

Effect of Health Care Provider Role and Social Supporters Role in Diabetic Patient Self-Care: Systematic Review Study

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ABSTRACT

Most of the research findings have stressed the significance of social support derived from Health Care providers, family, spouses, and friends of Type 2 Diabetes mellitus patients in enhancing participation in self-care activities. Nevertheless, relevant data on the issue of diabetes self-care practices within a Saudi Arabian context is particularly limited, while literature exploring the relationship between self-care and social support is absent. Consequently, research was not available on social support within a Saudi Arabian context, resulting in a lack of clarity surrounding its impact on diabetes self-care in this country. This evidence gap has reinforced the need for research to analyse the effect of Health Care Providers roles and social supports roles as determinants of self-care among Saudi Arabian Diabetes mellitus patients. Currently, few research studies have sought to resolve the problem of non-adherence to self-care activities in Saudi Arabia. It appears that diabetes self-care activities and social support may play an important role in managing Diabetes mellitus. The present study seeks to address this critical evidence gap. Reviewing literature can support Saudi Arabia-based Health Care Providers to develop healthcare services and social support systems that include health education programs on individual patient needs and conditions. In conclusion, social support strategies must be considered in relation to potential individual barriers to self-care activities. The study recommends that great emphasis should be placed on the development of diabetes patient care that supports the patients in implementing effective self-management care.

INTRODUCTION

The incidence of lifelong chronic metabolic disorder is rising at an alarmingly rapid pace. One of the major issues with diabetes management is the lack of cooperation between the medical staff and the families of diabetic patients. Healthcare providers believe that they are the experts, who know what is good for the patients' welfare, and they do not consult or collaborate with the recipient of such care or their family. Consequently, a one-sided prescriptive approach to care that reflects the medical model occurs, where direct advice is given and specific medications prescribed without the involvement of the patients or the family [1-3]. Within the last ten years, it has become evident that this approach does not promote adherence to diabetes self-care management, and the consequences of non-adherence include serious diseases affecting the heart and blood vessels, eyes, kidneys, nerves. This complications increases hospital admissions and bed occupancy.

Self-management of diabetes requires time and the performance of activities. However, when the patients effectively manage their condition, they might appear healthy. Daily decision making in diabetes has direct implications for health, and many daily self-care activities are aimed to achieve and maintain an acceptable living activity to prevent long-term complications. Diabetes can influence everyday social interactions in many ways; the patient must restrict the types and amounts of food, they might have to monitor their blood glucose levels at specific times during the day, and times and dose of medication when the individual

would be engaged in social activities^[4]. Any chronic illness and the management of its symptoms can affect social relationships, and thus can impact social and cultural relations^[5,6]. Participating in a diabetes support group is one way that patients can increase the possibility of implementing self-management behaviours, and individuals with Type 2 Diabetes mellitus (T2DM) that participate in social support groups as well as cooperating with healthcare providers in Saudi Arabia. The diabetes support group is important, because of the incidence of T2DM increase, with relatively few people able to manage the lifestyle modifications required. Significantly, no studies have been conducted to examine the impact of the role Health Care Providers (HCPs) and social support in patient's engagement in self-care activities among Saudi Arabian T2DM.

Thus, this research aims to examine the effect of the role of HCPs and social supporters in self-care management among diabetic patients. The following objectives were addressed based on identified themes that emerged from the literature:

- To identify the level of diabetes self-care activities carried out by T2DM patients.
- To identify the effectiveness of family, spouse and friends' support in adherence to self-care activities by individuals with T2DM.
- To identify the impact of HCP support for patients with T2DM in the management of their diabetes.
- To identify the effect of the lack of support from HCPs, family, friends, and spouse on participation in self-care activities by patients with T2DM.
- To identify the barriers and challenges to activation of diabetes self-care activities by patients with T2DM.

METHODOLOGY

Search Strategy and Process

The researchers were critically appraising the retrieved studies. Relevant studies have provided a solid foundation necessary to enhance the role of HCPs, family, spouse, and friends in supporting patients to engage in self-care diabetes activities on an ongoing basis. Initially clearly defining the keywords encapsulating the study goals and objectives, identifying the inclusion and exclusion criteria, and finding related sources, having conducted a guided keyword search. In this study, the systematic search strategy developed by Brettell and Grant was used to guide the search process, combined with a critique conducted within a well-defined framework developed by the Health Care Practice Research and Development Unit (HCPRDU)^[7-9].

