Original Article

Effects of social support and psychological factors on diabetes: Emphasizing diabetes among women

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ABSTRACT

This qualitative research explores the effects of social support and psychological factors on diabetes mellitus (DM) among women. The rationale is that identifying these factors fosters behavioral amendments in patients with DM and eventually lessens the count of affected individuals. Data were gathered through observations and semi-structured interviews with DM patients who were referred to the Iranian Diabetes Association (IDS) and the clinic of IDS's head Professor Assadollah Rajab. The interviewees were chosen through the purposive sampling method, and data obtained from 38 interviews were analyzed through thematic analysis. The study identified various social factors that influence DM incidence and control. These factors were classified as "social support" or "psychological factors", each covering distinct sub-categories and concepts. In the social support category, factors such as instrumental support, emotional support, and informational support had a more noticeable effect on DM patients. Concerning the psychological aspect of social factors, the study identified social factors that often affect the emotional and psychological aspects of DM patients like personal readiness, effects of IDS's training courses on effective awareness, the patient's attitude about DM, types of stress, patients' problems, and women's personal problems.

Keywords: Social factors, Diabetes mellitus (DM), Health, Women, Health policies

Introduction

Diabetes mellitus (DM) is currently a leading medical condition that affects people in Iran and worldwide, particularly in modern societies due to newly-emerged social issues. According to the International Diabetes Federation (IDF), 463 million adults (over 10% of all adults worldwide in the age group of 20 to 79) had DM in 2019, particularly in low- or middle-income countries (LMICs) (79%) [1], and an estimated 578 and 700 million people will suffer from DM by 2030 and 2045, respectively.

Besides family history, genetics, and age, some other factors like mobility, dietary habits, obesity, overweight, and lifestyle (as a whole) contribute to DM progression. DM, thereby, can be avoided by training and amendments to lifestyles. Initial policies regarding DM control and prevention were mostly clinically and medically oriented and based on policies of hospitals, clinics, technologies, and medications. Adopting the biomedical model of medicine, the chief goal of these policies was to control patients in hospitals and provide them with accessible and inexpensive medical services, regardless of social and cultural aspects influencing their leaves [2].

Social, cultural, and environmental factors impacting health have been a subject of interest for sociologists. These factors possess a marked overlap with those factors affecting DM patients. Overall, DM incidence and progression are influenced by age, gender, heredity, personal lifestyle, social relations and networks, nutrition and food security, education, work circumstance, living and working conditions, unemployment, health services, and housing [3].

In their study titled "*Improvement of adherence to treatment in people with diabetes: an Iranian perspective*", Mousavizadeh et al. (2017) explored perspectives of Iranian DM patients about promoting and fostering the factors of adherence to treatment and diagnosing factors influencing therapy progress in patients [4]. In another research titled "*Social factors influencing diabetes mellitus in adults attending a tertiary care hospital in Nagpur: a cross-sectional study*", Patil et al. (2017) identified social factors influencing DM [5]. In a 2013 study titled "*Importance of family / social support and impact on adherence to diabetic therapy, diabetes, metabolic syndrome, and obesity*", Miller and Dimatteo explored the effects of social

and family support on adherence to treatment in patients with DM and outlined strategies and interventions to facilitate family support for these patients [6].

In a 2013 study entitled "*Understanding the social factor that contributes to diabetes: a mean to informing health care and social policies for the chronically Ill*", Hill et al. addressed the influence of physical and social environments (e.g., low income, employment insecurity [7], low level of education, and unfavorable living conditions) on health outcomes. Likewise, in a 2011 study entitled "*Understanding physician's challenges when treating type 2 diabetic patients' social and emotional difficulties*", Beverly et al. explored physicians' awareness of and responses to T2DM patients' social and emotional difficulties [8]. In A 2020 study, Zhao et al. explored factors associated with subsequent diabetes-related self-care activities emphasizing the role of social support and optimism [9]. In a 2017 study titled "*A Systematic Review: family support integrated to diabetes self-management among glycemic uncontrolled type II DM Patients*", Pamungkas et al. explored the nexus between family education (as the pillar for social support) and diabetes self-management among glycemic uncontrolled type II DM patients [10].

The target population in this research was women with DM. T2DM is characterized by resistance to insulin action and latency and often happens in adults. It accounts for nearly 90 to 95% of DM cases worldwide. Thus, research often explores the correlation between T2DM with lifestyle and social factors influencing this disease. According to the IDF, the number of DM-attributed deaths worldwide is higher in women (2.3 million cases) than in men (1.9 million cases) (IDF, 2019: 54).

