

Barriers to Self-Care Practices in Diabetes Patients: A Systematic Review

Ameen Malky^{1,2}, Amal M Alshahrani^{3*}, Aishah Abdullah Ganem Alqarni⁴, Yara Rashed A Albayyahi⁵, Anoud Mubarak Alsaad⁶, Eyad Abdulatif Almohaisen⁷, Rahaf Mouner Haj Hasan⁸ and Sarh Sami Abdulghani⁹

¹Department of Preventive Medicine, Joint Program of Saudi Board in Preventive Medicine, Southern Region, Abha, Saudi Arabia;

²Health Affairs, Ministry of Health, Abha, Saudi Arabia; ³Public Health Department, General Directorate of Health Affairs, Aseer Region, Abha, Saudi Arabia; ⁴Department of Medicine, College of Medicine, King Khaled University, Abha, Saudi Arabia;

⁵College of Medicine, Almaarefa University, Riyadh, Saudi Arabia; ⁶College of Medicine, Najran University, Najran, Saudi Arabia;

⁷Department of Medicine, College of Medicine, King Faisal University, Al-Ahsa, Saudi Arabia; ⁸Department of Medicine, Batterjee Medical College, Jeddah, Saudi Arabia; ⁹Department of Medicine, Ibn Sina National College, Jeddah, Saudi Arabia

Corresponding author:

Amal M Alshahrani,
Department of Preventive Medicine,
Public Health Department,
General Directorate of Health Affairs,
Aseer Region, Abha, Saudi Arabia,
E-mail: amal.jrais@gmail.com

Abstract

Background: Diabetes mellitus is an emerging public health threat with rapid increase in prevalence all over the world. Mortality and other health care costs associated with diabetes are mainly due to its complications rather than the disease itself. Self-care management practices are essential in preventing such complications. Evidence shows that patients with diabetes face several challenges in adhering to such practices. **Aim:** The current study is aimed to identify the barriers to self-care practices in patients with diabetes from a global perspective. **Methods:** Online databases such as PubMed, Google Scholar, CINAHL were searched for following keywords: type 2 diabetes mellitus, self-care practices, self-management practices, adherence and barriers to diabetes self-care practices. By following the PRISMA guidelines this systematic review was done. Research articles that addressed the barriers for self-care in diabetes were included irrespective of the design, country and year of the study. **Results:** A total of 17 articles were included in this review. Barriers discussed were socio-economic barriers, financial barriers, health-care system related barriers, and barriers specific to medication adherence, blood sugar testing, diet and exercise. **Conclusion:** Global NCD targets focuses on reduction in mortality and health-care costs associated with diabetes, which cannot be achieved unless we address all these barriers for self-care practices.

Keywords: Type 2 diabetes; Self-care practices; Self-management practices; Adherence; Barriers to self-care practices; Narrative review

Introduction

Diabetes mellitus is a booming public health issue with rapidly increasing prevalence all over the world. The number of patients with diabetes was 425 million in the world in 2017; is expected to reach 629 million in 2045. Healthcare costs due to diabetes were \$727 billion for adults aged 20–79 years in 2017 and are expected to reach \$776 billion in 2045. ^[1]

Evidence from literature shows that there are poor adherence practices to medications and other self-care practices. ^[2] As a result, many of the diabetes end-up with major complications which otherwise are preventable. Self-care practices should be initiated soon after the diagnosis and consistent engagement in such practices are found to have positive outcomes.

The term “self-management” refers to day-to-day activities or actions an individual must undertake to control or reduce the impact of the disease on their health and well-being to prevent further illness. ^[3] Theories of health promotion such as Health Belief Model (HBM) can be used in the determination of factors affecting self-care or self-management practices. According to Health Belief Model (HBM), maintenance of health behavior

and development of preventive strategies are determined by beliefs and perceptions based on the experiences of patients. Of all the domains under HBM, perceived barriers are found to have the strongest discriminating factor. ^[4]

It has been emphasized that higher perceived barriers can prevent displaying desirable behaviour despite the presence of higher perceived benefits and sensitivity. ^[5] Therefore, it is thought that HBM can guide revealing patients with diabetes’ experiences with diabetes management.

