemic. All questions were read to participants to take into account the issue of low literacy in the study population (if any). If permission was given by the participants, interviews were audio recorded and transcribed. All selected participants were interviewed individually and there were no remunerations for the interviews.

Statistical analysis

A qualitative content analysis was utilized to analyse and interpret the data in the context of the selected facets of the interviews. The project team read each of the transcripts to gain a broad understanding of the interviews, and then relevant text sections in the form of sentences were identified. These sections were further summarized by assigning with codes to each meaningful segment. Codes were further categorized and themes identified based on the data. Thereafter, several rounds of reflection between the identified themes and transcribed interviews were undertaken to ensure and inform the interpretation of the data in accordance to the emerging context during interviews. The codebook was applied to each subsequent transcript, noting emergence of any new themes. The findings are presented in a descriptive manner under each key thematic head, with further subthemes being enriched with selected quotations. We refined the quotations by removing any repeated and unnecessary words to make the sentences complete and understandable, but still retained their meaning. The

project team was proficient in both Hindi (locally spoken language) and English and this ensured that the quotes were adequately translated the quotes from Hindi to English.

Research ethics

The study was approved by Institutional Ethics Committee, Indian Institute of Public Health-Delhi . An informed consent form was developed for the study purpose. Every personnel interviewed was explained about the study purpose and a verbal consent obtained. Unique identifiers were used to replace names in the transcribed interviews and we have removed identifying information. The information pertaining to interviews are kept confidential and not divulged to anyone outside the study team. Data collected is stored electronically at IIPH-Delhi and softcopies retained in password protected files. Data generated from the study is kept confidential.

RESULTS

Participant characteristics

Participants included physicians, coordinators of the centres and patients. We completed interviews on 30 participants (including 10physicians, 10 coordinators and 10 patients). Patients represented 50 % male and 50 % female and healthcare providers included 90 % male and 10 % female. The mean age of the patients and healthcare providers were 51 and 47 respectively. The participants (80%) were located at Maharashtra. Most of the healthcare providers have been involved in this initiative for a period ranging from 1 to 2 years. Majority of these physicians had a clinical background with speciality in Medicine. All the coordinators who took part in the interviews have been in this programme for 2 to 3 years. Further, patients reported having been in this programme for a duration of 1 to 2 years.

Key themes from interviews

Thematic analysis of interview transcripts and field notes on perceived barriers and facilitators of the initiative have been presented according to five distinct themes that emerged from the study: about the initiative; motivation for continued adherence; barriers; facilitators; and recommendations for strengthening the initiative. To maintain anonymity of the participants, verbatim quotes are identified at 'HP' for healthcare providers, 'P" for patients and 'C' for coordinators.

About the initiative

The initiative was developed in the context of a selfmanagement strategy for diabetic patients to take on responsibility in the management and control of their diabetes through educating them on diet- and lifestylespecific information. As a part of this lifestyle modification plan, the patients were prescribed two meals in the entire day to be completed in 55 minutes along with 45 minutes or more of cardio exercise per day. When a first-time patient registers in the centre, they are informed by Coordinators about status and nature of T2D, the effect of dietary and other lifestyle habits on the disease's progression, and the dietary modification and lifestyle changes (including reducing sugar levels and losing weight) required.

They were advised to include protein rich food and reduce carbohydrates and avoid sweets in their diet. While snacking between meals was discouraged, they were allowed to consume water, plain green tea/black tea, and buttermilk in between meals.

They were instructed to avoid habits like consumption of tobacco, alcohol, paan (betel nut) etc. Regular follow-ups and tests were prescribed to monitor disease control.

A key facilitator in the implementation of the initiative was that it was simple and easy- to-follow with very little need for involvement of family and care-givers in adhering to the regime. Further, an efficient setup including a network of volunteers, dieticians, doctors, and peer members who work collectively as a team made the initiative a success.

The coordinators were a group of patients who themselves have or were undergoing the diet plan and they acted as peer groups actively involved in building awareness.