When exposed to an elevated number of DM patients and the resultant financial burden, policymakers need to revise adopted policies and explore novel solutions to address the new situations. For example, parallel to the National Strategy for Prevention and Control of Non-Communicable Diseases (NSPCNCD), the National Service Framework for Diabetes (NSFD) was devised in 2016 by the "Iranian MOHME's National Committee on NCDs" as a key document covering policies regarding DM. NSFD covers four chapters, including "DM in Iran and Worldwide", "Service Delivery for DM", "DM Research", and "DM Education". However, this document largely overlooks the role of social factors and lifestyle in DM and its control (MOHME, 2016). Thus, identifying lifestyles based on social groups will allow for adopting the right policies to recover from this medical condition. Accordingly, this research explores the effects of social support and psychological factors on DM progression and control.

Materials and Methods

In this research, interviews with patients were the qualitative way for data collection, regarding that DM patients' lifestyle (as a social factor affecting DM) is a concept of interest for the authors, and that DM patients are best describers of their daily habits and lifestyles.

Participants were selected through the purposeful sampling method. **Table 1** presents post-interview background-medical information for 38 interviewees participating in this research.

Table 1. Background-medical information of the interviewees

Code	Age	Marital status	Carrier	Type of DM	Therapy	History of disease (years)	Average HbA1C for 3 months	Complication
1	28	M	Employee	1	Insulin	20	6.9	
2	14	S	Student	1	Insulin	4	6.5	
3	54	M	Employee	2	Medication	8	6.5	
4	26	M	Employee	1	Insulin	10	6.3	
5	20	M	Housewife	1	Insulin	3 months	13.5	
6	15	S	Student	1	Insulin	3	9	
7	54	M	Club manager	2	Medication	3	-	
8	67	M	Retired teacher	2	Medication	9	10	
9	55	M	Housewife	2	Insulin	22	9	Eye
10	55	W	Housewife	2	Medication	12	6.5	Eye
11	17	S	Student	1	Insulin	10	High	
12	19	S	Housewife	2	Medication	1	12	
13	65	M	Housewife	2	Medication	10	6.7	
14	59	M	Housewife	2	Insulin	30	High	Heart
15	55	M	Retired teacher	2	Medication	10	6	Eye
16	60	W	Housewife	2	Medication	2 months	High	Foot
17	48	M	Housewife	2	Medication	9	8.5	Foot
18	52	M	Housewife	2	Insulin	20	11.3	
19	65	M	Housewife	2	Medication	10	-	
20	51	M	Housewife	2	Insulin	15	7.1	Nerves
21	62	M	Housewife	2	Medication	3	8	Foot
22	68	W	Retired teacher	2	Medication	8	6	
23	52	M	Housewife	2	Medication	8	6.5	
24	56	M	Housewife	2	Insulin	17	7.5	
25	39	M	Housewife	2	Insulin	10	6.4	Eye
26	36	S	Housewife	1	Insulin	14	6.8	
27	76	W	Housewife	2	Insulin	35	7.2	

28	56	S	Housewife	2	Insulin	28	7.2	
29	54	M	Housewife	2	Medication	10	5.4	
30	56	M	Housewife	2	Insulin	21	7	Joints
31	63	M	Housewife	2	Medication	1	Acceptable	
32	38	S	Employed	2	Insulin	26	6.3	
33	28	S	Housewife	1	Insulin	24	6.7	Eye
34	27	M	Housewife	1	Insulin	24	9	Eye
35	22	M	Student	1	Insulin	11	7.7	
36	24	S	Dentist	1	Insulin	8	7.5	
37	64	M	Retired	2	Insulin	22	7.9	Eye
38	59	W	Housewife	2	Medication	22	High	Eye/kidney

The role of observation in this research is undisputable. Patients attending courses organized by the Iranian Diabetes Society (IDS) were interviewed. The courses were organized within a week, during which we observed the interviewee's behavior. Continuous contact with the interviewees allowed us to observe and record tips about points that might not be visible or identifiable in face-to-face interviews. Such observations often revealed signs of the lifestyle of the DM patients attending this research.

Besides observations, data were collected through semi-structured interviews. Briefly, the authors visited the IDS every week on the first day of the courses. Next, they invited DM women participating in the courses to attend interviews and/or talk about DM possibly before or after the courses for three days. Then, the interviews were scheduled based on the number of DM women accepting the authors' request for an interview.