Globally, there have been various studies that explored the factors and barriers to self-care practices by diabetes patients. The current review is aimed to identify the barriers to self-care or self-management practices in patients with diabetes from a global perspective.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

How to cite this article: Malky A, et al. Barriers to Self-Care Practices in Diabetes Patients: A Systematic Review. *Ann Med Health Sci Res.* 2021;11:1-6.

Literature Search Strategies

Online databases such as PubMed, Google Scholar, CINAHL were searched with the following search terms, “((barriers) AND (self-care practices)) AND (diabetes), ((barriers[Title/Abstract]) AND (self-care practices[Title/Abstract])) AND (diabetes[Title/Abstract]), (((barriers[Title/Abstract]) AND (self-care practices[Title/Abstract])) OR (self-management practices[Title/Abstract])) AND (diabetes[Title/Abstract]), (((barriers[Title]) AND (self-care practices[Title])) OR (self-management practices[Title])) AND (diabetes[Title]), (((barriers[Title/Abstract]) AND (self-care practices[Title/Abstract])) OR (self-management practices[Title/Abstract])) AND (diabetes mellitus[Title/Abstract]).

A total of 930 studies were found. For each of these, title and abstract were screened for studies that addressed the barriers for self-care practices in diabetes mellitus patients with English language and no limits on the design, country and year of the

study [Figure 1]. Out of those 17 studies [Table 1] fulfilled the above criteria and were included for the final review.

Adherence to Self-Care Practices

The American Association of Diabetes Educators [6] has enumerated the following seven self-care behaviours for successful and effective diabetes self-management: Healthy eating, being active, monitoring, taking medications, problem solving, healthy coping, and reducing risks. AADE convened a taskforce to further determine what to measure, when to monitor, and how to manage chronic diseases over its continuum as it related to diabetes education and care. However, obedience to the advised anti-diabetic medications among patients is also known to be varied in different parts of the KSA ranging from 1.4% to 70%, with an average of 35%. [7,8] Adherence levels to diet practices were relatively good than the practices such as blood sugar testing and foot care practices. SDSCA scale has been used by Alqahtani et al., [9] to measure the adherence to

