

Documents

Mohamed Nor, N., Mohd Shukri, N.A., Mohd Yassin, N.Q.A., Sidek, S., Azahari, N.

Barriers and enablers to make lifestyle changes among type 2 diabetes patients: A review
(2019) *Sains Malaysiana*, 48 (7), pp. 1491-1502. Cited 4 times.

DOI: 10.17576/jsm-2019-4807-18

Kulliyah of Allied Health Sciences, Department of Nutrition Sciences, International Islamic University Malaysia, Kuantan Campus, Pahang Darul Makmur, 25200, Malaysia

Abstract

Type 2 diabetes is a non-communicable disease that affects most people around the world and is generally the result of excessive food intake and physical inactivity. Therefore, the purpose of this review was to identify facilitators and barriers for lifestyle modifications among type 2 diabetes patients. We combined quantitative and qualitative studies for this systematic narrative review. A literary search was carried out using EBSCO, HighWire Press, Medline, PsycInfo, PubMed and Scopus. Narrative review was used to extract results from quantitative studies, while thematic synthesis was used to extract results from qualitative studies. Twenty-three studies were included in this review, with a total of 2287 participants from Western, Arab and Asian populations. The two main themes generated from this review are intrinsic factors and extrinsic factors that can either be facilitators or barriers to implementing lifestyle change. Among the barriers faced by the participants are established food habits, lack of self-efficacy, lack of motivation, lack of social support, inadequate knowledge, low socio-economic status, food culture and poor time management. In contrast, the facilitating factors generated are strong self-efficacy, high motivation, good habits, and sufficient knowledge. In general, patients with diabetes observed more barriers than facilitators to implementing healthy lifestyle changes. © 2019 Penerbit Universiti Kebangsaan Malaysia. All rights reserved.

Author Keywords

Barriers; Changes; Facilitators; Lifestyle; Type 2 diabetes

Index Keywords

diabetes, disease treatment, ethnicity, health status, lifestyle, literature review, qualitative analysis, quantitative analysis; Scopus

References

- **Physical activity/exercise and diabetes mellitus**
(2003) *Diabetes Care*, 26 (1), pp. 73-77.
ADA
- Akumiah, P.O., Samuel, O.A., Azumah Nayembil, D., Ofosu Agyapong, G., Fataw, P.
Barriers to adherence to diet and exercise recommendation amongst Type 2 diabetes mellitus patients
(2017) *Journal of Health, Medicine and Nursing*, 39, pp. 48-53.
0
- Al-Kaabi, J., Al-Maskari, F., Saadi, H., Afandi, B., Parkar, H., Nagelkerke, N.
Physical activity and reported barriers to activity among Type 2 diabetic patients in the United Arab Emirates
(2009) *Review of Diabetic Studies*, 6 (4), pp. 271-278.
- Ali, O.
Genetics of Type 2 diabetes
(2013) *World Journal of Diabetes*, 4 (4), pp. 114-123.
- Ashra, N.B., Spong, R., Carter, P., Davies, M.J., Dunkley, A., Gillies, C., Khunti, K.,

Youssef, D.

A systematic review and meta-analysis assessing the effectiveness of pragmatic lifestyle interventions for the prevention of Type 2 diabetes mellitus in routine practice about public health England

(2015) *Public Health England*,

Wellington House

- Booth, A.O., Lowis, C., Dean, M., Hunter, S.J., McKinley, M.C.

Diet and physical activity in the self-management of Type 2 diabetes: Barriers and facilitators identified by patients and health professionals

(2013) *Primary Health Care Research & Development*, 14 (3), pp. 293-306.

- Brunk, D.R., Taylor, A.G., Clark, M.L., Williams, I.C., Cox, D.J.

A culturally appropriate self-management program for hispanic adults with Type 2 diabetes and low health literacy skills

(2017) *Journal of Transcultural Nursing*, 28 (2), pp. 187-194.

- Bryant, T., Leaver, C., Dunn, J.

Unmet healthcare need, gender, and health inequalities in Canada

(2009) *Health Policy*, 91 (1), pp. 24-32.

- Byers, D., Garth, K., Manley, D., Chlebowy, D.O.

Facilitators and barriers to self-management of Type 2 diabetes among urban African American adults

(2016) *Journal of Health Disparities Research and Practice*, 9 (1), pp. 164-174.

- Chary, A., Greiner, M., Bowers, C., Rohloff, P.

Determining adult Type 2 diabetes-related health care needs in an indigenous population from rural Guatemala: A mixed-methods preliminary study

(2012) *BMC Health Services Research*, 12, p. 476.

- Chatterjee, S., Khunti, K., Davies, M.J.

Type 2 diabetes

(2017) *The Lancet*, 389, pp. 2239-2251.