A total of 34 interviews were conducted. During interviews, no new content was added to the previous items, but we conducted four extra interviews to ensure the complete sample size in this research. After conducting 38 interviews, the obtained data were analyzed.

Results and Discussion

The results obtained from the interviews with 38 DM women are presented in this section.

Social support

This section discusses social support as a social factor that influences DM. Such support can substantially control DM progression in patients, particularly in DM women.

Instrumental supports

Most DM women in this research have been supported by at least one of their family members by receiving at least one type of instrumental support. The contribution of this support was found to be higher than other types of support. The main types of instrumental support were helping the patient (particularly younger ones) by the family in obtaining medications, going to the physician's clinic, and visiting the laboratory. Other instrumental supports were to financially aid the patient in covering therapy expenses, monitor the patient in following a healthy diet, remind the patient to take medications regularly, and control blood glucose levels in at-risk patients by the family members. For example, one of the mothers explained about her 17-year-old DM girl (with a 10-year history of T1DM) that "*My wife and I are conscious about her and strive to control her disease maximally. I think that I must not leave her alone even if she follows her regular diet, rather she's yet the same 7-year-old girl for me who is at the start of her DM and I need to watch her blood sugar constantly. Every night before bed, I remind her to check her blood sugar and inject her insulin once a day*."

Emotional support

Emotional support plays a pivotal role in refreshing the patient's temper, and most DM patients receiving emotional support benefit likewise from the instrumental support of their families. Emotional support can significantly enhance the patient's adherence to a healthy diet and taking medications regularly. Here, emotional supports include monitoring the patient's mental and spiritual health (i.e., asking about the patient's overall state, showing empathy, and sympathy), making the patient optimistic about the future, inspiring them to participate in training courses, instigating their families not concealing the disease, and not notifying bad news to DM patients to avoid high blood glucose levels. Following up on the patient's health status by the family implies the patient's importance to the family, giving the patient a sense of being respectful and esteemed. A woman (51 years old) having infected with T2DM for 15 years reported emotional support from her son:

"*My son gives me the best of his effort during the therapy course. For example, he is now with me here in the IDS and often asks me if I took my medications and controlled my blood sugar regularly*."

Again, a 27-year-old woman having T1DM for 24 years was highly gratified with his wife's support during the therapy sessions by articulating that "*My wife is distinguished and is more alert to me than himself. He regularly checks my insulin level and regularly calls me when he is at work to ensure that I have eaten my meals and alerts me to intake vegetables. My mother further frequently pursued my health and offered me multiple advice*."

Informational supports

Informational supports were pointed out by a few DM patients in this research, and family support mostly included instrumental and emotional components. Informational support only covers two concepts, namely 1) pursuing treatment approaches and 2) founding a diabetes association to help DM patients. The former has been fulfilled by the mother of a 22-year-old girl with T1DM

for 11 years. According to this girl, "*My family gives substantial support to me, and my mother founded a diabetes association in Kish for the sake of me*."

Besides the above support often from the families, most patients think that the role played by physicians is as effective as that played by the families in DM control. In recent years, diabetologists and endocrinologists who constantly followed up on their patients' status beyond simply visiting them have markedly contributed to knowledge and education on DM control and enhanced patients' awareness.

Psychological dimensions

This section covers DM's psychological dimensions and explores the effects of psychological factors on DM and its control. These factors include the patient's readiness, the impacts of IDS's training courses on effective awareness, the patient's attitude about the disease, types of stress, and patients' problems (particularly in DM women). Most of these factors are among social and psychological causes affecting DM after infection and, thereby, are deemed secondary factors in controlling the disease.

Patient's readiness

The patient's readiness is a key determinant when they first encounter the disease. Readiness means the awareness and education that patients receive regarding DM, which if present, many DM complications can be prevented and controlled. Personal readiness is measured by two concepts: 1) paucity of prior knowledge of DM and 2) relative awareness of DM due to family history. However, compared to biological aspects, the role of family history is much higher reflected in terms of its social dimension and its impacts on the policies made to prevent DM and diminish its associated costs.

Regarding the acquired knowledge on DM due to the family history, the family of a 17-year-old girl who had DM for 10 years said that "*Her father's family, which include his father, grandfather, uncle, and aunts, all have inherited DM. Thus, we were fairly aware of DM before our girl was infected with this disease, and we knew DM's symptoms. However, it was all of a shock for us to see our girl has DM at a very young age*."