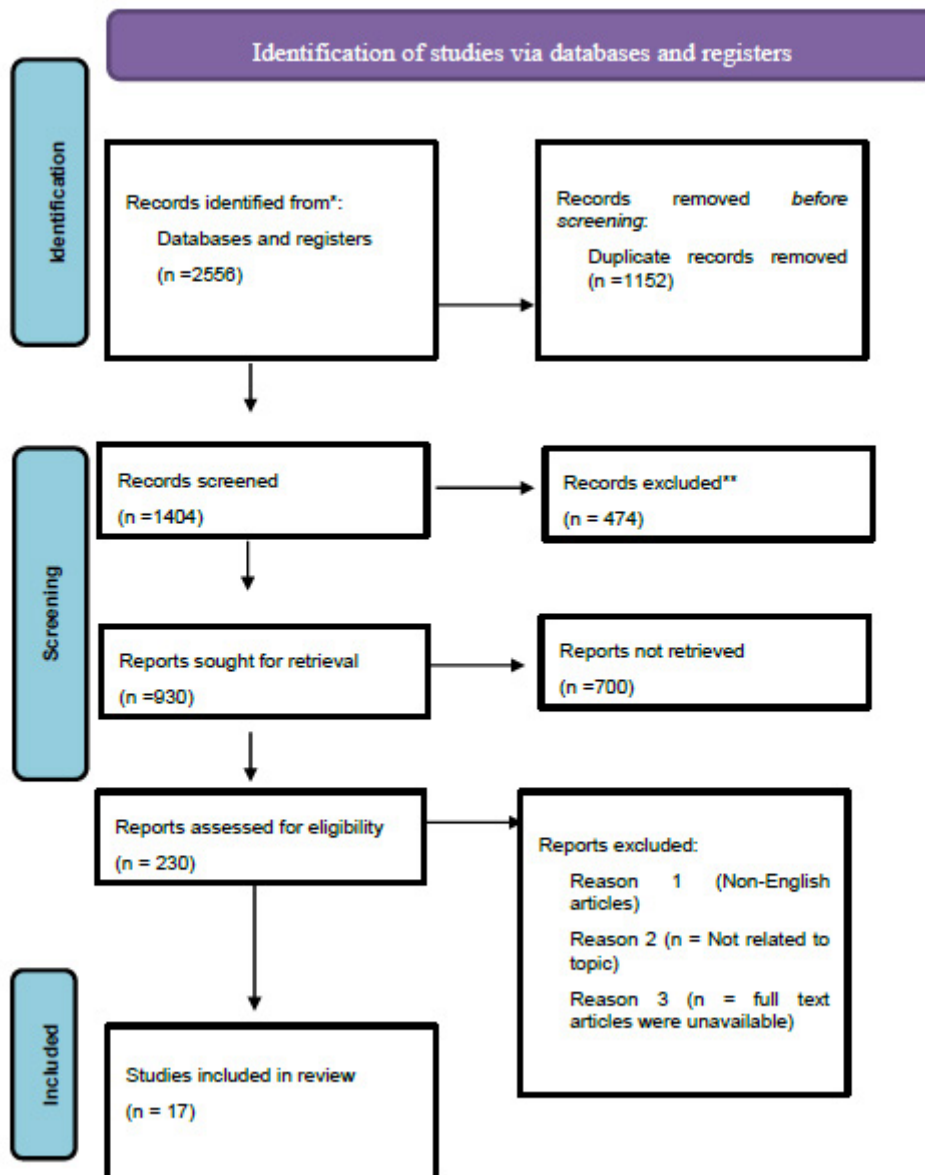


Figure 1: PRISMA flowchart of the review.

Table 1: Studies included in the review.

S.no	Title	Author	Published year	Study design	Study subjects
1	Illness perceptions and perceived barriers to self-care in patients with type 2 diabetes mellitus: An exploratory study from India	Abraham et al.	2015	Cross sectional	Type 2 diabetes patients
2	Perceived barriers to diabetes management at home: A qualitative study	Açıl et al.	2019	Qualitative study	Diabetes
3	Enablers and barriers to effective diabetes self-management: A multi-national investigation	D Adu et al.	2019	Mix- methods	Adults type 1and 2 diabetes
4	Levels of Practice and Determinants of Diabetes Self-Care in Primary Health Care in Jeddah City, Saudi Arabia	Alqahtani et al.	2020	Cross sectional	Type 1and2 diabetes
5	Facilitators and Barriers to Type 2 Diabetes Self-Management Among Rural African American Adults	Byers et al.	2016	Qualitative study	Type 2 diabetes patients
6	Understanding Financial Barriers to Care in Patients With Diabetes	Campbell et al.	2017	Qualitative study	Type 1and2 diabetes
7	Perception of barriers to self-care management among diabetic patients	Gazmararian et al.	2009	Qualitative study	Diabetes Patients age 18 and above
8	Barriers to Diet and Exercise among Nepalese Type 2 Diabetic Patients	Ghimire S	2017	Cross sectional	Type 2 diabetes patients
9	Barriers to Diabetes Self-Management Among Rural Individuals in the Workplace	Grant et al.	2016	Reivew	Diabetes Patients
10	Exploring the barriers and facilitators of dietary self-care for type 2 diabetes: a qualitative study in Ghana	Hushie M	2019	Qualitative study	Type 2 diabetes patients
11	Knowledge, Attitude and Barriers Towards Self-care Practices in Patients with Diabetes Mellitus in North Batinah, Sultanate of Oman	Jahan et al.	2018	Cross sectional	Type 2 diabetes patients
12	Knowledge, Attitude, Practice and Barriers For Self-care diabetes among Type 2 Diabetes Mellitus Patients in Rural Tamil Nadu	Jasmine et al.	2019	Cross sectional	Type 2 diabetes patients
13	Barriers and facilitators to effective type 2 diabetes management in a rural context: a qualitative study with diabetic patients and health professionals	Jones et al.	2015	Qualitative study	Type 2 diabetes patients
14	Facilitators, barriers and expectations in the self-management of type 2 diabetes—a qualitative study from Portugal	Laranjo et al.	2015	Qualitative study	Type 2 diabetes patients
15	Goals, beliefs, knowledge, and barriers for diabetes self-care in a multi-ethnic population in Malaysia: A qualitative study	Nebet et al.	2019	Qualitative study	Type 2 diabetes patients
16	Barriers to Medication Adherence in Poorly Controlled Diabetes Mellitus	Odegard et al.	2008	Cross sectional	Type 2 diabetes patients
17	Enablers of and Barriers to Effective Diabetes Self-Care in Iran: A Qualitative Study	Sarpooshi et al.	2020	Qualitative study	Type 2 diabetes patients