"I was having diabetes and was fed up of taking medicines. Then I heard about this campaign on diet modification and started following it. It immensely improved my overall energy level. I also underwent a cardiac surgery due to a congenital anomaly but kept on following this diet even after surgery and was back to normal in a month without any weakness. According to doctors, recovering in such a short span was no less than a miracle. "- C1

They had several responsibilities that included motivating patients through sharing lectures, success stories and their own experiences on social media platform like Whatsapp, navigating the patients to doctors and periodic monitoring and counselling the patients.

The treating doctors in this programme were either general physicians or diabetologists. These doctors work with the patients to bring high blood sugar under control through diet, physical activity, and medications (if indicated). Thus, patients are regularly monitored for sugar and HbA1c levels (watching for hypoglycaemic/hyperglycaemic condition) and altering their medication as per requirement.

"In the Indian scenario I feel that this programme has taken this life-changing information to the public at large very effectively by systematically-designed campaign. The dedicated band of volunteers supporting his work have been key in this. Many doctors, like myself, have been frustrated for years by following the 'low fat and many frequent meals' diet usually proposed by the professional bodies over the years. With the change, we are now experiencing a high percentage of outstanding successes in reversing diabetes and getting appreciation and blessings from diabetics and the obese, for saving both their health and money."- HC

Motivation for continued adherence

The protocol followed when new patient presented was very systematic and included the coordinator counselling the patients about the disease, motivating them to enrol in the DRC, prescribing initial diagnostics procedures, referral to the diabetologist/physician, following them up every three months and responding to their queries whenever required. Such a rigorous process motivated the patients to take the disease and management plan as recommended by the physician seriously.

Rapport created by coordinators during the care process and also the fact that coordinators were themselves patients undergoing the diet plan and their success stories were important to keep up the motivation of the patients for adhering to treatment guidelines.

"It is self-motivation of patients which is driving this program otherwise it is very difficult to convince patients and frankly speaking we don't get that much of time to convince every single patient to follow this diet."-HC6

Among the different categories of respondents interviewed including patients, doctors and coordinator, all respondent types consistently agreed that the initiative was a success in terms of achieving patient outcomes.

Experience of weight loss, energetic feeling, reduction in HBA1c levels, reduction in insulin dosage and conversion from diabetic to pre-diabetic/non diabetic state were some of the experiences which patients observed as a result of the diet modification.

"I was diagnosed pre-diabetic but I followed this diet and now I am diabetes free. I eat twice in a day and even manage to eat burgers, pizza without any fear of weight gain."-P2

"The effect after getting into this program is amazing. I have lost weight and my diabetic medicines are also reduced. There is a visible benefit from this program that keeps me motivated."-P7

These positive outcomes were also substantiated by the coordinators and doctors as key motivating factors for the patient.

Further, some patients went on to say that they were recognized and complimented by their friends and family for looking fit.

Perceived barriers

The visible changes produced by the regime and no cost implications on the patient for following the diet modification, however, were not enough reasons for continued adherence.

The healthcare providers were concerned that patients often failed to honour follow-up appointments.

Doctors highlighted that when patients start to experience positive changes like reduction in sugar levels they feel that they are cured and they tend to become complacent with their self-management and neglect their follow-ups. In some cases, regime was difficult to follow if the patients had kidney complications.

Additionally, coordinators confirmed some dropouts being due to patients' inability to attend counselling sessions regularly because of their clashing working hours and commitments.

Patients reported as a barrier, their struggle to adjust to dietary regulation and recommendations because of their initial feeling of lethargy and craving for food (which, however, they got accustomed to with passing time). Their pre-conceived notion that just two meals a day was not enough to give them the necessary energy to carry on with their day to day chores, was another challenge. Further, some quoted the following:

"I used to experience acidic and low levels of energy when initially on this diet regime as I was in the habit of eating three times a day and suddenly having to make changes in diet affected me. But now I am fine and following this easily." P2

Further, most patients emphasized enjoying and craving for sweets (which are usually rich in sugars and fat) that contrast with recommended dietary guidelines and felt that they had little or no self-control when it came to such dietary choices. This was substantiated by the coordinators:

"Challenge is some are not following properly and complain of no change but on probing we get to know they are not following proper diet, eating sweets." C3

In particular, they felt that they had limited control over themselves, particularly, when tea and snacks were doing the rounds during the office hours.