The systematic search strategy involved searching the main electronic databases, such as the Cumulative Index of Nursing and Allied Health Literature (CINAHL), the MEDLINE database, the PubMed database, the OVID database and the British Nursing Index. The search was also extended to include Social Services Abstracts, Applied Social Sciences Index, and Abstracts (ASSIA), PsycARTICLES Full Text, and finally, Google Scholar.

The search strategy was carried out using a combination of keywords (free text searching) to identify sources of information on non-insulin dependent Type 2 diabetes, Type 2 diabetes in Saudi Arabia linked to self-care, self-management, self-care behavior, adherence, diabetic educator, diabetic nurse, healthcare team, diabetic care team, physician, social support, family/friends' support, and spouse support. It aimed to source relevant articles on HCPs support and social support (families/friends) that influence engagement in diabetes self-care practices by patients with T2DM. A Boolean search technique used a combination of terms, such as 'AND' or 'OR' and avoided the use of 'NOT' to combine keywords^[10]. The literature search was conducted within a near eight-year time frame from January 2010 - November 2017.

Inclusion and Exclusion Criteria

The inclusion criteria include research based on quantitative, qualitative and mixed methods to capture a wider range of studies in diabetes self-care, healthcare team support, and social support. For Inclusion criteria, published between the period 2010–2017 English language Studies using qualitative, quantitative and mixed methods. Studies that focused on controlling T2DM, diabetes self-care activities, self-management, social support, HCPs support were influenced diabetes self-care. For exclusion criteria, all articles published before 2010. All other languages Reports, essays and review papers. Studies that focused on Type 1 Diabetes mellitus (T1DM) and gestational diabetes.

RESULTS AND DISCUSSION

The 33 studies published between the periods of January 2010–November 2017 consisted of 18 quantitative, 10 qualitative, and 5 mixed methods studies. These studies are analysed concerning the following key areas: Aims, Sample, method, and Results. The majority of studies took place in the Americas (12 in the US, one in Canada and one in Brazil). The US-based studies, in particular, identified the need to support diabetes self-care through HCPs, family and friends of people with T2DM. Five studies were conducted in East Asia (one in China, two in Malaysia, one in Japan and one in Taiwan), two in Oceania (Australia and New Zealand) and two studies in Africa (Nigeria and Uganda). Also, six studies were conducted in Europe (Germany, the Netherlands, Denmark, Norway, Portugal and one pan-European). Four studies were conducted in the Middle East (Saudi Arabia, Kuwait, Turkey, and Lebanon). These articles emphasized the important role played by HCPs and social supporters in promoting self-care among T2DM patients.

Aims of the Studies

The aims and scope of the studies selected in this review differed significantly. Twelve studies focused on the relationship between social support and diabetes self-care activities. 5 studies assessed how social/family support for patients with T2DM affected their

self-care activities, such as diet, physical exercise, medication adherence and glycaemic control [14-15]. One study was undertaken by Huang compared levels of self-care behavior, social support, and quality of life among patients with T2DM [16]. Shayeghiana also specifically explored the impact of coping styles on T2DM, along with social support, in the relationship between self-care activities and glycated haemoglobin among T2DM patients [17]. Surucu investigated empowerment, social support related to self-care behaviours and glycaemic control in patients with T2DM [18]. A further study conducted by Komar-Samardzija examined the relationship between physical exercise and caloric expenditure among African American women with T2DM and self-efficacy and family/friend social support [19]. Watkins investigated the correlation between spiritual and religious beliefs and practices, social support and diabetes self-care activities among African American patients with T2DM [20]. The direct and indirect effects of neighborhood-related factors and self-care on glycaemic control in patients with T2DM were also examined by Smalls [21]. Five studies investigated how facilitators, barriers, factors, and challenges affect engagement in diabetes self-care activities among patients with T2DM [22-26]. Only one Saudi Arabian-based study was identified and it assessed factors associated with glycaemic control among patients with T2DM [26]. The study measured diabetes self-care behavior performance, barriers, family support, the physician-patient relationship, and hemoglobin results. It also assessed factors such as knowledge of diabetes and attitude to self-care behavior, physical health, depression, and stressful life events.