self-care behaviours which shows that adherence was relatively better medications than other behaviours such as diet, blood glucose monitoring, exercise, and foot care. In a study done by Pokhrel et al.,^[10] where they measured the HbA1c in about 480 study subjects, it has been a significant correlation between the HbA1c levels and the adherence to self-care that those who can adhere to self-care practices have significantly lower HbA1c levels.

Barriers

Socio-economic barriers

Health care outcomes are not only a result of medical interventions, but also influenced by a wide range of socio-demographic determinants.

Socio-economic status: Of all, lower socio-economic status

has been a key determinant that has been associated with poor medication adherence.^[11–13]

Social stigma: Diabetes-related stigma is a key barrier to the self-care practices for diabetes. Stigmatization impacts the psychological wellbeing of diabetes to a greater extent which leads to poor self-care behaviours in them.^[14]

Family support: In many instances, family members were not supportive that they exhibit inappropriate or non-supportive behaviours with diabetes subjects. Some of the family members are involved in sabotaging that they not only support the diabetics to adopt self-care practices but also criticize them in doing so. Miscarried help has also been a conflicting behaviour between the diabetics and the family members which interfere with the self-care practices.^[15]

Health literacy: Lower literacy rates among diabetics has been

associated with poor knowledge about self-care behaviours.^[16,17] Poor health literacy decreases their ability to comprehend the self-care behaviour instructions and also makes them difficult to adhere to them.^[18] Patients with diabetes who have poor literacy levels are more likely to experience difficulty in identifying warning events in diabetes such as hypoglycemic episodes and faces difficulty reading the prescriptions.^[19,20]

Financial barriers

Cost-related non-adherence to self-care practices is more common among patients with diabetes. Diabetes-related supplies such as Continuous Glucose Monitoring (CMG) systems are of high cost and not affordable to many of the populations. The frequency of diabetes testing adds to its complexity. Diabetics also experience financial barriers to procure the prescribed medications. In diabetics, medications are not only for the diabetes condition but also to manage its comorbid conditions and complications; piling up a huge burden for the drugs themselves.^[21] All these costs for supplies, medications, and user charges are not completely covered by insurance.

People with diabetes have to maintain the proper diet patterns to have control of their blood glucose levels. The foods which are deemed to be healthy for diabetics such as fruits etc., are of the higher cost that many of them experience difficulty in following the prescribed diet patterns.^[22]

The role of healthcare providers cannot be neglected when we address the financial barriers. Prescribing too many drugs, prescribing drugs that are not under generic list, testing some new drugs that are not directly related but proving to be of high costs such as vitamins and poor understanding of the financial status of the people with diabetes by healthcare providers that set unrealistic recommendations are several such factors that increase the financial burden experienced by them.