- Chen, L., Pei, J.H., Kuang, J., Chen, H.M., Chen, Z., Wen Li, Z., Yang, H.Z.

Effect of lifestyle intervention in patients with Type 2 diabetes: A meta-analysis

(2015) *Metabolism: Clinical and Experimental*, 64 (2), pp. 338-347.

- Chong, S., Ding, D., Byun, R., Comino, E., Bauman, A., Jalaludin, B.

Lifestyle changes after a diagnosis of Type 2 diabetes

(2017) *Diabetes Spectrum*, 30 (1), pp. 43-50.

- Colagiuri, S., Vita, P., Cardona-Morrell, M., Singh, M.F., Farrell, L., Milat, A., Haas, M., Bauman, A.

The Sydney diabetes prevention program: A community-based translational study

(2010) *BMC Public Health*, 10, p. 328.

- Crandall, J., Schade, D., Ma, Y., Fujimoto, W.Y., Barrett-Connor, E., Flower, S., Dagogo-Jack, S., Andres, R.

The influence of age on the effects of lifestyle modification and metformin in prevention of diabetes

(2006) *J. Gerontol. A Biol. Sci. Med. Sci.*, 61 (10), pp. 1075-1081.

- **10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study**

(2011) NIH Public Access, 374 (9702), pp. 1677-1686.

- Dixon, A.
Motivation and confidence: What does it take to change behaviour?
(2008) *The Kings Fund*,
- Engbers, L.H., Mireille, N.M., Van Poppel, A., Paw, M.C., Van Mechelen, W.
The effects of a controlled worksite environmental intervention on determinants of dietary behavior and self-reported fruit, vegetable and fat intake
(2006) *BMC Public Health*, 6, pp. 1-10.
- Ezzati, M.
Worldwide trends in diabetes since 1980: A pooled analysis of 751 population-based studies with 4.4 million participants
(2016) *Lancet (London, England)*, 387, pp. 1513-1530. 10027
- Garrard, J.
(2017) *Health Sciences Literature Review Made Easy: The Matrix Method*, Fifth Edition. Burlington, Massachusetts: Jones & Bartlett Learning
- Ghimire, S.
Barriers to diet and exercise among Nepalese Type 2 diabetic patients
(2017) *International Scholarly Research Notices*, 2017, p. 1273084.
- Hankonen, N., Absetz, P., Haukkala, A., Uutela, A.
Socioeconomic status and psychosocial mechanisms of lifestyle change in a Type 2 diabetes prevention trial
(2009) *Annals of Behavioral Medicine*, 38 (2), pp. 160-165.
- Holman, R.R., Paul, S.K., Bethel, M.A., Matthews, A.A., Neil, H.A.W.
10-year follow-up of intensive glucose control in Type 2 diabetes
(2008) *New England Journal of Medicine*, 359 (15), pp. 1577-1589.
- Ide, N., LoGerfo, J.P., Karmacharya, B.
Barriers and facilitators of diabetes services in Nepal: A qualitative evaluation
(2018) *Health Policy and Planning*, 33 (4), pp. 474-482.
- Tuomilehto, J., Lindström, J., Eriksson, J.G., Valle, T.T., Hääläinen, H., Ilanne-Parikka, P., Keinänen-Kiukaanniemi, S., Uusitupa, M.
Prevention of Type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance
(2001) *The New England Journal of Medicine*, 344 (18), pp. 1343-1350.
- Jadawala, H.D., Pawar, A.B., Patel, P.B., Patel, K.G., Patel, S.B., Bansal, R.K.
Factors associated with non adherence to diet and physical activity among diabetes patients: A cross sectional study
(2017) *Ntl. J. Community Med.*, 8 (2), pp. 68-73.
- Joseph-Williams, N., Elwyn, G., Edwards, A.
Knowledge is not power for patients: A systematic review and thematic synthesis of patient-reported barriers and facilitators to shared decision making
(2014) *Patient Education and Counseling*, 94 (3), pp. 291-309.
- Kaltman, S., Talisman, N., Serrano, A., Cabassa, L.J., Magee, M.F., Pulgar-Vidal, O., Peraza, D., Cohen, N.R.

Type 2 diabetes and depression: Patient, family member, and primary care provider perspectives on the development of an integrated self-management intervention
(2015) *The Diabetes Educator*, 41 (6), pp. 763-772.

