



Type 2 Diabetes Mellitus among Immigrants in Canada: A Scoping Review on Self-Management

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ABSTRACT

BACKGROUND: Diabetes, a chronic disease commonly experienced by immigrants in Canada, can be complicated by cardiovascular and cerebrovascular disease, non-traumatic lower extremity amputation, diabetic retinopathy, and end-stage renal disease. Immigrants from Africa, South Asia, and Latin America are at risk of diabetes because of genetic, sociocultural, environmental, and economic factors. Self-management practices are critical in preventing poor outcomes for individuals with diabetes.

OBJECTIVES: This scoping review identifies gaps in the range, scope, nature, and characteristics of self-management practices among immigrants with type 2 diabetes in Canada.

METHODS: The review was initiated by accessing 152 primary studies and peer-retrieved articles published in English and retrieved from PubMed, CINAHL, Medline, Scopus, grey literature, and ProQuest Dissertation and Theses databases. After reviewing the abstracts and removing studies that failed to meet inclusion and exclusion criteria, 12 studies were selected for the review.

RESULTS: Self-management of type 2 diabetes among Canadian immigrants is influenced by language proficiency, finances, patient-provider preferences, and support from family, health providers, and peers. Length of stay in Canada, acculturation, and cultural beliefs were also found to impinge on diabetes self-management in immigrants.

CONCLUSION: More information about the influence of religion, the influence of immigration, and refugee status in specific ethnic groups, as well as studies on the lived experiences of immigrants with type 2 diabetes in Canada, are needed to guide nursing care and improve health outcomes of immigrants with type 2 diabetes mellitus.

Key Words: immigrants, Canada, self-management, type 2 diabetes, migrant, * self-care

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Introduction

Diabetes is a common chronic disease associated with significant morbidity and mortality for many Canadians. In 2010, approximately 2.7 million people in Canada (7.6%) had diabetes, and this number is expected to increase to 4.2 million by the year 2020 (Diabetes Canada, 2013). According to Diabetes Canada (2013), immigrants from southeast and south Asian countries and those with Hispanic and African descent have high rates of diabetes and the highest morbidity and mortality rates from diabetes-related cardiovascular disease. Immigrants bear a higher burden of poor health outcomes of diabetes, such as retinopathy, nephropathy, and neuropathy, as well as cardiovascular complications such as heart disease and stroke (Canadian Diabetes Association, 2018). These complications create a significant financial burden for individuals with diabetes and for the Canadian healthcare system (Canadian Diabetes Association, 2013).

Self-management practices are important to prevent complications of diabetes (Diabetes Canada, 2013). Participation in self-management activities, such as monitoring health parameters, maintaining a healthy lifestyle with a nutritious diet and exercise, and medication compliance can prevent acute complications of diabetes as well as monitoring and prevention of complications is important for improving health outcomes for individuals with diabetes (Sherefali et al., 2018). Little is known about the self-management practices of immigrants with diabetes. Identifying factors that influence self-management is critical in reducing diabetes-related mortality and morbidity in the Canadian population. This scoping review highlights the range, scope, nature, and characteristics of self-management practices in type 2 diabetes among immigrants in Canada and identifies knowledge gaps relevant to research, health promotion, and health policy in respect to diabetes.

Background

Canada is presently experiencing large-scale immigration and increasing ethnocultural diversity. Statistics Canada (2016) estimated the total number of immigrants in Canada to be 21.9% of Canada's total population. Many immigrants come from low to middle-income countries that are seeing a surge in non-communicable diseases such as diabetes (Shariful et. al., 2014). Immigrants arrive in Canada with health status somewhat better than that of the native-born population, but with increasing years in Canada, immigrants' health status converges to that of native-born Canadians (McDonald & Kennedy, 2004). This decrease in immigrant health status holds true for chronic diseases, including diabetes (Vang, Sigouin, Flenon, & Gagnon, 2017).

Diabetes is a chronic debilitating disease and some of its complications include cardiovascular disease end-stage renal disease, and it is a leading cause of amputation (Canadian Diabetes Association (CDA), 2013; Hux, Jacka, Fung, & Rothwell, 2003). Diabetes is a global pandemic; it is estimated that about 387 million people in the world live with type 2 diabetes, and approximately 4.9 million people died of diabetes and its related complications in 2014 (International Diabetes Federation, 2014). According to the Public Health Agency of Canada (2011), 2.4 million Canadians, including immigrants, are living with diabetes, and this number is expected to increase to 3.7 million from 2018-2019. Thus, diabetes inflicts significant impacts on population health and the Canadian healthcare system. Diabetes cost the Canadian healthcare system and the economy \$11.7 billion in 2010, and costs will rise to \$16 billion by 2020

(Canadian Diabetes Association, 2013). Immigrants, mainly those of African, South Asian, and Latin American descent, have a high prevalence of diabetes due to genetic, sociocultural, environmental, and economic factors (Adhikari & Sanou 2012). Immigrant populations suffer from limited language proficiency, low education levels, dietary changes, cultural factors, genetic predispositions, low economic status, and increased stress levels due to strain associated with changing home countries—all factors that can increase their predisposition to diabetes (Joo & Lee 2016; Sanou 2014; Smith-Miller, Berry, & Miller, 2017).

Despite available resources and initiatives to increase diabetes awareness within immigrant communities, approaches to effective self-management and prevention of diabetes have yet to reach this population (Canadian Diabetes Association Clinical Practice Guidelines Expert Committee, 2013). Diabetes education must include better self-care and good control over lifestyle (Bagnasco et. al. 2014). The needs, goals, and life experiences of a person with diabetes must be incorporated into an awareness of the consequences of this disease and self-management practices geared to decreasing negative outcomes. Diabetes Canada (2013) stated that close to 60% of mortality from diabetes-related complications can be significantly reduced by implementing applicable self-management.

