

Self-efficacy Impact Adherence in Diabetes Mellitus

Melba Sheila D'Souza¹, Nasser Majid Al Salmi²

¹Faculty of Nursing, School of Nursing, Thompson Rivers University, British Columbia V2T 1S3, Canada,

²Department of Adult health and critical care, College of Nursing, Sultan Qaboos University, Muscat, Oman

ABSTRACT

Aim: The aim of the paper is to explore how self-efficacy (SE) is associated with adherence among adults with diabetes mellitus (DM). **Methods:** The search of electronic databases identified 564 records from 2007 to 2017 on SE and adherence from different perspectives and its effect on adults with DM. **Discussions:** SE increases the confidence in adults in their self-care behaviors. Non-adherence continues to be a significant barrier to SE. SE and adherence should be informed by an understanding of theoretical frameworks and the individual characteristics. **Conclusion:** Adherence is likely among adults with better SE to empower them to make valid decisions about their health. Interventions to improve SE should be tailored based on different types of non-adherence such as intentional and unintentional non-adherence. **Implications:** An intercollaborative professional practice approach is crucial to improve SE and adherence for sound judgment and valid decision-making.

Key words: Adherence, chronic illness, diabetes mellitus, self-care behaviors, self-efficacy, type 2 diabetes

INTRODUCTION

A total of 347 million persons have diabetes mellitus (DM) and nearly 3.4 million persons die from complications.^[24] Adults with DM have a high incidence of morbidity and mortality as compared to normal or near-normal adult populations. Adults with DM is expected to rise to 350 million cases by the year 2030.^[15] In developed countries, non-adherence to the treatment of chronic diseases ranges from 30% to 50%, and this rate has escalated in the developing countries.^[5] Lifestyle factors such as behavioral, environmental, and societal play a critical part in the prevention of both development of the disease and its complications.^[10]

Adults with DM are at higher risk of developing cardiovascular and other secondary complications if the DM is not well controlled.^[19] Poor adherence affects self-efficacy (SE) leading to a lower quality of life and imposes a significant financial burden on the health care.^[17] Poor adherence and lack of knowledge are key concerns of developing complications and to managing DM. In adults with DM requiring behavior change, SE and self-care

behaviors are central to adherence. Non-adherence to prescribed medications and the lack of awareness are believed to be the common causes of poor treatment adherence among Arab adults.

The Middle Eastern countries will have the second highest increase in the percentage of people with DM in 2030 compared to other parts of the world.^[22] In the Sultanate of Oman, approximately 10% of the population is currently living with DM. The number of adults with DM in Oman will rise from 75,000 in 2000 to 217,000 in 2025.^[20] There are very few studies on SE and the relationship between sociodemographic characteristics and adherence levels of adults with DM in the Middle East.^[17] The aim of the paper is to explore how SE is associated with adherence among adults with DM.

METHODS

Several research databases (Academic Search, CINAH, EBSCO, Google Scholar, JSTOR, Lippincott Williams and Wilkins, Medline, ProQuest, PsycINFO, Sage, Science Direct, Springer, Web of Science, and Wiley) were reviewed

Address for correspondence:

Melba Sheila D'Souza, Thompson Rivers University, British Columbia V2T 1S3, Canada.
E-mail melba123@rediffmail.com

© 2018 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

with keywords for SE, self-care behaviors, adherence, compliance, chronic illness, adults, and DM. The search of electronic databases identified 564 records from 2007 to 2017 on SE and adherence from different perspectives and its effect on adults with DM.

REVIEW

Adherence is defined as, an extent to which a person's behavior-taking medication, following a diet, and/or executing lifestyle changes, corresponds with the agreed recommendations from a provider.^[16] The concept of adherence implies a mutual and dynamic interaction between the patients and health-care providers, and it results in long-term changes in patients' behaviors.^[5] The barriers to adherence are poor knowledge, psychosocial status, the complexity of the disease, comorbidity, lack of comprehension of treatment, and poor communication between the patient and health-care provider.^[21]

This was a qualitative study to explore the possibility of applying treatment adherence success factors in diabetes consultations between health-care providers and patients.^[23] Patients did not experience goal setting in consultations. Health-care providers indicated that they motivated patients to set treatment goals. Although shared decision-making was applied, patients were passive collaborators and health-care providers were in charge of making treatment decisions. An effect of educational interventions on knowledge of the disease, treatment adherence, and control of DM used a pre- and post-test design with the single comparison group.^[14] Educational intervention using the cognitive social theory had significantly improved the medication treatment adherence.