Social occasions and festivities (integral to strong social and cultural norm in India) were often perceived as barriers by patients. Such social function forces them to breach their diet habits and there was too much temptation on the offer to resist compounded by the lack of healthier foods choices.

Family members sometimes do not accommodate the diet needs of diabetic patients as it disturbs the regular eating pattern of the household, thereby, acting as deterrent to patient's self-management.

Perceived facilitators

A key facilitator in the initiative was the active involvement of a network of coordinators and doctors. Their engagement in educating patients to make needed life-style changes regarding food intake and timing of meals as part of the strategies for managing their diabetes, was well accepted. In particular, sharing of information and success stories through regular planned sessions was reported by patients as factors that facilitated their adherence to the initiative.

The coordinators being cognizant of the fact that negotiating and adopting dietary recommendations can be a challenging task, often took the time to emphasize the significance of all the instructions for patients.

Considering how important family support is in a selfmanagement initiative, it was not surprising to know that this served as one of the facilitators. Patients reported that family members (including spouses, children, parents and others) provided support in various ways: adapting and adjusting to new diet regimes as required for patient management, assisting with the preparation of recommended meals, dissuading from following through a temptation to break their diet plan and motivating them to adhere to follow-ups appointment and continued watch over their sugar levels.

"I think the USP of this program is so simple it is easy to follow, nothing different to make for the lady of the house. It is an extension of what you are eating it's not something fancy you have to go and buy, no different type of ingredients or cooking is needed. Because of this, I think the acceptability and feasibility is much higher." D2

Recommendations for strengthening the initiative

When asked for specific input on making the initiative a success, patients stated the requirement for better reach and coverage through establishing more many such centres to expand to a greater population.

Increasing publicity of the initiative through advertisements and documentation and dissemination of success stories was another suggestion by patients. This was further substantiated by doctors and coordinators who felt use of various communication modes including social media platform, advertisements, banners, publication in research journals, YouTube videos etc. is pertinent for extensive coverage of the initiative. "I think they should advertise more and people should read success stories of this program. It's really helpful."-P10

From the healthcare providers' perspectives, some of the recommendations prescribed were attaining political goodwill and support to expand the programme to the national public health systems, setting up DRCs in government institutes, expanding the programme to greater number of doctors, involving professional bodies (like International Diabetes Society etc), careful patient selection, etc.

In addition, doctors also suggested the use of telecommunication technology to initiate tele-consultation.

DISCUSSION

The current study aimed to explore the barriers and facilitators to self-management of T2DM from a healthcare provider and beneficiary perspective across four states in India. In addition to facilitators and barriers to a diet modification plan, the study findings highlighted motivators to adherence and recommendations for improvement. Findings from the patients' and healthcare providers' perspectives are consistent with other studies that have examined factors associated with selfmanagement of diabetes through diet modifications and related lifestyle changes.¹³⁻¹⁵ While most available literature has focused on quantitatively understanding factors (for example, demographics etc.) associated with observance of self-care, there is very few literature on qualitative studies examining the facilitators and barriers pertinent to self-management involving dietary restrictions. Thus, the current study adds to the sparse evidence in this area.

The key motivator in helping patients to take on responsibility and control over their diabetes management is the continued, active and supervisory role of the team of doctors and coordinators in the DRCs. Similar findings have also been cited earlier where active involvement of experts and health care providers as advisors during the care and counselling process have been beneficial for compliance with care regimes.^{16,17} We observed the rapport between the patient and healthcare providers was crucial to acceptance and motivating patients to engage in the initiative. Rapport has been increasingly recognized as important contributor to continued adherence to selfmanagement and our findings was consistent with other evidence.^{18,19} Further, positive outcomes like noticeable reduction in blood glucose levels, body weight and other parameters were reinforcement to patient's commitment to the initiative. This is not unexpected and has been observed elsewhere.²⁰