Jeragh-Alhaddad explored barriers to medication adherence among patients with T2DM [24]. The factors identified as contributing to such barriers include spirituality and God-centred locus of control, perceptions of social support, beliefs about medicines/diabetes, perceptions of HCPs' attitudes toward patients, and social stigma. Studies by Chlebowy, Mathew, Laranjo also focused on identifying barriers, facilitators, and challenges in self-management among patients with T2DM [22,23,25]. A further three studies assessed and investigated social/network support and dietary adherence while a study carried out by Vissenberg explored the effect of the social network-based intervention 'Powerful Together with Diabetes' on diabetes self-management among socioeconomically deprived patients with T2DM [27-30].

Five studies focused on the effect of HCPs and social support on diabetes self-care activities among patients with T2DM [31-35].

One intervention study was centred on the design and implementation elements required to deliver an integrated behavioural intervention that simultaneously targets T2DM and depression self-management [36]. Also, McEwen studied the efficacy of culturally-tailored diabetes self-management through social support interventions to improve the behavioural and physiological outcomes for patients with T2DM [37]. One Malaysian study conducted by Puziah explored how patients with T2DM adapted and engaged in diabetes self-management behavior, from a nursing perspective [38]. Another study by Oftedal explored the importance of social support for people with T2DM and in particular, the role general practitioners and practice nurses perform in providing such support [39]. A US study focused on differences in primary sources of social support [40].

A study conducted by Schiøtz examined the relationship between social networks and patient activation, psychosocial problems, and self-management behaviours, and HbA1c levels among patients with T2DM [41]. The study adopted a cross-sectional survey design, where an online questionnaire was used to collect data from 2,572 patients with T2DM [41]. A Nigerian study undertaken by Odume assessed the relationship between family characteristics and glycaemic control among people with T2DM [42]. Janice focused on the day-to-day life experiences of people with T2DM, and their historical capacity, as well as their current ability to self-manage this illness [43].

The brief outline of the aims of the studies mentioned clearly highlights that no previous research to date has sought to examine the role of HCPs, coupled with discerning the impact of social support on diabetes self-care, using a mixed-methods research design. Undoubtedly, further research is required in the area of diabetes self-care, as the incidence of this disease is increasing, and its effects are being felt in all countries throughout the globe. In particular, there is an absence of this type of work being undertaken in Gulf Cooperation Council (GCC) countries, which rank among the top ten countries in terms of the prevalence of Diabetes Mellitus (DM).

Sample

The study samples were drawn from patients with T2DM (both male and female), HCPs, couples, families, and friends. Two study samples comprised couples, while another sample was of HCPs and patients with T2DM [28,31,34]. In the two studies that used quantitative methods, the sample was made up of females only [15,19]. In one qualitative method study, the sample consisted of HCPs, patients with T2DM, and their families [36]. Twenty-seven of the studies recruited participants who were people with T2DM.

The number of research participants in these studies ranged from 21-2,572. Large sample sizes predominated in quantitative studies. On the other hand, the sample sizes were relatively small for qualitative studies (10 in total), ranging from 9-125 participants. Nine participants took part in the New Zealand-based study while there were 125 participants in the studies conducted over five European countries (Bulgaria, Greece, Norway, Spain, and the United Kingdom) [29,43]. Variations in sample size are expected as they reflect differences in the research methodologies adopted [44].

In Saudi Arabian there is lack of studies focus on support from HCPs/family/spouse/friends and diabetes self-care activities. This is significant, not only because the sociocultural context differs for Saudi Arabian patients as compared to other countries, but also because there are limits to the extent to which relevant policy and program-related knowledge is transferable from one context to another, without having first undertaken an in-depth analysis of the original setting [45].

Methods

Studies selected in the review comprised a variety of methodological designs and approaches. A quantitative approach was used in the majority of cases (18). Ten of the studies used a qualitative approach, while five studies adopted a mixed-methods design.

Quantitative Methods

Quantitative approaches were applied in 18 studies; they all used different instruments for data collection purposes. These instruments mainly focused on Diabetes self-care activities among patients with T2DM, Associations between social support (HCPs/family/friends/spouse), and self-care activities in patients with T2DM and, Social support, self-care activities and glycaemic control in individuals with T2DM.

Ten studies used the Summary of Diabetes Self-care Activities Scale (SDSCA) to measure diabetes self-care activity [13-15,17,18,20,21,37,40,41]. All studies selected different instruments to measure social support, except two studies that used the Diabetes Care Profile (DCP) [15,40].