Zhao, Suhonen, Koskinen, and Leino-Kilpi (2017) concluded that more rigorous diabetes self-management on a daily basis will decrease or prevent complications. Several studies have linked self-management education to a better understanding of diabetes and improved self-care behaviors. For example, Magwood, Zapka, and Jenkins (2008) claimed that in order to improve outcomes in people with type 2 diabetes and improve their quality of life, diabetes education should focus on seven self-care management strategies: healthy eating, physical activity, monitoring, taking medication, problem solving, healthy coping, and reducing risks. Good self-management reduces the complication rate and improves the quality of life of individuals living with diabetes (Bagnasco et al., 2014; Zhao et al., 2017).

Research Purpose

This scoping review identifies the range, scope, nature and characteristics of the evidence and related gaps on self-management of type 2 diabetes among immigrants in Canada. It seeks to answer the following questions:

- What is the range, scope, and nature of evidence on self-management of type 2 diabetes mellitus management among immigrants living in Canada?
- What are the characteristics of studies on self-management of type 2 diabetes among immigrants in Canada?
- What gaps exist in the literature on self-management of type 2 diabetes among immigrants in Canada?

Methods

An iterative approach similar to Arskey and O'Malley's (2005) scoping review framework was used to conduct a literature review that would provide answers to the three

questions above. The scoping review synthesized the studies and identified gaps in the range, scope, and nature of existing literature on the self-management of type 2 diabetes among immigrants living in Canada. Arksey and O'Malley's (2005) scoping review framework involved (i) developing a research question appropriate to the scoping review, and (ii) identifying studies relevant to the research question. Relevant studies were identified with the help of a librarian on July 25 and August 3, 2018. Articles published in English were selected from the following databases: PubMed, CINAHL, Medline, Scopus, Google Scholar, and ProQuest Dissertation and Theses databases. Keywords and subject headings were tailored for each database used in the search. The search contained four concepts: Type 2 diabetes, * self-care* or self-management, *immigrants* and Canada* (see Appendix B for subject headings and keywords used in the search).

Study Selection

The initial literature search with the specified parameters resulted in 152 studies. Studies that did not meet the inclusion criteria were eliminated and duplicates were removed. The resulting 29 studies were reviewed and two other reviewers to make sure that the authors examined self-management of type 2 diabetes in Canadian immigrant populations. Relevancy, each article was subjected to a review of the title, a review of the abstract, a full-text screening, and a manual review of the reference list. Twelve articles that met the inclusion and exclusion criteria were selected and included in the scoping review. In addition, the reference list of each article that met the inclusion criteria was reviewed to identify further relevant articles (see Figure 1 Appendix B for the article selection process).

Inclusion and Exclusion Criteria

The inclusion criteria were English peer-reviewed publications conducted in Canada that focused on type 2 diabetes self-management by immigrants ≥ 18 years of age. Opinion papers were excluded from the review. Articles that focused on studies of the risk of developing diabetes, type 1 diabetes, diabetes in nonimmigrant populations, diabetes in pediatric populations, gestational diabetes, and diabetes screening were excluded from the study. The following data were retrieved from the selected articles: Author, year of publication, location, study population, sample size, aim of the study, and method of the study (Table 1, Appendix A). Studies were separated into interventional and non-interventional studies (Tables 2 and 3, Appendix A).

Data Analysis

The studies were summarized, and findings were reported using the six steps: thematic analysis, familiarization with the data, coding of the data, searching for themes relevant to the research question, defining themes, reviewing the themes, and finally reporting the findings described by Arksey and O'Malley (2005).

Results

Characteristics of The Background Studies

Twelve studies were included in the review. The general characteristics of the studies are summarized in Table 1 (Appendix A). All 12 studies examined the self-management of type 2 diabetes mellitus of immigrant individuals in Canada but used different methodologies to examine the topic of interest. The studies were largely cross-sectional ($n = 5$) in nature with large sample sizes. Nine of the studies used a quantitative methodology and three studies used a qualitative methodology to explore the self-management of type 2 diabetes among Canadian immigrants; two studies were interventional, and ten studies were non-interventional. Ten studies ($n = 10$) were conducted in Ontario and two studies ($n = 2$) were conducted in Vancouver, British Columbia.

Four studies focused on different types of Canadian immigrant education concerning type 2 diabetes: self-management education (Cauch-Dudek et al., 2013), culturally appropriate education (Dahal et al., 2014), education of peer support providers (Tang et al., 2013), and education with peer support (Tang et al., 2015). Six studies focused on specific health services used and information-seeking for type 2 diabetes care and self-management activities, such as self-monitoring of blood glucose (SMBG)] (Gucciardi et al., 2013a; Hyman et al. 2012; Hyman et al., 2014; Hyman et al., 2017; Gucciardi et al., 2006), and combining diabetes self-management with cardiac rehabilitation (Nielsen et al., 2012). Two studies explored the relationship between gender and ethnocultural barriers and one examined self-management disparities between immigrants and nonimmigrants with type 2 diabetes mellitus in Canada (Nielsen et al., 2012; Ponzio et al., 2006).

Most of the studies described the recruitment of immigrants as being challenging. Ten studies did not specify the time frame of immigration or the age of the immigrant, and two studies recruited recently immigrated adults with type 2 diabetes. Visible minority status and country of origin were specified in all studies, and five studies specifically focused on Asian populations from Sri-Lanka, Bangladesh, Pakistan, and China. Two studies focused on black Caribbean immigrants to Canada and the other five studies focused on other visible ethnicities (Portuguese, Cantonese, Egyptian, Guyanese, Italian, Greek, East Indian, Jamaican, Malaysian, Filipino, Slovakian, Trinidadian, Punjabi, Nepalian, Somalian, and Latin American).

Three main themes emerged from the analysis of the literature regarding the self-management of type 2 diabetes: (a) self-management participation, (b) barriers to self-management, and (c) facilitators of self-management.