Health-care system-related barriers

Diabetes being a chronic disease requires long-term treatment modalities which involve frequent follow-up visits. Hence, to cater to the needs of diabetics, health care systems and their interactions should be optimal. Evidence suggests that the median time for discussing diabetes self-care practices was 5.2 minutes which is depicting the poor communication interface between the health care system and the patients.^[23,24] Poor access to the diabetes clinics/ laboratories; limited-service timings; shortage in the healthcare providers such as specialists, dieticians are other factors that are related to the barriers in adhering to self-care practices.^[25,26] Lack of transportation facilities, particularly in rural areas make it difficult for diabetics in rural areas to frequently contact healthcare organizations.

Health education is a key component in any behavioural intervention. Self-care practices in diabetes require a lot of behavioural modifications such as diet modification, lifestyle practices, etc. Many people with diabetes experience that there is a lack of nutrition education, education about the nature of medications, and their side effects. Moreover, people with diabetes feel they are not followed-up regularly to address the constraints they face while adopting self-care practices.

Barriers specific to medication adherence

Diabetes, a chronic disease, makes people with diabetes experiencing a wide variety of emotional responses at the time of diagnosis. Many of them falsely believe that diabetes is an incurable disease and medications won't be helping them out. These kinds of false beliefs or myths make them difficult to initiate and adherence to the medications.^[27] Moreover, the dynamic and chronic nature of diabetes itself acts as a barrier to adhere to medications.

Some other challenges include unable to read the prescription labels, the complexity of dosage regimes, difficulty in procuring refills or drugs such as insulin, fear of side effects in allopathic drugs, and also try out the traditional medications for the cure.

Diet-specific barriers

Diet modification is a key component in self-care practices. People with diabetes lack awareness of healthy dietary options that they adopt, awareness about the effects of harmful practices such as alcohol consumption on diabetes was inadequate, and also the health consequences that occur as a result of poor compliance to a healthy diet.^[28] Even though if they are aware, diabetes-friendly dietary products are not easily available to them. They even lack self-control and they are unable to change the diet consumption patterns at ease.^[29] Also, some of the diabetics feel that the diet recommended was not dynamic and hence, unable to adhere to long-run.

Environmental factors play a major role when it comes to dietary behaviours. In the familial environment, lack of assistance from the family members in procuring and preparation of healthy diets act as barriers. The perceived belief that healthy diet patterns are socially unacceptable and peer pressure in friends' circle to consume unhealthy diets are some other factors. Workplace-related factors such as job roles that involve frequent travels, irregular shift patterns, lack of administrative support, and lack of facilities are making the working community with diabetes adhere to such self-care practices. Social functions such as gatherings, marriage celebrations are served with a diet that is not healthy and it makes patients with diabetes adhere to their diet plans.^[30]

From a socio-cultural perspective, many of them feel that diet recommendations made are not compatible with their traditions or culture.^[31] Myths too exist among them that certain food items (e.g., banana, grapes, beans, etc.) are forbidden and those should be avoided.^[32]

Exercise-related barriers

In the prevention and control of non-communicable diseases especially diabetes, exercise or physical activity plays an inevitable role in altering the course of the disease. Though there are some enabling factors for involving in physical activity, there are a lot of barriers that are of serious concern. People with diabetes lack the motivation to do physical activity and sustain the behaviour regularly. Many of them find difficulty in allocating quality time to do exercises. Several other personal level factors that act as barriers for exercise include low mood states that make them feel lazy, presence of disabling co-morbid health conditions such as neuropathy, diabetic foot ulcers,

amputations, etc., and gender issues such as being a homemaker, experiences difficulty in allocating time for exercises and also fear of crimes in the surroundings.