Effects of IDS's training courses on effective awareness

Recent impacts of education and enhanced awareness about DM provided by active associations on the medical community and patients have been indisputable and significant. Of all the effects of attending IDS's training courses about DM mentioned by the interviewees, some items are more prominent, including better control of the disease, enhanced awareness and knowledge about diabetes, awareness of proper food intake, promoted morale, augmented hope, enhanced three-month average sugar, strengthened self-confidence, stress control, and increased motivation.

As mentioned above, some patients reported that attending IDS's training courses mostly allowed them to control their disease. They further pointed out other items regarding the mental and psychological effects of IDS's training courses on the patients. According to a 54-year-old woman having DM for 3 years, "*The first day of attending IDS's courses was very helpful and I learned much about the disease. I was always thinking about DM and constantly supposing that life with DM no longer sounds to me; but today that I take my medications regularly and attend training courses, I can see a jump in my hope for the future*."

Overall, the effects of training courses on promoting awareness and fostering DM control is a subject worth exploring when it comes to policies adopted to control this disease.

The patient's attitude about DM

This section discusses the patient's attitude about DM and how they manage the disease. In this research, the patient's attitude about DM was assessed in two ways. First, the patients were asked about their feelings about DM and whether they accepted DM or opposed accepting the disease. That is, various concepts developed by the patient when encountering the disease were used as a basis for a better understanding of how they accept the disease. Second, we explored if the patient's relatives are aware of the person's disease. A key factor deriving DM acceptance by the patient is that they must can easily talk about the disease and not attempt to conceal it from others. Here, there are two distinct interviews, one for a patient who has accepted the disease and the other for a patient who is yet struggling with this issue. The first interview is for rejecting DM by a 54-year-old patient with an 8-year history of T2DM infection:

"*I was highly strung at first, especially when labeling myself as a foodie person. I hardly can wait to eat because I feel that whenever I desire something, I need to get it all eaten, and I'm totally powerless to avoid sweets*."

The second interview is with a 76-year-old woman having T2DM for 35 years:

"*I already have gotten along this circumstance. This is now for 35 years that I regularly inject insulin, take metformin, and undergo scheduled tests. DM is now prevalent and it is affecting countless people around the world. It is not highly difficult to control. Suppose you want to go to a party or wedding; then you can simply inject one or more shots higher than normal. This is not a matter if you want to inject one or two more shots of insulin*."

Types of stress

Academic stress is prevalent among patients with T1DM who are often diagnosed with this type of diabetes at a young age. Stress about success in final exams with acceptable scores has become a major mental conflict in these patients and thereby exerts adversely harsh impacts on their disease control. For example, a 15-year-old patient infected with T1DM for three years stated that she struggled with high blood glucose and even had to be hospitalized every year during the end-of-semester exams:

"*Final exams are typically highly stressful to me; the last one was in June this year, like last year when my blood glucose level uplifted due to an empirical science exam and I had to be hospitalized*."

With aging, the patient experiences changes in the sources of their concern, with a shift towards stress caused by work and social issues. Overall, women find it challenging to find a suitable job in society, and this will be more intricate if the person is suffering from a certain disease. Discrimination against women (de jure or de facto) and gender inequalities at the workplace are potent sources of stress in DM women. Since DM patients require a special lifestyle to control their disease, the working conditions must best fit their adopted lifestyle.

Eventually, as we find in Iranian women (particularly among married and older women), daily stress and worry about the future of children confound other sources of stress and become a leading factor for elevated blood glucose levels.

Patients' problems

Problems are demanding to bear and perilous for the elderly and especially for those who live alone. A 56-year-old woman infected with DM for 21 years outlined the leading problem related to this disease:

"*It has recently become hard and a thoughtful issue for me to get insulin, and I have to call different pharmacies every month to see if they have insulin or not. All these are the same for a blood glucose meter kit and I have to search everywhere to find it at any cost set by the seller. Recently, my mother (in Qazvin) and my daughter (living abroad) strived to find this kit for me, but I eventually found only one or two*."

The next issue that may not seem to be problematic at first look and is a matter only for a DM patient is injecting insulin in public and the paucity of private space to inject it in everyday life. For example, a 24-year-old woman having T1DM for 8 years said "*The leading issue for me when I'm at work or when I'm out with people who know nothing about my disease, I'm forced to inject insulin or check my blood glucose all stealthily, and this is a daunting task for me*."