- Kanavos, P., Van Den Aardweg, S., Schurer, W.
Diabetes expenditure, burden of disease and management in 5 EU countries
(2012) *LSE Health*, 1, pp. 1-113.
- Khan, A., Al-Abdul Lateef, Z., Al Aithan, M., Bu-Khamseen, M., Al Ibrahim, I., Khan, S.
Factors contributing to noncompliance among diabetics attending primary health centers in the Al Hasa district of Saudi Arabia
(2012) *Journal of Family and Community Medicine*, 19 (1), pp. 26-32.
- Klein, S., Sheard, N.F., Pi-Sunyer, X., Daly, A., Wylie-Rosett, J., Kulkarni, K., Clark, N.G.
Weight management through lifestyle modification for the prevention and management of type 2 diabetes: Rationale and strategies
(2004) *Diabetes Care*, 27 (8), pp. 2067-2073.
- Klug, C., Toobert, D.J., Fogerty, M.
Healthy changesTM for living with diabetes: An evidence-based community diabetes self-management program cindy
(2008) *HHS Public Access*, 6 (34), pp. 1053-1061.
- Knowler, W.C., Barrett-Connor, E., Fowler, S.E., Hamman, R.F., Lachin, J.M., Walker, E.A., Nathan, D.M.
Reduction in the incidence of Type 2 diabetes with lifestyle intervention or metformin
(2002) *New England Journal of Medicine*, 346 (6), pp. 393-403.
- Kolb, H., Martin, S.
Environmental/lifestyle factors in the pathogenesis and prevention of Type 2 diabetes
(2017) *BMC Medicine*, 15 (1), pp. 1-11.
- Korkiakangas, E.E., Alahuhta, M.A., Husman, P.M., Keinänen-Kiukaanniemi, S., Taanila, A.M., Laitinen, J.H.
Motivators and barriers to exercise among adults with a high risk of Type 2 diabetes - A qualitative study
(2011) *Scandinavian Journal of Caring Sciences*, 25 (1), pp. 62-69.
- Laranjo, L., Neves, A.L., Costa, A., Ribeiro, R.T., Couto, L., Sá, A.B.
Facilitators, barriers and expectations in the self-management of Type 2 diabetes - A qualitative study from Portugal
(2015) *European Journal of General Practice*, 21 (2), pp. 103-110.
- Lawton, J., Ahmad, N., Hanna, L., Douglas, M., Hallowell, N.
I can't do any serious exercise: Barriers to physical activity amongst people of Pakistani and Indian origin with Type 2 diabetes
(2006) *Health Education Research*, 21 (1), pp. 43-54.
- Lemacks, J., Wells, B.A., Ilich, J.Z., Ralston, P.A.
Interventions for improving nutrition and physical activity behaviors in adult African American populations: A systematic review, January 2000 through December 2011
(2013) *Preventing Chronic Disease*, 10 (1), p. 120256.
- Li, G., Zhang, P., Wang, J., Gregg, E.W., Yang, W., Gong, Q., Li, H., Bennett, P.H.

The long-term effect of lifestyle interventions to prevent diabetes in the China Da Qing diabetes prevention study: A 20-year follow-up study
(2008) *The Lancet*, 371 (9626), pp. 1783-1789.

- Lindström, J., Peltonen, M., Eriksson, J.G., Hamalainen, H., Ilanne-Parikka, P., Keinanen-Kiukaanniemi, S., Uusitupa, M., Tuomilehto, J.

Determinants for the effectiveness of lifestyle intervention in the Finnish Diabetes Prevention Study
(2008) *Diabetes Care*, 31 (5), pp. 857-862.

- Lindstrom, J., Ilanne-Parikka, P., Peltonen, M., Aunola, S., Eriksson, J.G., Hemio, K., Hamalainen, H., Tuomilehto, J.

Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: Follow-up of the Finnish diabetes prevention study
(2006) *The Lancet*, 368 (9548), pp. 1673-1679.

- Lindström, J., Louheranta, A., Mannelin, M., Rastas, M., Salminen, V., Eriksson, J., Uusitupa, M., Tuomilehto, J.

The finnish Diabetes prevention study (DPS)
(2003) *Diabetes Care*, 26 (12), pp. 3230-3236.

- Malik, V.S., Popkin, B.M., Bray, G.A., Despres, J.P., Willett, W.C., Hu, F.B.

Sugar sweetened beverages and risk of metabolic syndrome and Type 2 diabetes: A meta-analysis

(2010) *Diabetes Care*, 33 (11), pp. 2477-2483.

- Malpass, A., Andrews, R., Turner, K.M.

Patients with Type 2 diabetes experiences of making multiple lifestyle changes: A qualitative study

(2009) *Patient Education and Counseling*, 74 (2), pp. 258-263.

- Mansyur, C.L., Rustveld, L.O., Nash, S.G., Jibaja-Weiss, M.L.

Social factors and barriers to self-care adherence in hispanic men and women with diabetes

(2015) *Patient Education and Counseling*, 98 (6), pp. 805-810.

- Marcy, T.R., Britton, M.L., Harrison, D.

Identification of barriers to appropriate dietary behavior in low-income patients with Type 2 diabetes mellitus

(2010) *Diabetes Therapy*, 2 (1), pp. 9-19.