Apart from the individual level factors, residing in inconvenient locations such as urban slums, congested housing conditions, lack of grounds or parks to engage in activities, and weather conditions such as extremely hot terrains are the environmental factors that act as barriers for exercise.

Many of the times, lack of knowledge in the type of activities to get involved in, monotonous exercise patterns, and certainly not experiencing weight loss or blood sugar control immediately also makes them less concerned about the physical activity.

Blood sugar test-related barriers

Continuous blood glucose monitoring is essential to keep track of blood glucose and it helps in the titration of medication doses. Patients with diabetes face a lot of challenges in doing so because of lack of information on normal blood sugar levels, various methods of testing such as Random Blood Sugar (HBC), Glycated hemoglobin (HbA1c), and devices/equipment required to perform such tests such as a glucometer, test strips, etc. Sometimes, to avoid negative mood states associated with high blood sugar levels, they don't undergo frequent blood sugar testing.

Conclusion

In this review, we had discussed all those barriers that are associated with adherence to self-care or self-management practices. There is a wide range of barriers starting from individual perspectives to the social and healthcare system perspective. To achieve the global NCD targets, it is mandatory to address all these barriers which will have a considerable impact on mortality due to diabetes.

References

1. WHO. Factsheet: Diabetes. World Health Organization. 2021.
2. Adu MD, Malabu UH, Malau-Aduli AEO, Malau-Aduli BS. Enablers and barriers to effective diabetes self-management: A multi-national investigation. *PLoS ONE*. 2019;14:e0217771.
3. Barlow JH, Sturt J, Hearnshaw H. Self-management interventions for people with chronic conditions in primary care: Examples from arthritis, asthma and diabetes. *Health Educ J*. 2002;61:365-378.
4. Açı D, Bahar Z. Perceived barriers to diabetes management at home: a qualitative study. *Turkish J Biochem*. 2019;44:621-629.
5. Wdowik MJ, Kendall PA, Harris MA, Auld G. Expanded health belief model predicts diabetes self-management in college students. *J Nutr Educ*. 2001;33:17-23.
6. Tomky D, Tomky D, Cypress M, Dang D, Maryniuk M, Peyrot M, et al. Aade position statement. *Diabetes Educ*. 2008;34:445-449.
7. Mulcahy K, Maryniuk M, Peeples M, Peyrot M, Tomky D, Weaver T, et al. Position statement: standards for outcomes measurement of DSME. *Diabetes Educ*. 2003;29:804-818.
8. Alkhormi AH, Alshahrani NZ, Mahmood SE. Khat chewing leads to increase in glycaemic parameters in patients with type 2 diabetes mellitus in Jazan region, Saudi Arabia and Yemen. *Diabetes Metab Syndr*. 2021;15:565-568.
9. AlQahtani AH, Alzahrani AS, Alzahrani SH, Alqahtani SM, AlOtaibi AF, Khan AA. Levels of practice and determinants of diabetes self-care in primary health care in Jeddah City, Saudi Arabia. *Cureus*. 2020;12:e8816.
10. Sankar UV, Lipska K, Mini GK, Sarma PS, Thankappan KR. The adherence to medications in diabetic patients in rural Kerala, India. *Asia Pac J Public Health*. 2015;27:NP513-23.
11. Alshahrani NZ, Almohaishi HA, Alabadi M. Preventive measures to mitigate transmission of COVID-19 on aircrafts. *Int J Med Rev Case Rep*. 2021;5:93-95
12. Mukherjee S. Compliance to anti-diabetic drugs: Observations from the diabetic clinic of a medical college in Kolkata, India. *JCDR*. 2013;7:661-665.
13. Schabert J, Browne JL, Mosely K, Speight J. Social stigma in diabetes: A framework to understand a growing problem for an increasing epidemic. *Patient*. 2013;6:1-10.
14. Mayberry LS, Osborn CY. Family support, medication adherence, and glycemic control among adults with type 2 diabetes. *Diabetes Care*. 2012;35:1239-45.
15. Basu S, Garg S. The barriers and challenges toward addressing the social and cultural factors influencing diabetes self-management in. *J Soc Health Diabetes*. 2017;5:6.
16. Jahan F, Shibli IA, Mukhlif Z. Knowledge, attitude and barriers towards self-care practices in patients with diabetes mellitus in North Batinah, Sultanate of Oman. *Int J Public Health Res*. 2018;6:63-70.
17. Alshahrani NZ, Alhashim LA, Almohaishi HA, Alabadi M, Alothman FA, Parker S. FIFA World Cup 2022 in Qatar; health advice and safety issues for travelling attendees. *Ann Med Health Sci Res*. 2021;11:417-422.
18. Sarkar U, Karter AJ, Liu JY, Moffet HH, Adler NE, Schillinger D. Hypoglycemia is more common among type 2 diabetes patients with limited health literacy: The diabetes study of Northern California. *J Gen Intern Med*. 2010;25:962-968.
19. Odegard PS, Gray SL. Barriers to medication adherence in poorly controlled diabetes mellitus. *Diabetes Educ*. 2008;34:692-697.
20. Campbell DJT, Manns BJ, Hemmelgarn BR, Sanmartin C, Edwards A, King-Shier K. Understanding financial barriers to care in patients with diabetes: An exploratory qualitative study. *Diabetes Educ*. 2017;43:78-86.
21. Schoenberg NE, Drungle SC. Barriers to Non-Insulin Dependent Diabetes Mellitus (NIDDM) self-care practices among older women. *J Aging Health*. 2001;13:443-66.
22. Grant JS, Steadman LA. Barriers to diabetes self-management among rural individuals in the workplace. *Workplace Health Saf*. 2016;64:243-248.
23. Jones L, Crabb S, Turnbull D, Oxlad M. Barriers and facilitators to effective type 2 diabetes management in a rural context: A qualitative study with diabetic patients and health professionals. *J Health Psychol*. 2014;19:441-53.
24. Gazmararian JA, Ziemer DC, Barnes C. Perception of barriers to self-care management among diabetic patients. *Diabetes Educ*. 2009;35:778-88.