Diabetes Self-Management Participation

Studies have revealed that, compared to individuals in the general Canadian population who have type 2 diabetes, immigrants with type 2 diabetes perform self-management activities at lower levels (Cauch-Dudek et al., 2013; Grant & Retnakaran, 2012; Hyman et al., 2014). The review of the literature indicated that the extent of self-management of type 2 diabetes performed by Canadian immigrants was influenced by their length of stay in Canada. Recent immigrants

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who had lived in Canada for less than 10 years were less likely than those who had lived in Canada for a longer period to participate in any program of self-management activity for type 2 diabetes, particularly in important self-management activities like checking blood glucose levels regularly and performing regular foot examinations (Cauch-Dudek et al., 2013; Hyman et al., 2014). There were conflicting findings regarding self-monitoring of blood glucose (SMBG) levels in immigrant groups. Gucciardi et al. (2013a) noted that some immigrants did not recognize the relevance or benefit of SMBG, whereas Grant and Retnakaran (2012) found no significant difference between diabetic immigrants and non-immigrants with type 2 diabetes in regard to SMBG. Additionally, no significant differences between diabetic immigrants and diabetic nonimmigrants were recorded regarding hemoglobin A1C testing, urine protein testing, eye examinations, and foot examinations (Grant & Retnakaran, 2012), and immigrants were less likely than nonimmigrants to perform weekly foot examinations (Grant & Retnakaran, 2012; Hyman et al., 2017). Gender differences were identified in the types of self-management activities that immigrants participated in. Men focused on practical aspects of self-management such as self-directed learning, SMBG, and experimented with strategies that could decrease their reliance on medication, whereas women focused on the affective aspects of SMBG, dietary restrictions and support groups for self-management.

Barriers to Diabetes Self-Management

The studies reviewed here identified some of the major barriers to diabetes self-management, such as financial stressors, low levels of health literacy, language barriers, cultural beliefs, and lack of social support. Financial barriers were specifically red flags, as many immigrants reported inadequate money to purchase diabetes self-management supplies (Cauch-Dudek et al., 2013; Gucciardi et al., 2013a Hyman et al., 2017; Hyman et al., 2012; Nielsen et al., 2012;). Immigrants who had been in Canada for less than 10 years were found to have insufficient funds to purchase medical supplies and equipment for self-management activities, and most lacked the necessary health insurance to cover medical expenses. Canadian immigrants reportedly had low levels of health care literacy due to a lack of proficiency in the English language, and these factors were seen to have a detrimental effect on immigrants' health and diabetes self-management (Hyman et al., 2017; Hyman et al., 2012; Grant & Retnakaran, 2012; Gucciardi et al., 2006 Ponzio et al., 2006). Health care providers were seen to lack cultural sensitivity, sometimes offering services in a manner not appropriately responsive to the attitudes, feelings, or circumstances of this population (Dahal et al., 2014; Hyman et al., 2017; Hyman et al., 2012; Grant & Retnakaran, 2012; Nielsen et al., 2012), and culturally dictated gender roles where, it is the responsibility for the wives to prepare meals and grocery shopping, even though the male is the one suffering from the type 2 diabetes (Ponzio et al., 2006). Those were identified as a barrier to self-management of type 2 diabetes. The culture of immigrants with type 2 diabetes influences their adherences to dietary recommendations as well as self-management knowledge and practices. Lack of social support was also found to be a major barrier to self-management of type 2 diabetes (Grant & Retnakaran, 2012; Hyman et al., 2017; Nielsen et al., 2012). Social support can provide information about ways to engage in health promotion activities, and ways to manage emotions. Canadian immigrants were found to lack access to support from community and health resources (Salma et al., 2018).

Facilitators of Diabetes Self-Management

Facilitators of self-management of type 2 diabetes identified in the studies were support systems, hybridization of diabetes knowledge, and perceptions of disease susceptibility. Family support (Gucciardi et al., 2013a; Ponzio et al., 2006), and education with peer support (Tang et al., 2015, Tang et al., 2013) were found to be effective strategies to improve the health of Canadian immigrants with type 2 diabetes. Family members can assist individuals with type 2 diabetes in performing self-management activities and meal preparation (Gucciardi et al., 2013a; Ponzio et al., 2006). Some immigrants with type 2 diabetes were reported to rely on ongoing encouragement from their physicians to motivate them to perform self-monitoring of blood glucose (SMBG) (Gucciardi et al., 2013a). Hybridizing knowledge was found as a facilitator as many immigrants were blending new health behaviors with previous cultural knowledge for instance some emphasized the healing effects of reinstating a healthier Mediterranean diet and veggies derived from the biographical past, and the stress-release associated with feeling at home into their everyday routine to manage their type 2 diabetes. (Nielsen et al., 2012). A perceived susceptibility to disease and a perceived benefit of self-management were positive motivators to self-management practices (Gucciardi et al., 2013a; Ponzio et al., 2006). Perceived benefits are related to the perception of the usefulness of taking action to reduce disease risk. Patient beliefs regarding the severity and susceptibility of their disease were found to be important in influencing preventive self-care behaviors.

Discussion

Participation in self-management activities, such as monitoring health parameters, maintaining a healthy lifestyle with a nutritious diet and exercise, and medication compliance, are important practices for improving health outcomes for individuals with type 2 diabetes (Sherefali et al., 2018). One issue that dominated the findings was the lack of financial resources and supplementary health insurance that could support effective self-management of type 2 diabetes in Canadian immigrants (Hyman et al., 2017; Hyman et al., 2012; Nielsen et al., 2012; Cauch-Dudek et al. 2013; Gucciardi et al., 2013a). This finding is well supported in other studies in western contexts (Gucciardi et al., 2013b; Karter et al., 2000;) where out-of-pocket expenditures impose barriers to self-care practices in type 2 diabetes for immigrant populations. Canada has a publicly funded healthcare system (Medicare) mandated through the Canadian Health Act. However, Medicare falls short of meeting the needs of Canadians living with chronic illnesses (Hennessy et al., 2016). Canadians need private health insurance to supplement Medicare coverage, and the cost of private health insurance can be out of range for many immigrants with low income and precarious employment. Efforts to address self-management in immigrant populations must address relevant financial stressors.