Quantitative approach is conducive to applying a variety of methods to recruit participants, collect data and utilize different instruments and measurement tools [46]. Surveys are often employed to describe and explore human behaviour, and hence, are frequently used in social and psychological research. Also, surveys are relatively economical and enable the recording of multiple variables, such as knowledge and attitudes, of several individuals in one single setting [10].

Qualitative Methods

Ten qualitative studies were retrieved, two of which used a single method, namely focus groups [25,39]. Puziah used a combination of semi-structured interviews, focus groups, longitudinal observations, and personal and reflective diaries in developing support system strategies to assist patients with T2DM to self-manage the condition, with help from HCPs and family members [38]. A study undertaken by Goetz adopted a dual approach, which included interviews with general practitioners and a focus group with a practice nurse and people with T2DM [31]. By using a combination of methods, the latter study's overall aim was to explore the importance of social support in providing care for patients with T2DM. Also, four studies used semi-structured topic guides to carry out in-depth interviews [24,29,35,43].

A study conducted by Mathew recruited 35 participants with T2DM and facilitated five focus groups and nine individual interviews to elaborate on the multi-dimensional aspects of diabetes self-management for both genders [23]. A comparative analysis was also undertaken to acquire a better understanding of the different experiences men and women were exposed to [23]. Kaltman undertook a combination of interviews with HCPs (A Medical Director, a primary care provider, a diabetes educator, and a medical assistant) and focus groups with patients with T2DM and their families, to gain an understanding of the challenges facing this patient cohort [36]. This assists in terms of self-management, as well as identifying the most effective interventions to implement to effectively respond to patient needs [36].

Several studies used face-to-face interviews to explore the role HCPs play in encouraging patients with T2DM to improve their diabetes self-care activities and to examine the effect of social support on engaging in such activities. Additionally, in-depth interviews help to facilitate the collection of rich data that can be used to answer research questions, aims, and objectives.

Mixed Methods

Five studies used a mixed-methods approach to obtain data from participants [12,22,30,33,34]. The study by Vissenberg used both quantitative and qualitative approaches to explore the effects of a intervention on self-management behaviours [30]. The researchers evaluated the intervention by using a quasi-experimental study based on a mixed-methods approach. They included 131 participants with T2DM in their study. Twenty-seven people participated in qualitative in-depth interviews [30]. The study conducted by Venkatesh also used mixed methods to determine the impact of social and HCP support on diabetes self-management in Indians living in the US [33]. The researchers used a self-care survey and semi-structured in-depth interviews to assess the diabetes self-management behaviours of patients with T2DM, as well as the effect of social and HCP support on diabetes self-management. Chlebowy used quantitative and qualitative methods to identify barriers and facilitators of self-management behaviours among African-Americans with T2DM [22]. For data collection purposes, they surveyed 38 participants and held a focus group with seven participants. Moreover, Mayberry distributed questionnaires to 61 people with T2DM and conducted two focus groups to explore the relationship between patient perceptions of family members' diabetes-specific supportive and non-supportive behaviours, medication adherence, and glycaemic control [12].

Overall, only five studies used mixed methods. These studies employed both quantitative and qualitative methods to create a research outcome that is stronger than one single approach alone. Generally, combining both approaches enables exploration of the more complex aspects of human relationships and the social world. The strengths associated with quantitative studies include the techniques applied to minimize confusion and the generalisability of the results if based on samples that are both representative and sufficiently large. It remains the controlling paradigm in health research [47].

On the other hand, in-depth qualitative research is designed to deliver a rich tapestry of opinions, beliefs, and meaning [48]. Additionally, it tends to acknowledge the investigator's role and the context in forming and creating the data. For example, Baumann discussed issues regarding a short-term intervention support program for patients with T2DM and their partners to improve diabetes self-care behaviours, glycaemic control, social support and emotional well-being, along with creating linkages with HCPs [34].

Various structured results emerged from the studies concerning the role of HCPs, social support, and diabetes self-care activities among patients with T2DM (**Table 1**).

Table 1. Summary of literature findings.