25. Jasmine A, Iyer RH. Knowledge, attitude, practice and barriers for self-care among type 2 diabetes mellitus patients in rural Tamil Nadu. *Ind Jour of Publ Health Rese Develop*. 2019;10(9):419.
26. Robat Sarpooshi D, Taghipour A, Mahdizadeh M, Peyman N. Enablers of and barriers to effective diabetes self-care in Iran: A qualitative study. *PROM*. 2020;11:109–18.
27. Ghimire S. Barriers to diet and exercise among Nepalese type 2 diabetic patients. *Int Sch Res Notices*. 2017;2017:1–9.
28. Byers D, Garth K, Manley D, Chlebowy D. Facilitators and barriers to type 2 diabetes self-management among rural African American adults. *J Health Dispar Res Pract*. 2016;9:11.
29. Hushie M. Exploring the barriers and facilitators of dietary self-care for type 2 diabetes: a qualitative study in Ghana. *Health Promot Perspect*. 2019;9:223–32.
30. Alshahrani NZ, Alshaiban HM, Alarbash HA, Mahmood SE, Aljunaid MA, Albeshry AM, et al. Knowledge, attitude and practices of healthcare workers regarding bio-medical waste of Covid-19 in Aseer Region, KSA. *Int J Pharm Res*. 2021;13.
31. Laranjo L, Neves AL, Costa A, Ribeiro RT, Couto L, Sá AB. Facilitators, barriers and expectations in the self-management of type 2 diabetes – a qualitative study from Portugal. *Eur J Gen Pract*. 2015;21:103–10.
32. Neblett RS. Goals, beliefs, knowledge, and barriers for diabetes self-care in a multi-ethnic population in Malaysia: A qualitative study. 2019;74:9.