Other issues that dominated the review were the influences of culturally sensitive care for and the low English language proficiency of Canadian immigrants (Dahal et al., 2014; Hyman et al., 2017; Hyman et al., 2012; Grant & Retnakaran, 2012; Nielsen et al., 2012; Ponzio et al., 2006). Similar to the findings of this Canadian scoping review, comparative studies and randomized-control trials conducted in the United States, Europe, and Asia indicate that cultural and language factors are associated with patient outcomes in diabetes management (Kim & Lee,

2016; Smith-Miller, Berry, & Miller, 2017), culturally appropriate interventions are essential to diabetes self-management in immigrant populations (Creamer et al., 2016), and culturally-based diabetes self-management education provides better outcomes when compared to general diabetes education (Guccuardi et al., 2013b). Immigrants experience challenges in following diet and physical activity recommendations, they feel cultural stigma, they suffer poor relationships and interactions with healthcare professionals, they often face immigration problems, and their inadequate financial resources (as well as lack of medical instruction) can result in poor medication compliance. All these factors necessitate a comprehensive multipronged approach to address self-management in immigrant populations. These findings illustrate the importance of cultural and language factors in self-management and in improving patient health outcomes in the management of type 2 diabetes. Although we know that culturally and linguistically tailored self-management programs are effective in improving self-management and health outcomes in immigrant populations, there remains a lack of wide and sustainable adoption of such programming in the Canadian context.

A lack of availability of social support has a major influence on a person's ability to engage in effective self-management behaviors. Social support has been defined as "cognitive appraisal of being connected to others, and knowing that support is there if needed" (Barrera, 1986, p. 416, cited in Brooks, 2017). Supportive resources can be emotional, financial, or informational, and access to community resources can provide all three. The relationship between lack of social support and depression among Canadian immigrants is well documented. Evidence of depression has consistently pointed to a lack of social support in managing chronic illnesses, including diabetes (Salma et al., 2018). Depression in immigrants has been associated with an increased risk of distress and with mental illness (Guruge et al., 2015). Social support can serve as a barrier against the harmful effects of stress. Social support is a coping resource that protects against physical and mental health risks (Guruge et al., 2015). Therefore, self-management programs or interventions need to address these aspects of social support to be effective and to improve health outcomes of Canadian immigrants.

Strengths and Limitations of the Study

To our knowledge, this is the first scoping review to examine literature that describes the range, scope, nature, and characteristics of self-management approaches targeting type 2 diabetes mellitus management among immigrants living in Canada. Another strength is the use of a methodologically sound and transparent processes to identify and map the literature using two reviewers. Four limitations to this review are described. First, it is possible that despite the use of an exhaustive search strategy some literature could have been missed, particularly the grey literature and thus not included in this review. Second, the low number of qualitative studies limited a rich descriptive and contextual understanding of influences on type 2 diabetes self-management in this population. Third, not all of the 12 studies reviewed had a sample that consisted solely of Canadian immigrants with type 2 diabetes (Hyman et al., 2014; Tang et al., 2013). Therefore, the heterogeneity in the reviewed studies limits the effectiveness of this review in identifying the scope and nature of self-management influences on type 2 diabetes among immigrants in Canada. Fourth, the exclusion of non-English studies limited the scope of the review because it may have excluded studies in other languages especially French. However, all of the studies support the existing literature in other Western contexts regarding barriers and

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facilitators of type 2 diabetes self-management in immigrant populations. Given the small number of studies, conclusions cited here concerning type 2 diabetes among immigrants in Canada should be interpreted with caution.

Gaps in The Literature

While this study provides some insight into type 2 diabetes among immigrants in Canada, it is important that the gaps in the reviewed studies be examined. There was a lack of studies investigating the influence of important issues—such as immigration status and refugee status—for this population. Knowledge about the influence of refugee and immigration status can be integrated in the nursing research to improve health outcomes for this population. Such research may provide new insights into whether newer immigrants and refugees require extra support to acquire the necessary skills for diabetes self-management.

Another gap in the literature was the low number of qualitative studies that could provide rich descriptions of self-management approaches of immigrants with type 2 diabetes in Canada. There were no studies of lived experiences of Canadian immigrants with type 2 diabetes who apply self-management practices. Lived experiences in the study population will provide detailed information about challenges and facilitators of diabetes self-management from the perspectives. Future studies using qualitative approaches such as phenomenology and narrative inquiry are needed to further explore this research topic.

There were no studies in the reviewed articles that examined the influence of religious beliefs and practices on diabetes self-management. Religion is an important subject for research investigation, as religious practices such as fasting can influence diabetes self-management practices, including self-monitoring of blood glucose (SMBG), diet, and exercise. A study conducted in the United States among Christian African Americans by Polzer Casarez et al. (2010), showed that spirituality and religion might reduce efforts toward self-management, attention to diet, and exercise. Also, some studies have shown that immigrants ignore medical advice in favor of spiritual practices such as fasting during Ramadan (a Muslim religious ritual) (Lundberg & Thrakul, 2013). Future studies examining the influence of immigrants' religious practices on diabetes self-management are needed to obtain evidence to guide nursing care of immigrants who ascribe to different religions.