No.	Summary of Literature Findings
1	Patient activation of self-care activities is linked to support provided by family and friends.
2	Social support is important in improving the quality of life of patients with T2DM and in helping them to engage in self-care activities.
3	Spouse support is a key cornerstone of diet adherence for T2DM management. Gender differences emerged in terms of spouse support, thus affecting participation in self-care activities among patients with T2DM.
4	Negative experiences with non-supportive families are associated with reduced adherence by patients to diabetes self-care activities.
5	Delineation of social support and the role of coping styles are useful factors in identifying T2DM patients' need for specific counselling and support, to improve self-care activities and HbA1c levels.
6	Spiritual, religious, and socio-cultural beliefs of people with T2DM and their self-efficacy levels affect diabetes self-care activities.
7	Patients with T2DM who receive support from HCPs and have a good relationship with their physicians demonstrate improved health style levels and increased participation in diabetes self-care activities.
8	Risk factors, such as exposure to highly stressful life events and depression, are significantly correlated with higher health style levels.
9	Barriers and challenges to self-care behaviours: Internal factors, such as fears associated with glucose monitoring, lack of individual control of diabetes and failure to self-control dietary habits; and external factors, such as social support from family/friends/spouse and HCPs positively influence adherence behaviours by providing knowledge, reinforcement, cues to action and direct assistance.
10	The empowerment of patients improved their diabetes self-care behaviours and increased their glycaemic control.
11	HCP support and patient-provider communication are necessary to strengthen motivation among people with T2DM to engage in self-management strategies.

ANALYSIS OF THEMES AND FINDINGS

The literature review has highlighted the importance of HCPs and social support provided by family, friends, and spouses, along with how this is associated with self-care activities in patients with T2DM. T2DM management often requires complex treatment regimens that place demands on patients and their families to actively participate and adhere to different self-care behaviours involving complex daily self-care tasks [43,14]. Moreover, the influence of HCPs has been positively associated with diabetes self-care activities [33,39]. Furthermore, practical advice and information provided by HCPs have assisted and motivated patients with T2DM to participate in the self-care and management of their condition [33,39].

All of the literature reviewed recognizes the need for continuing support for patients with T2DM, for them to engage in diabetes self-care activities and manage their condition. A summary of the themes and findings from the literature review is presented in **Table 2**.

Table 2. Themes of the Study.

Setting	Author/Data	Key themes and findings from the literature review
Brazil; Denmark; Europe; Germany; Iran; Japan; Lebanon; Malaysia; the Netherlands; New Zealand; Nigeria; Taiwan; Uganda; United States of America (USA).	Baumann (2015); Goetz (2012); Gomes-Villas Boas (2012); Harvey (2017); Huang (2013); Janice (2010); Knutsen (2015); Komar-Samardzija (2012); Mayberry (2012); Mayberry (2014); Odume (2015); Schiotez (2012); Shayeghiana (2015); Smalls (2015); Song (2012); Stephens (2013); Sukkarieh-Haraty (2014); Vissenberg (2017); Watanabe (2010); Watkins (2013).	Theme 1: Social support for patients with T2DM and self-care activities.
Australia; China; Norway; USA.	Crotty (2015); Gao (2013); Oftedal (2010); Venkatesh (2013).	Theme 2: HCP support for patients with T2DM and self-care activities.
Canada; Kuwait; Malaysia; Portugal; Saudi Arabia; Turkey; USA.	Badedi (2016); Chlebowy (2010); Jeragh-Alhaddad (2015); Kaltman (2015); Laranjo (2015); Mathew (2012); McEwen (2010); Puziah (2016); Surucu (2017).	Theme 3: Facilitators and barriers to self-care activities.

THEME 1: SOCIAL SUPPORT FOR PATIENTS WITH T2DM AND SELF-CARE ACTIVITIES

Various sources of social support were identified under this theme, including family, friends, and spousal support. This theme provided evidence of the importance of social support in adhering to self-care activities. 17 studies have supported this: 12 quantitative studies two mixed methods studies and three qualitative studies [11,12,14-17,19-21,27,28,29,31,34,41-43]. No studies were sourced that had been undertaken within a Saudi Arabian context. While investigations have focused on the importance of social support from family, spouse and friends to assist patients with T2DM to adhere to self-care in a range of countries, this must be examined from a Saudi Arabian context. This would help to build an evidence base and improve our understanding of the importance of social support for Saudi Arabian patients who are managing their T2DM.

The overall importance of social support for patients with T2DM in assisting adherence to self-care has been highlighted in two quantitative studies, while six studies have provided specific evidence of the importance of support from families and friends in promoting such compliance [17,21]. Of the six studies, two are qualitative, three are quantitative and one adopted a mixed-methods approach [14,15,29,34,42,43].