An investigation of the DM medication adherence using a theoretical framework, the health belief model (HBM), was conducted in Saudi Arabia.^[1] The regression analyses found that most of the adults took the prescribed dose every time taken; however, 60% of these adults were not taking the dose in the prescribed number of times per day and 50% were not taking the medication in the prescribed time of the day. Perceived susceptibility, perceived medication benefits, and SE were significant HBM predictors for medication adherence ($R^2 = 0.42$).^[1]

Self-reported adherence rate to antidiabetic drugs was 84%, and the most common reason for non-adherence was forgetfulness in the United Arab Emirates.^[2] This strategy is highly influenced by social desirability responding (faking good), and it depends on memory limitations, especially when asking about behaviors that required adults to remember old practices.^[18] Medication adherence of adults with DM in Oman was used to identify the probable reasons for medication non-adherence.^[17] Forgetfulness was the most frequent reason for medication non-adherence (36.4%).^[17]

Developing SE and self-care behaviors is complex, is difficult to incorporate into lifestyles, and is influenced by a myriad of psychosocial factors such as motivation, adherence, and compliance. Adults with DM are responsible for commitment, new skills, knowledge, confidence, compliance, and adherence. It involves a more detailed assessment to provoke changes in SE for better adherence and understanding of the social and behavioral theories such as social cognitive theory, HBM, theory of reasoned action, and theory of planned behavior. Social cognitive theory addresses both SE and outcome expectations which are motivating factors.^[3] This theory states that, when people observe a model performing a behavior and the consequences of that behavior, they remember the sequence of events and use this information to guide subsequent behaviors.

Self-efficacy (SE) refers to people's beliefs about their capabilities to produce designated levels of performance that can influence events which affect their lives. SE is defined as the "belief in one's capabilities to organize and execute the sources of action required to manage prospective situations."^[4] SE is the central concept that determines individuals' behaviors and how much effort they spend on adopting the behavior. The perceptions of managing psychosocial aspects of diabetes and readiness to change affect goal attainment in the empowerment model.^[8] Higher ability to manage diabetes positively significantly predicts the quality of life and body mass index in the health-related quality of life model.^[9] It is significant to recognize paradigms that are pertinent at different phases of readiness for change which are beneficial for SE. SE is the belief that one can effectively achieve the behavior essential to adherence.

SE played a critical mediating role between symptoms of depression - a common comorbidity with DM and glycemic control. Predictors of self-efficacy (SE) are demographic and clinical characteristics accounting of 20.6% of the total variance in self-care behaviors and 31.3% of the variance of the SE in the SE model.^[12] Boosting adults' SE (confidence) with regard to their ability to implement care successfully is a critical step in promoting active self-management.^[25] Behavior change requires some "intention," and "intention" is driven by three constructs: Attitude, subjective norm, and self - efficacy.^[11] SE is an important component of management and a key psychosocial variable used in predicting adherence to self-care behaviors.

Central to the theories is the construct of SE and self-care behaviors and how these influence adherence. Higher SE is linked with Self-care behaviours (SCB) in determining glycemic control and lower HbA1c levels.^[7] Education, understanding of DM, and management predicted good foot care behaviors in the SE model.^[13] SE is the most powerful determinant of intention and suggested attention to SE. The relationship between these is critical to the improved SE and adherence among adults with DM.