The lack of studies examining diabetes self-management among immigrants from African and Arab decent, two of the fastest growing immigrant groups in Canada (Statistics Canada, 2016), revealed a gap in the literature on self-management of type 2 diabetes in specific ethnic groups. Increasing rates of diabetes have been noted in both Arab (Musaiger & Al-Hazzaa, 2012) and African populations (Guccuardi et al., 2013b), but their experiences have not been explored in depth in the Canadian context. Another gap in the available literature was that only studies conducted in Ontario and British Columbia were appropriate for this review. The lack of studies in Quebec may be due to the elimination of French articles from the search. Given the fast-growing proportion of immigrants in Saskatchewan and Alberta (Statistics Canada, 2016), future studies should be conducted in these provinces. There were no studies examining the effects of policies to provide financial support, language support, and to increase access to self-management services. The evidence from policy studies can be used to develop new policies or

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to modify existing policies to improve the health outcomes of Canadian immigrants with type 2 diabetes.

Conclusion

This scoping review identified gaps in the range, scope, nature, and characteristics of the existing literature on the self-management of type 2 diabetes among immigrants in Canada. This review revealed that self-management among Canadian immigrants is influenced by language proficiency; finances; patient-provider preferences; support from family, providers, and peers; length of stay in Canada; acculturation; and cultural beliefs. Future studies are needed to examine self-management of type 2 diabetes in specific ethnic groups, and the influence of religion, refugee status, and immigration on the self-management of this disease. These findings will inform healthcare leaders, clinicians, program developers, and policy makers about factors that influence self-management in immigrants with type 2 diabetes.

References

- Adhikari, R., & Sanou, D. (2012). Risk factors of diabetes in Canadian immigrants: A synthesis of recent literature. *Canadian Journal of Diabetes*, 36, 142–150.
<https://doi.org/10.1016/j.jcjd.2012.06.001>
- Arksey, H., & O'malley, L. (2005). Scoping Studies: Towards a Methodological Framework. *International Journal of Social Research Methodology*, 8(1), 19-32.
doi:10.1080/1364557032000119616
- Bagnasco, A., Di Giacomo, P., Da Rin Della Mora, R., Catania, G., Turci, C., Rocco, G., & Sasso, L. (2014). Factors influencing self-management in patients with type 2 diabetes: A quantitative systematic review protocol. *Journal of Advanced Nursing*, 70, 187-200.
doi:10.1111/jan.12178
- Brooks, A. T., Lòpez, M. M., Ranucci, A., Krumlauf, M., & Wallen, G. R. (2017). A qualitative exploration of social support during treatment for severe alcohol use disorder and recovery. *Addictive behaviors reports*, 6, 76-82.
- Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. (2013). Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Can Journal of Diabetes*, 37
- Canadian Diabetes Association. (2018). Diabetes Statistics in Canada. Retrieved from <http://www.diabetes.ca/how-you-can-help/advocate/why-federal-leadership-is-essential/diabetes-statistics-in-canada>
- Cauch-Dudek, K., Victor, J. C., Sigmond, M., & Shah, B. R. (2013). Disparities in attendance at diabetes self-management education programs after diagnosis in Ontario, Canada: A cohort study. *BioMedCentral Public Health*, 13(1). <http://www.biomedcentral.com/1471-2458/13/85>
- Creamer, J., Attridge, M., Ramsden, M., Cannings-John, R., & Hawthorne, K. (2016). Culturally appropriate health education for Type 2 diabetes in ethnic minority groups: An updated Cochrane Review of randomized controlled trials. *Diabetic Medicine*, 33, 169-183.
- Dahal, G., Qayyum, A., Ferreyra, M., Kassim, H., & Pottie, K. (2014). Immigrant community leaders identify four dimensions of trust for culturally appropriate diabetes education and care. *Journal of Immigrant and Minority Health*, 16, 978-984.
- Diabetes Canada. (2013). Diabetes: Canada at a tipping point. Retrieved from www.diabetes.ca/CDA/media/documents/.../canada-at-the-tipping-point-english.pdf
- Grant, R. C., & Retnakaran, R. R. (2012). Healthcare, self-care, and health status of immigrants and non-immigrants with type 2 diabetes in the Canadian community health survey. *Diabetes Research and Clinical Practice*, 98, 320-328.
- International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019, Article # 38. ISSN 2291-6679. This work is licensed under a Creative Commons Attribution-Non-Commercial 4.0 International License <http://creativecommons.org/licenses/by-nc/4.0/>**

Type 2 Diabetes Mellitus Among Immigrants in Canada: A Scoping Review on Self-Management.