Focusing initially with studies examining social support in general, Smalls, drew on survey data to demonstrate that social support and glycaemic control are connected [21]. The authors highlighted the significant overall effects on diabetes self-care activity that occurred through social support and access to healthy foods. Furthermore, the results showed that neighbourhood aesthetics and self-care behaviours have a direct effect on glycaemic control [21]. Similarly, a quantitative study conducted in Iran underlined the importance of social support in adherence to self-care behaviour among people with T2DM [17]. The latter authors also indicated that social support has a moderating role in the relationship between diabetes self-care activities and HbA1c control. Furthermore, they found that an association existed between coping styles, social support, self-care activities, and HbA1c among this cohort.

Several studies have provided evidence to reinforce the importance of support from families and friends to encourage T2DM patients' adherence to self-care regimes. A survey conducted by Mayberry suggested that supportive family behaviours are associated with high self-care compliance, whereas the opposite is true of obstructive family behaviours [14]. However, a descriptive and cross-sectional study conducted in Nigeria by Odume found that physical and emotional family support for patients enhanced their glycaemic levels [42]. They discovered that a significant correlation existed between family function, social support, and glycaemic control. This notion has also been supported by Baumann who conducted a four-month peer intervention study, which involved purchasing mobile phones for peer support purposes, establishing a pre-paid closed network user group and logging peer contact [34]. They found that peer intervention enhanced diabetes care among T2DM patients, with participants showing positive behavioral and physiological outcomes and significant improvements in Hb1Ac levels.

Janice conducted semi-structured interviews to understand the day-to-day lived experiences of adults with Type 2 diabetes their historical and current ability to self-manage their illness [43]. Participants in this study reported that self-management support was more strongly connected to spiritual beliefs and the support of family and friends, rather than being influenced by HCPs. This notion has also been supported by another quantitative study conducted by Harvey who found that African-American females with T2DM were more likely to adhere to a specific diabetes diet to regulate their glucose levels [15]. Furthermore, this study indicated that social interactions with friends and family play an important role in diabetes management. Qualitative research by Knutsen revealed that social supports, founded on familial relationships and knowledge, influence self-management practices among patients with T2DM [29].

These findings suggest that social support plays an important role in adherence to self-care activities among patients with T2DM. However, no study to date has examined the role social support performs in promoting self-care among a Saudi Arabian cohort, despite the high national prevalence rates of this condition. This research gap is surprising, given the Saudi Arabian societal context, which is characterized by a collectivist culture, meaning that family members, neighbours, friends, and, occasionally, the wider community play a pivotal role in supporting and caring for those patients [49].

Several studies further differentiate self-care behaviors. The importance of social support in encouraging T2DM patients to adhere to self-care regimes, such as diet, exercise, and medications, was noted in six studies: One qualitative study; four quantitative studies and one mixed methods study [11,13,16,20,30,31]. Research conducted in Taiwan and Germany found that social support plays a key role in participation levels in physical exercise among T2DM patients [16,31]. The Taiwanese study reported that patients' adherence to medication, dieting and regular exercise regimes was related to the highest possible levels of social support [16]. The key finding from this study is that physical exercise is a crucial determinant in influencing self-care behaviours among T2DM patients, quality of life and social support. Goetz found that social support was essential for T2DM patients to enable them to change their lifestyle habits, for instance, engaging in physical activities and altering their diet [31]. The findings showed that a significant relationship existed between social support and adherence to diet and food care, and that old age was significantly linked to dietary adherence [20]. A quantitative study conducted by Gomes-Villas found that social support can be beneficial in achieving adherence to non-medication treatments (such as diet and physical exercise), medication treatment compliance and the clinical-metabolic control of T2DM patients at outpatient follow-up [11]. However, no statistically significant correlation was observed between social support and metabolic control.

Furthermore, two studies conducted in Lebanon and the Netherlands found that social support and social networks were important in adhering to diabetes self-care activities (such as diet and physical exercise) and glycaemic control among patients with T2DM

^[13,30]. The former authors reported that adherence to dietary measures revealed a statistically significant relationship with HbA1c, and social support was also positively related to glycaemic control. Vissenberg recommended that education programs on diabetes management and self-management be provided to enhance patient self-efficacy and skills ^[30].