Among the barriers reported, not keeping follow-up appointments was identified as a critical challenge. While reduction in levels of critical biological measurements was perceived as a motivating factor, yet this initial apparent feeling of well-being and improvement was seen by some patients as control of their condition and a subsequent sense of apathy and complacency towards their regime. Further, in a culture where food is integral to all social interactions and no festival or ceremony is considered complete without sweets, it is no wonder that patients reported craving for food and sweets in particular, as one of the nagging barriers to breaking their diet habit. This finding has also been supported by a study conducted by Byers et al. among rural African American adults with T2DM.²¹ Another concern voiced by the patients was job commitments leaving them with little time to attend the follow-up sessions during the working hours. While studies elsewhere reported issues of cost of consultation, long waiting times, stress and depression associated with illness, perceived seriousness and fears of potential death from the condition as crucial factors posing a significant barrier to self-care, these barriers were not documented in the current study. These findings suggest that interventions to improve follow-up visits should envisage strategies involving counselling patients about the importance of regular check-ups together with initiatives to overcome other barriers (like ways to resist the temptation to eat untimely and unhealthy food etc.).²²⁻ ²⁵ This is substantiated by evidence that suggest intervention tackling multiple barriers may be more effective in reducing non-attendance than strategies that target one barrier.26 Further, creative and social support strategies involving families, for example, 'families being encouraged to attend educational training sessions with patients so as to offer appropriate support which can assist patients to make healthy food choices and decisions regarding their diabetes management' will help address the barrier.²⁷ Increasing access to healthcare providers through extended clinic hours or through telecommunications could be a means of overcoming issue related to time-constraints owing to employment. Again, interventions that are tailored to meet the individual needs and provision of culturally acceptable diet-specific advice will go a long way in empowering patients and fostering healthy habits as also observed elsewhere.28

While emphasis on family relationships, social functions and enduring cultural values was seen as a hindrance to compliance, the current study found the role of family to act as an enabler to self-management. This is in contrast to some studies where family ties were found to act as deterrent with respect to unrealistic expectations and advice from them and also lack of adjustment of family to the needs of diabetic patient.^{18,27}

Lastly, a unique perspective from the interviews revealed that both the healthcare provider and patients had similar views on their recommendation for further strengthening of the initiative. They felt that it is imperative to engage in social marketing through mass media and social platforms to expand the programme for a larger coverage and access. There is evidence to show that 'social marketing interventions can work with a range of target groups, in different settings, and can work upstream as well as with individuals'.²⁹ Further, they advocated the use of mobile technologies and other telecommunication applications to enable efficient self-management by patient and help them support attainment of the health outcomes.

Table 1:

What does this paper contribute to the wider global
clinical community?
Self-management is crucial part of diabetes
management and control.
This paper provides insights into the common
barriers and facilitators that influence self
management.
Programmes related to diabetes control and
management should be cognizant and incorporate
coping mechanisms to promote self-management.

The strength of the current study is that it provides input on barriers and facilitators for self-management of T2DM from multiple perspectives including both the delivery and beneficiary side and thus adds to scanty literature in this area. Additionally, these insights can be used for informing strategies to further strengthened the initiative and support patients in their self-management. However, the limitation of this study is the limited generalizability of the findings. Further, since interviews had to be conducted telephonically because of the lockdown amid the COVID-19 pandemic, the interviews were brief and we could not have cover other issues like patients' fears and self-perception and knowledge of T2DM. Thus, future research into patients' self-care behaviours and practices in such contexts, would provide greater insights.

CONCLUSION

In conclusion, as with any other initiative/programme there were barriers and facilitators in this study too that had a bearing on the success of the patients' adherence to their diet and lifestyle modifications. The optimism shown by both the beneficiaries and healthcare providers and sense of collectivism is encouraging. However, there is scope for further strengthening the initiative through strategies that take care of the multiple barriers and provide individualized, context-driven solution. In particular, recognizing that self-management of their disease can go out of their control given the cultural and social sensitivity, it is pertinent for healthcare providers to be cognizant of these facilitators and barriers to best assist the patients with T2DM self-management. Further, education programmes and activities should be designed to also foster and reinforce healthy coping mechanisms to different social situations.

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