- Gucciardi, E., Fortugno, M., Senchuk, A., Beanlands, H., McCay, E., & Peel, E. E. (2013a). Self-monitoring of blood glucose in Black Caribbean and South Asian Canadians with non-insulin treated Type 2 diabetes mellitus: A qualitative study of patient's perspectives. *BioMedCentral Endocrine Disorders*, 13(1). <http://www.biomedcentral.com/1472-6823/13/46>
- Gucciardi, E., Chan, V.W. S., Manuel, L., & Sidani, S. (2013b). A systematic literature review of diabetes self-management education features to improve diabetes education in women of Black African/Caribbean and Hispanic/Latin American ethnicity. *Patient Education and Counseling*, 92, 235-245.
- Gucciardi, E., Smith, P., & DeMelo, M. (2006). Use of diabetes resources in adults attending a self-management education program. *Patient Education & Counseling*, 64(1-3), 322-33.
- Guruge, S, Thomson, M.S, George, U., & Chaze F. (2015). Social support, social conflict, and immigrant women's mental health in a Canadian context: A scoping review. *Journal of Psychiatric & Mental Health Nursing*. 22, 655-667. doi:10.1111/jpm.12216.
- Hennessy, D., Sanmartin, C., Ronksley, P., Weaver, R., Campbell, D., Manns, B., Hemmelgarn, B. (2016). Out-of-pocket spending on drugs and pharmaceutical products and cost related prescription non-adherence among Canadians with chronic disease. Retrieved from <http://www.statcan.gc.ca/pub/82-003-x/2016006/article/14634-eng.htm>.
- Hux, J. E., Jacka, R., Fung, K., & Rothwell, D. M. (2003). Diabetes and peripheral vascular disease. *Diabetes in Ontario: An ICES Practice Atlas* (pp. 129-149). Toronto, Canada: Institute for Clinical Evaluative Sciences
- Hyman, I., Shakya, Y., Jembere, N., Gucciardi, E., & Vissandjee, B. (2017). Provider- and patient-related determinants of diabetes self-management among recent immigrants. *Canadian Family Physician*, 63(2), e137-e144.
- Hyman, I., Gucciardi, E., Patychuk, D., Rummens, J. A., Shakya, Y., Kljubic, D., Boqaileh, F. (2014). Self-management, health service use and information seeking for diabetes care among black Caribbean immigrants in Toronto. *Canadian Journal of Diabetes*, 38(1), 32-37.
- Hyman, I., Patychuk, D., Zaidi, Q., Kljubic, D., Shakya, Y. B., Rummens, J. A., & Vissandjee, B. (2012). Self-management, health service use and information seeking for diabetes care among recent immigrants in Toronto. *Chronic Diseases and Injuries in Canada*, 33(1), 12-18.
- International Diabetes Federation. (2014). *IDF Diabetes Atlas*. 6th ed. Retrieved from: http://www.idf.org/sites/default/files/Atlas-poster-2014_EN.pdf.
- Joo, J., & Lee, H. (2016). Barriers to and facilitators of diabetes self-management with elderly Korean-American immigrants. *International Nursing Review*, 63, 277-284. doi:10.1111/inr.12260
- International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019, Article # 38. ISSN 2291-6679. This work is licensed under a Creative Commons Attribution-Non-Commercial 4.0 International License <http://creativecommons.org/licenses/by-nc/4.0/>**

Type 2 Diabetes Mellitus Among Immigrants in Canada: A Scoping Review on Self-Management.

- Karter AJ, Ferrara A, Darbinian JA, Ackerson LM, & Selby JV. (2000). Self-monitoring of blood glucose: language and financial barriers in a managed care population with diabetes. *Diabetes Care*, 23(4)
- Kim, S. H., Lee, A. (2016). Health-literacy-sensitive self-management interventions. *Worldviews on Evidence-Based Nursing*, 13(4), 324-333.
- Lundberg, P.C., Thrakul, S. (2013). Religion and self-management of Thai Buddhist and Muslim women with type 2 diabetes. *J Clinical Nurs* 22: 1907–16.
- Magwood, G., Zapka, J., & Jenkins, C. (2008). A review of systematic reviews evaluating diabetes interventions: Focus on quality of life and disparities. *Diabetes Educator*, 34(2), 242-265.
- McDonald, J. T., Kennedy, S. (2004). Insights into the ‘healthy immigrant effect’: Health status and health service use of immigrants to Canada. *Social Science & Medicine*, 591613-1627. doi: 10.1016/j.socscimed.2004.02.004
- Musaiger, A. O., & Al-Hazzaa, H. M. (2012). Prevalence and risk factors associated with nutrition-related noncommunicable diseases in the Eastern Mediterranean region. *International Journal of General Medicine*, 5, 199–217. doi: 10.2147/IJGM.S29663.
- Nielsen, L. S., Angus, J. E., Lapum, J., Dale, C., Kramer-Kile, M., Abrahamson, B., . . . Clark, A. (2012). “I can’t just follow any particular textbook”: Immigrants in cardiac rehabilitation. *Journal of Advanced Nursing*, 68(12), 2719-2729.
- Public Health Agency of Canada (2011). Diabetes in Canada: Facts and Figures from a Public Health Perspective. Ottawa. Retrieved from <http://www.phacaspc.gc.ca/login.ezproxy.library.ualberta.ca/cd-mc/publications/diabetes-diabete/facts-figures-faits-chiffres-2011/index-eng.php>.
- Polzer Casarez RL, Engebretson JC, Ostwald SK (2010) Spiritual practices in self-management of diabetes in African Americans. *Holistic Nurs Practice* 24: 227–37.
- Ponzo, M. G., Gucciardi, E., Weiland, M., Masi, R., Lee, R., & Grace, S. L. (2006). Gender, ethnocultural, and psychosocial barriers to diabetes self-management in Italian women and men with type 2 diabetes. *Behavioral Medicine*, 31(4), 153-160.
- Salma, J., Keating, N., Ogilvie, L., & Hunter, K. F. (2018). Social dimensions of health across the life course: Narratives of Arab immigrant women ageing in Canada. *Nursing Inquiry*, 25(2), 1. <https://doi-org.login.ezproxy.library.ualberta.ca/10.1111/nin.12226>
- Sanou, D., O'Reilly, E., Ngnie-Teta, I., Batal, M., Mondain, N., Andrew, C., & Bourgeault, I. (2014). Acculturation and Nutritional Health of Immigrants in Canada: A Scoping Review. *Journal of Immigrant & Minority Health*, 16(1), 24-34. doi:10.1007/s10903-013-013-
- International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019, Article # 38. ISSN 2291-6679. This work is licensed under a Creative Commons Attribution-Non-Commercial 4.0 International License <http://creativecommons.org/licenses/by-nc/4.0/>**