The importance of the provision of familial support to ensure T2DM patients abide to a diet, exercise, and medications have also been highlighted in three studies: Two quantitative studies; and one mixed methods study ^[12,19,27]. Mayberry found that non-supportive behaviours exhibited by family members correlated with low adherence to diabetes medication regimes ^[12]. Furthermore, the study found that self-care behaviours correlated with improved glycaemic control and the prevention of diabetes-related complications ^[12].

Several studies conducted in Saudi Arabia have focused on the medical aspects of DM (such as prevalence and complications), self-management, education and participation in self-care activities ^[50]. However, no Saudi Arabian-based studies have examined or investigated these issues concerning social support and self-care activities. Given the benefits of social support reported in the international literature concerning adherence to the diet, exercise, and medication, this is an area that warrants further investigation within a Saudi Arabian context.

The importance of spousal support and gender differences for patients with T2DM in terms of adherence to self-care activities have been demonstrated in three quantitative studies, one qualitative study and one mixed methods study ^[23,28,34,40,41]. A quantitative study conducted by Song found that the primary source of social support differed according to gender ^[40]. One possible explanation for this is that patients reported limited social support. However, males with T2DM have been shown to obtain greater spousal support from their wives, thus aiding them in self-care activity adherence, whereas females reported lower support levels ^[40]. They attributed this finding to socially determined gender roles, whereby women are more likely to assume responsibility for food preparation than males within the family ^[40]. This finding is of interest, given that traditional female roles in terms of food preparation continue to prevail in Saudi Arabia ^[51]. Similarly, a quantitative study conducted in the USA by Stephens, using multilevel modeling, found that the provision of diet-related support by partners increased patient adherence levels, whereas conversely, diet-related pressures and persuasion were associated with decreased compliance ^[28]. These findings were supported by a cross-sectional survey conducted in Denmark, where Schiøtz reported that living with a partner was related to lower HbA1c levels ^[41].

A qualitative study by Mathew provided further insights into gender variations in self-management ^[23], in particular, highlighting the needs, barriers, and challenges facing men and women living with T2DM. The authors reported that female T2DM patients were more inclined to engage in the personal management of their daily lives, whereas men had a greater tendency to share this management responsibility with family members and friends. Moreover, males were more likely to concentrate on practical aspects, such as blood glucose self-monitoring, as a means by which to manage their diabetes and reduce their medication intake, whereas women typically emphasized the elements associated with effective blood glucose self-monitoring ^[23].

Generally, most of the literature has emphasized the importance of social support provision from the family, spouses, and friends of T2DM patients, as it enhances the likelihood of engaging in self-care activities. However, no studies have been conducted within a Saudi Arabian context to investigate social support and diabetes self-care activities among T2DM patients. This suggests that a need to investigate this specific area, in terms of improved patient adherence to self-care activities. This is important given the high prevalence of T2DM in Saudi Arabia, but also because of its unique environmental factors. More specifically, it cannot simply be assumed that social support for T2DM will work in the same way across different social, cultural, legal and healthcare contexts. As such, social support and self-care need to be better understood within the Saudi Arabian context, so that HCPs can identify how best to approach it, thus assisting patients in taking the necessary steps to improve their diabetes management and overall care.

THEME 2: HCP SUPPORT FOR PATIENTS WITH T2DM AND SELF-CARE ACTIVITIES

Evidence to demonstrate the importance of HCPs in supporting adherence to self-care for patients with T2DM has emerged in four studies: two qualitative studies, one mixed methods study and one quantitative study ^[32,33,35,39]. Research conducted in Norway and the USA have found that the main support provided by HCPs to T2DM patients was in offering practical advice, information and education programs, which motivated them to implement diabetes self-management strategies ^[33,39]. A qualitative study undertaken by Oftedal found that participants typically regarded the support provided by HCPs as a motivating factor in undertaking diabetes self-management activities ^[39].

This notion has also been supported by a mixed-methods study conducted by Venkatesh, who analyzed social and HCP support concerning Indian T2DM patients' involvement in diabetes self-management ^[33]. Their results emphasized the support that physicians can offer in terms of providing education concerning diabetes self-management behaviors ^[33]. More specifically, a study conducted in China by Gao highlighted the importance of patient-provider communication in adherence to self-care activities ^[32]. Analysis of their survey data found that patient-provider communication, self-efficacy, and social support exerted a direct effect on diabetes self-care activities among Chinese T2DM patients. A qualitative study conducted by Crotty found that patients with no spousal support showed greater dependency on professional and paid caregivers in the daily care and self-management of their condition ^[35].