Women's problems

Women who think that DM women have more problems than DM men outlined multiple problems for women like life management issues, criticizing women for their disease, marriage issues, pregnancy and child-bearing problems, women's more sensitive spirit, financial problems to cover treatment costs, not receiving support from the family, women's greater sacrifice for the family, physical weakness of women, and less mobility of housewives.

A leading problem especially in housewives and women with no income is the financial dependence (on others; e.g., spouses) to cover treatment costs. According to a 65-year-old woman with a 10-year history of DM:

"*Women suffer more issues as they often depend on their husbands for costs of medications and treatment, but men can more easily control their disease and cover treatment costs due to financial independence. This is a case for me and my spouse*."

Patient's opinions about disease control factors

The DM patients were ultimately asked about factors effective in DM control. The answers indicated their awareness of DM and revealed their high knowledge about this disease and strategies for its control. Most patients outlined following a healthy diet as the most critical factor in disease control, followed by factors like stress avoidance, exercise, education, regular blood glucose control, regular taking of medicines, self-care, acceptance of the disease, illness perception by others (e.g., family members), family support, strengthened morale, tailored medication prescribed by the physician, physical fitness, easy access to disease control equipment, and motivation. Interestingly, some patients suggested unexpected solutions such as laparoscopic sleeve gastrectomy as the only option to control DM. Collectively, the factors outlined by patients for disease control can allow us to determine solutions to help the patients in DM control more easily, and to see the disease from the patient's perspectives.

Figure 1 shows a summary of the findings of this research for a better understanding of the results.

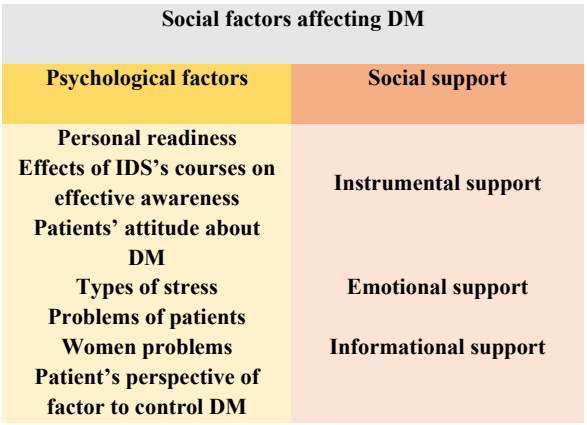

Figure 1. Social factors influencing DM

Conclusion

This research explored types of support received by DM patients and the effects of such support on disease control. Most patients reported that they often benefit from instrumental support (among types of social support), and that support from relatives has a significant impact on disease control. For example, family accompanying in pursuing a healthy diet motivated patients to adhere to healthy diets. Patients who profited from both emotional and instrumental support were found to easily deal with DM and better control the disease. The study revealed social support from the physician as a social factor affecting disease control. DM acceptance and adherence to treatment were found to be much easier in patients who were regularly monitored by the physician for their health status and when the physician allocated enough time to check their physical condition. However, these findings were not in line with those reported by

Alipour et al. (2016) in their study titled "*The relationship between perceived social support and adherence to treatment in patients with type 2 diabetes: the mediating role of resilience and hope*" [11]. They found that family support has no effect on resilience and DM patients' adherence to treatment, but support from friends and relatives affects their adherence to treatment as mediated by resilience.

In terms of psychological dimensions, the study identified factors affecting diabetes, which can be classified as social factors affecting this disease. The findings for this section agree with the results reported by Mousavizadeh et al. (2018) in a research entitled "*Improvement of adherence to treatment in people with diabetes: An Iranian perspective*", where both studies identified similar concepts in the psychological dimension affecting DM. Personal readiness, IDS training courses on effective awareness, patients' attitudes about DM, and patients' problems were found to influence DM control. The contribution of this research was that it targeted women's issues and problems as a factor influencing their adherence to DM treatment and control. Except for patients' problems and women's personal problems, all other concepts were directly correlated with education and its role in disease control.

Since current upper policies are fairly ineffective on DM, a potent solution is to alter people's behavior through collective discussions or the concept of Habermas's public sphere. Indeed, one way to control DM is to establish diabetes associations and support them in pursuing the interests of patients and solving their problems through collective discussions and holding training courses. The next solution is physicians' cooperation and coordination with various ministries like the Ministry of Sport and Youth (MSY) and MOHME to propose solutions to enhance the mobility of DM patients and the public.

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