- Shariful Islam, S. M., Purnat, T. D., Anh Phuong, N. T., Mwingira, U., Schacht, K., & Fröschl, G. (2014). Non-Communicable Diseases (NCDs) in developing countries: A symposium report. *Globalization & Health*, 10(1), 1-12. doi:10.1186/s12992-014-0081-9 9823-7
- Sherifali, D., Berard, L. D., Gucciardi, E., MacDonald, B., & MacNeill, G. (2018). *Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*. *Canadian Journal of Diabetes*, 42(Suppl 1), S88-S103. Retrieved from <http://guidelines.diabetes.ca/fullguidelines>
- Smith-Miller, C. A., Berry, D. C., & Miller, C. T. (2017). Diabetes affects everything: Type 2 diabetes self-management among Spanish-speaking Hispanic immigrants. *Research in Nursing & Health*, 40, 541-554. doi:10.1002/nur.21817
- Statistics Canada (2016). Immigration and ethno cultural diversity from the 2016 Census. Retrieved from <http://www.statcan.gc.ca/daily-quotidien/171025/dq171025b-eng.htm>
- Tang, T. S., Sohal, P. S., & Garg, A. K. (2015). Rethinking peer support for diabetes in Vancouver's South-Asian community: A feasibility study. *Diabetic Medicine*, 32, 1077-1084.
- Tang, T. S., Sohal, P. S., & Garg, A. K. (2013). Evaluating a diabetes self-management support peer leader training programme for the English- and Punjabi-speaking South-Asian community in Vancouver. *Diabetic Medicine*, 30(6), 746-752.
- Vang, Z. M., Sigouin, J., Flenon, A., & Gagnon, A. (2017). Are immigrants healthier than native-born Canadians? A systematic review of the healthy immigrant effect in Canada. *Ethnicity & Health*, 22, 209-241. doi:10.1080/13557858.2016.1246518
- Zhao, F., Suhonen, R., Koskinen, S., & Leino-Kilpi, H. (2017). Theory-based self-management educational interventions on patients with type 2 diabetes: A systematic review and meta-analysis of randomized controlled trials. *Journal of Advanced Nursing*, 73, 812-833.

Appendix A

Table 1: Characteristic of studies

Author, Year, Country	Study population, Sample size, Visible Minority	Aim	Methodology
Cauch-Dudek et al. (2013) Ontario, Canada	Adults N= 46,553 Immigrants and Non Immigrants	To determine the frequency of diabetes self-management education program utilization and evaluate clinical or demographic disparities in utilization	population-based cohort study
Hyman et al. (2017). Toronto, Canada	Adult recent immigrants N=130 From Sri-Lanka, Bangladesh, Pakistan, and China	To examine provider- and patient-related characteristics related to diabetes self-management among recent immigrants	Cross-sectional study
Hyman et al. (2012). Toronto, Canada	Adult recent immigrants with type 2 diabetes N=54 Canadian born N= 130 recent immigrants From Sri-Lanka, Bangladesh, Pakistan, and China	To examine the self-management practices, health services use and information-seeking for type 2 diabetes care among adult men and women from four recent immigrant communities in Toronto	Cross-sectional study
Hyman et al. (2014). Toronto, Canada	Adult immigrants and Canadian-born participants with type 2 diabetes N= 48 Black Caribbean N= 54 Canadian born	To examine diabetes self management practice and access to information and care among black-Caribbean immigrants with type 2 diabetes residing in Toronto.	Cross- sectional research design
Grant & Retnakaran (2012) Canada	Adults with type 2 diabetes N=7658 General immigrants	To examine healthcare, self-management and self-care, and health status disparities between immigrants and non-immigrants with type 2 diabetes mellitus in Canada.	Cross-sectional study

Gucciardi et al. (2013) Greater Toronto Area, Canada	Adults with type 2 diabetes N=12 Black Caribbean, South Asians	To examine the opinions and self-monitoring of blood glucose (SMBG) practices among South Asians and Black Caribbean individual's non-insulin treated type 2 diabetes	Descriptive qualitative study
Gucciardi et al. (2006) Toronto, Canada.	Adults with type 2 diabetes N= 267 Canadian immigrants (86.9%) English (42.3%), Portuguese (39.3%), and Cantonese (18.4%).	(a)To identify resources patients' use to acquire information or assistance in the management of their diabetes. (b) To identify those who are more or less likely to use a variety of diabetes resources.	Questionnaire
Ponzo et al. (2006) Greater Toronto Area, Canada	Adults with type 2 diabetes N= 50 Italian immigrant women and men	The study was to explore the relationship among gender and ethnocultural barriers, family support, depressive symptomatology, and illness perceptions on self-reported diabetes self-management in Italian women and men with type 2 diabetes living in Canada.	Cross-sectional study
Tang et al. (2014) Vancouver, Canada	South Asian adults with type 2 diabetes N=41 South Asian Community (Punjabi)	To examine the feasibility and impact of a diabetes education intervention involving peer support for individuals with type 2 diabetes on glycemic	Quasi-experimental study

		control and diabetes distress.	
Tang et al. (2013) Vancouver, Canada	Adult immigrant N=8 South Asian	To evaluate the perceived efficacy of peer support training program for adults with type 2 diabetes	Quasi-experimental study
Nielsen et al. (2012) Ontario, Canada	Adult immigrant N=18 Egyptians, Guyana, Italian, Pakistan, Portuguese, Sri Lanka, Greece, India, Jamaica, Malaysia, Philippines, Slovakia, Trinidad	To examine the circumstances for immigrants combining diabetes self-management with cardiac rehabilitation	Ethnography
Dahal et al. (2014) Ontario, Canada	Adult immigrants at high risk for type 2 diabetes N=131 Punjabi, Nepali, Somali and Latin America	To explore the views of immigrant community leaders regarding culturally appropriate diabetes education and care.	Focus group study Exploratory workshop