Overall, these studies highlight the association between good patient-HCP relationships and improved diabetes self-care practice, not least through motivation, practical advice, information, and education. However, within a Saudi Arabian context, there is an

absence of literature that examines the role of HCPs in facilitating diabetes self-care. This is significant not only considering the social context prevailing in Saudi Arabia but also as healthcare systems differ internationally. Therefore, investigating the function HCPs can perform concerning diabetes self-care practice can help to lay a solid foundation for improved patient's self-care activities.

THEME 3: FACILITATORS AND BARRIERS TO SELF-CARE ACTIVITIES

This theme describes the facilitators and barriers to self-care activities. Eight studies provided information concerning this theme. One study adopted a mixed-methods approach, four were qualitative, while three studies were quantitative [18,22,24-26,36-38]. The findings showed that factors facilitating T2DM patient self-management included acceptance of diabetes, acquiring greater information and knowledge about the condition and patient empowerment. Barriers to self-care included inadequate family support, lack of self-control over dietary habits, memory failure and cultural constraints.

Facilitators of self-management behaviours among patients with T2DM in Portugal and the USA included independence, acceptance of diabetes and having access to greater information and knowledge [22,25]. On the other hand, barriers to self-management included poor diet due to lack of motivation and cost-related factors [22,25]. The same authors identified other barriers including memory failure, inadequate family support and insufficient exercise. Quantitative and qualitative studies conducted in Malaysia and Turkey has emphasized the importance of patient empowerment in facilitating self-care activities [18,38]. More specifically, these studies have suggested that patient empowerment during an education process, led by HCPs, was significant in enhancing adherence to diabetes self-care activities among T2DM patients [52,53].

Kuwaiti and USA based studies have identified cultural barriers to diet and medication adherence among patients with T2DM [24,36]. For example, Jeragh-Alhaddad found that ten percent of patients reported not taking their medication in front of others to avoid experiencing diabetes-related stigma [24]. The cultural challenges of adhering to diets for diabetic patients were reported by Kaltman [36]. The notion of cultural dynamics has also been supported by a quantitative study conducted by McEwen [37]. They highlighted the importance of ensuring treatments are adapted culturally for T2DM patients in a manner that would improve self-management behaviors, knowledge and diminish diabetes-related distress. Other barriers affecting adherence to self-care among patients with T2DM were reported by Badedi, who demonstrated that factors such as low educational levels, smoking, and failing to complete a course of medication and adhere to diet or exercise requirements were significantly associated with higher HbA1c levels [26].

An extensive body of literature is available on the facilitators and barriers to self-care activities. This research highlights that social support from family/spouse/friends and HCPs is the most critical factor in supporting patients to adhere to diabetes self-care activities to control their condition. The literature has also highlighted how factors such as lack of social support from family and HCPs can negatively affect adherence to self-management behaviours among patients with T2DM. However, within a Saudi Arabian context, to date, only one study has been conducted that analyses the variables associated with glycaemic control among T2DM patients. Therefore, it is reasonable to assume that this is a highly under-researched area in Saudi Arabia. Also, the literature review has highlighted that patients with T2DM in other parts of the world have faced challenges and difficulties in adhering to self-care activities due to factors such as religious beliefs, sociocultural issues, HCPs and diet. These determinants require further investigation within a Saudi Arabian context, given the role of Islam, Saudi culture, diet and work practices among HCPs.

CONCLUSION

In conclusion, various studies have specifically centred on the importance of self-care activity engagement and social support for T2DM patients. Also, several studies have examined the impact of HCP education on diabetes self-care activities. However, all Saudi Arabian studies to date have tended to focus on the medical aspects of T2DM (such as its prevalence and complications), as well as effective self-management and educational support programs. This evidence gap reinforces the need to design Saudi Arabian-based studies, as little is currently known about the role of social support provided by family, spouse, and friends to individuals with T2DM, as well as challenges facing HCPs in the provision of care and the delivery of self-care management education. Therefore, the present study seeks to address this critical evidence gap. It is needed to build an evidence base, and a greater understanding of the role of social support and self-care activities play in diabetes management among Saudi Arabian-based patients with T2DM.

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