- Mathew, R., Gucciardi, E., Melo, M.D., Barata, P.

Self-management experiences among men and women with Type 2 diabetes mellitus: A qualitative analysis

(2012) *BioMed Central Family Practice*, 13, p. 122.

- Medagama, A., Galgomuwa, M.

Lack of infrastructure, social and cultural factors limit physical activity among patients with Type 2 diabetes in Rural Sri Lanka, a qualitative study

(2018) *PLoS ONE*, 13 (2), pp. 1-8.

- Messina, J., Campbell, S., Morris, R., Eyles, E., Sanders, C.

A narrative systematic review of factors affecting diabetes prevention in primary care settings

(2017) *PLoS ONE*, 12 (5), pp. 1-20.

- Miller, K.M., Beck, R.W., Bergenstal, R.M., Goland, R.S., Haller, M.J., McGill, J.B., Rodriguez, H., Hirsch, B.
Evidence of a strong association between frequency of self-monitoring of blood glucose and hemoglobin A1c levels in T1D exchange clinic registry participants
(2013) *Diabetes Care*, 36 (7), pp. 2009-2014.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G.
Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement
(2009) *Journal of Clinical Epidemiology*, 62 (10), pp. 1006-1012.
- Norris, S.L., Zhang, X., Avenell, A., Gregg, E., Bowman, B., Schmid, C.H., Lau, J.
Long-term effectiveness of weight-loss interventions in adults with pre-diabetes: A review
(2005) *American Journal of Preventive Medicine*, 28 (1), pp. 126-139.
- Peimani, M., Monjazebi, F., Ghodssi-Ghassemabadi, R., Nasli-Esfahani, E.
A peer support intervention in improving glycemic control in patients with Type 2 diabetes
(2017) *Patient Education and Counseling*, 101 (3), pp. 460-466.
- Ratner, R.E.
An update on the diabetes prevention program
(2006) *Endocr. Pract.*, 12 (2), pp. 105-109.
- Riekert, K.A., Ockene, J.K., Pbert, L.
(2014) *The Handbook of Health Behavior Change Models*,
New York: Springer
- Rise, M.B., Pellerud, A., Rygg, L., Steinsbekk, A.
Making and maintaining lifestyle changes after participating in group based Type 2 diabetes self-management educations: A qualitative study
(2013) *PLoS ONE*, 8 (5), pp. 1-8.
- Roglic, G., Unwin, N., Bennett, P.H., Mathers, C., Tuomilehto, J., Nag, S., Connolly, V., King, H.
The burden of mortality attributable to diabetes: Realistic estimates for the year 2000
(2005) *Diabetes Care*, 28 (9), pp. 2130-2135.
- Sapkota, S., Brien, J.A.E., Gwynn, J., Flood, V., Aslani, P.
Perceived impact of Nepalese food and food culture in diabetes
(2017) *Appetite*, 113, pp. 376-386.
- Savoca, M., Miller, C.
Food selection and eating patterns: Themes found among people with Type 2 diabetes mellitus
(2001) *Journal of Nutrition Education*, 33 (4), pp. 224-233.
- Seuring, T., Archangelidi, O., Suhrcke, M.
The economic costs of Type 2 diabetes: A global systematic review
(2015) *Pharmacoeconomics*, 33 (8), pp. 811-831.
- Shanti, K., Aro, A.R.
Barriers and facilitators to physical activity among urban residents with diabetes in

Nepal(2018) *PLoS ONE*, 13 (6), pp. 1-21.

- Sohal, T., Sohal, P., King-Shier, K.M., Khan, N.A.

Barriers and facilitators for Type 2 diabetes management in South Asians: A systematic review(2015) *PLoS ONE*, 10 (9), pp. 1-15.

- Sun, Q., Spiegelman, D., Van Dam, R.M., Holmes, M.D., Malik, V.S., Willett, W.C., Hu, F.B.

White rice, brown rice, and risk of Type 2 diabetes in US men and women(2010) *Archives of Internal Medicine*, 170 (11), pp. 961-969.

- Umeh, A.E., Nkombua, L.

A study of the knowledge and practice of lifestyle modification in patients with Type 2 diabetes mellitus in middelburg sub-district of Mpumalanga(2018) *South African Family Practice*, 60 (1), pp. 26-30.**Correspondence Address**

Mohd Shukri N.A.; Kulliyah of Allied Health Sciences, Malaysia; email: norazwani@iium.edu.my

Publisher: Penerbit Universiti Kebangsaan Malaysia**ISSN:** 01266039**Language of Original Document:** English**Abbreviated Source Title:** Sains Malays.

2-s2.0-85071504945

Document Type: Article**Publication Stage:** Final**Source:** Scopus

Copyright © 2022 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