Table 2: *Interventional studies*

Author, Year Country	Interventions Duration and frequencies Facilitators	Interventions description	Measurements	Outcomes	Limitations
Tang et al. (2014) Vancouver Canada	6 weeks of self management education sessions (75 mins in length) 18weeks of self management support sessions (60 mins in length) Facilitated by certified diabetes educators and two peer leaders.	The intervention was based on patient empowerment for making more than 95% of the daily self-management decisions. Behaviour modification activities Reflecting on recent self management challenges Sharing emotions associated with those challenges Engaging in group-based problem solving. Asking self-management questions Seeing behaviour goals	Blood test Diabetes distress scale Open-ended questions Demographic items including age, gender, country of birth, years lived in Canada, diabetes duration, marital status educational level, household incomes, employment status.	HbA1c showed no changes at 6 weeks and deteriorated at 24 weeks. Diabetes distress scores improved at 6 weeks with peer support	Feasibility study location was not the optimum setting The learning approach was not suitable for individual with low literacy

		and making action plan			
Tang et al. (2013) Vancouver Canada	5 sessions, 4 hours per session	Five step behavioral goal setting Developing effective communication and listening skills Empowerment-based facilitating behaviour change skills Self-efficacy	Active listening observation scale DVD of Punjabi speaking patients making statements reflecting their self-management challenges Six item quantitative survey to assessed behavioral skills	Peer leaders were trained with the necessary skills (active listening, empowerment-based facilitation, five-step goal setting, and self efficacy) to facilitates diabetes self management support intervention	Recruitment targeted the general population rather than individual with the disease The program was lengthy and intense, and the feasibility was a concern.

Table 3: Non-interventional studies

Author, Year, Country	Facilitators of self-Management	Barriers of self-Management	Limitations of the studies
Cauch-Dudek et al. (2013) Ontario, Canada	Younger age Patients in rural areas were able to attend self-management education program utilization.	Less likely to attend self-management were those with Advanced age, recent immigrants, no family physician, mental health, medical comorbidity, and low socioeconomic status	Unable to measure education level Employment level Health literacy Language proficiency Type of diabetes not distinguished Absentees not captured
Hyman et al. (2017). Toronto, Canada	N/A	Financial hardship Lack of culturally sensitive care Perceived poor quality of patient to provider interactions Low level of health literacy, Mental illness Language barriers Limited social support	were unable to examine areas of vulnerability within recent immigrants due to small and non-randomized sample. Results are based on self reporting which is prone to bias. Some questions were developed specifically and not validated in previous research
Hyman et al. (2012). Toronto, Canada	Region of origin (Recent immigrants from Pakistan were more likely to carry through with self management than others).	Informational and systemic barrier to health care Financial hardship Language barriers Cultural barriers Being a recent female immigrant Difficulties finding a physician with same gender	Small sample size
Hyman et al. (2014). Toronto, Canada	N/A	Distrust of physician and western medicine	Small sample size Non –random sampling contributes to potential bias threatening validity.

			Self reporting bias due to no evidence of the severity
Gucciardi et al. (2013) Greater Toronto Area, Canada	Self perceived susceptibility, self perceived severity, perceived benefits self-efficacy	SMBG expenses SMBG can trigger both positive and negative emotional responses, depending on the reading	Small sample size of 12 thus no data saturation Lack of ethnically matched interviewers for study participants.
Grant & Retnakaran (2012) Canada	N/A	Language barriers Lack of social support Poor communication from clinicians Lack of cultural sensitive education for foot care	Selection bias in sampling Confounding bias Self reporting bias There insufficient numbers of immigrants with T2DM sample with Canadian community health surveys
Nielsen et al. (2012) Ontario, Canada	Combining the previous knowledge and experiences in managing diabetes from their home country with the current knowledge Some stated attending weekly sessions in cardiac rehabilitation is a motivation. Mall walking which was safe and free	Financial hardship and pressure of life Feelings of marginalization and unwelcome in some Cardiac Rehabilitation center. Language barriers Co-morbid conditions	The study was not generalizable The study did not purposely recruit immigrants, but more than half of the study sample identified as immigrants. Long-term immigrants' participants views many not reflect the experiences of recent immigrants

<p>Dahal et al. (2014) Ontario, Canada</p>	<p>Community leaders as brokers</p>	<p>Lack of entry trust (unfamiliarity of the health care system and delivery process). Lack of knowledge on diet Professionals with different cultural and language background. Privacy matters. Disclosing their illness to people who are not family members or physicians</p>	<p>Reliability of the qualitative study was question. The result can not be used to determine cultural beliefs or practice in relation to other immigrant populations</p>
<p>Ponzo et al. (2006) Toronto Canada</p>	<p>Nutrition self management Family support Perceived their illness as being significantly more serious.</p>	<p>Low literacy can lead to non compliance due to the inability to comprehend the benefits of self management. Culturally dictated gender roles burden Limited time to prepare separate meal for the family Cold weather and joint pain discouraged adherence to exercise regimen Cultural beliefs about health</p>	<p>Social desirability response bias may have affected the results because questionnaires were interviewer-administered. psychometrically validated the measures used in English may not be culturally appropriate.</p>

<p>Gucciardi et al. (2006) Toronto, Canada</p>	<p>Women were more likely than men to choose interactive, people-oriented resources, such as support groups or talking with another person with diabetes.</p> <p>Print and audiovisual education materials are available in six languages (i.e. Cantonese, English, Italian, Spanish, Vietnamese, and Portuguese</p>	<p>Low-literacy level for patients to comprehend essential points.</p> <p>Old age also appears to be a barrier to accessing diabetes resources.</p> <p>Depression is also prevalent in elderly persons with diabetes and acts as a barrier to self-care and glycemic control</p>	<p>Questionnaires were interviewer-administered.</p> <p>The list of resources to choose from in the study was not representative of all the different levels of resources available</p> <p>Included both audio-visual and print media within one category when literacy was a major factor.</p> <p>Data was based on patients' self-report rather than actual use of diabetes resources and patients may have exaggerated their use of resources to provide socially acceptable responses.</p> <p>The study does not provide insight on how efficacious those resources are in managing diabetes</p>
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Appendix B

Figure 1: Flow diagram of article selection process