DISCUSSIONS

Exploring SE is critical to achieve optimal adherence among adults with DM. SE increases the confidence in adults in their self-care behaviors. The common applications are of social cognitive theory within which the HBM, the theory of reasoned action, and the theory of planned behavior are most prevalent. The majority of the reviewed studies examining non-adherence have considered it as a single entity and have not differentiated types of non-adherence such as intentional and unintentional non-adherence or the reasons underlying each type. Nurses are the first point of contact with clients, and it is significant for them to assess intentional or non-intentional non-adherence behaviors before planning interventions. Unintentional behaviors such as forgetfulness should receive other strategies to enhance treatment adherence. Non-adherence continues to be a significant barrier to SE.

Non-adherence concerns all aspects of therapy, not only taking medicines, but also developing SE and lifestyle changes such as diet and physical exercise, avoiding high-risk behaviors, such as the use of tobacco or alcohol, or simply returning for the next medical appointment. Adults have variant levels in adherence to prescribed treatments. Therefore, the application of theory-driven, evidence-based models is important in the development of effective interventions. SE and adherence should be informed by an understanding of theoretical frameworks (e.g., sociocognitive, self-regulation, and social support) and within those a range of subordinate models (e.g., HBM, theory of planned behavior, and self-regulation model) and then the individual characteristics (e.g., perceived barriers, perceived benefits, and treatment beliefs).

With aging and baby boomers, demographical and urbanization changes in society, and information motivation behavioral skills, it is shown that SE impacts adherences as shown in the attachment theory, epidemiological theory, theory of reasoned action, cognitive behavioral theory, self-care model impacts adherence, and the medication adherence model. The interventions to improve SE should be tailored based on the sociodemographic, psychosocial, behavioral, and lifestyle characteristics, intentional non-adherence (e.g., not attending appointments) and unintentional non-adherence (e.g., forgetfulness) among adults with DM.

CONCLUSION

Adherence is likely among adults with better SE to empower them to make valid decisions about their health. The sociocultural aspects of adults in the Middle East are different from the western world in terms of culture, religious nature, spirituality, beliefs, values, education, awareness

level, efficacy, compliance, and health practices. Providing explanations and predictions about the SE phenomenon will help to identify barriers and challenges concerning the adherence interpretation. Empirically, cross-sectional descriptive studies guided by behavioral frameworks and SE models are needed. Building a good knowledge base with clinical trials and behavioral change interventions can be used to test effective interventions that can improve SE. Health-care professionals need to be trained on how to use cognitive behavioral therapies in their communication and consultation with adults with DM. Nurses can make an important contribution to improve SE among adults with DM. Hence, treatment adherence is a complex and multidimensional phenomenon and is very important to address the concept from SE. An intercollaborative professional practice approach is crucial to improve SE and adherence for sound judgment and valid decision-making.

REFERENCES

1. Alatawi YM, Kavookjian J, Ekong G, Alrayees MM. The association between health beliefs and medication adherence among patients with Type 2 diabetes. *Res Social Adm Pharm* 2016;12:914-25.
2. Arifulla M, John LJ, Sreedharan J, Muttappallymyalil J, Basha SA. Patients' adherence to anti-diabetic medications in a hospital at Ajman, UAE. *Malays J Med Sci* 2014;21:44-9.
3. Bandura A. *Self-Efficacy: The Exercise of Control*. New York: Macmillan; 1997.
4. Bandura A, editors. *Self-Efficacy in Changing Societies*. New York: Cambridge university press; 1995.
5. Costa E, Giardini A, Savin M, Menditto E, Lehane E, Laosa O, *et al*. Interventional tools to improve medication adherence: Review of literature. *Patient Prefer Adherence* 2015;9:1303-14.
6. Doggrel SA, Warot S. The association between the measurement of adherence to anti-diabetes medicine and the hbA1c. *Int J Clin Pharm* 2014;36:488-97.
7. D'Souza MS, Karkada SN, Venkatesaperumal R, Natarajan J. Self-care behaviors and glycemic control among adults with DM. *GSTF J Nurs Health Care* 2015a;2:29-40.
8. D'Souza MS, Nairy KS, Hanrahan NP, Venkatesaperumal R, Amirtharaj A. Do perceptions of empowerment affect glycemic control and self-care among adults with DM? *Glob J Health Sci* 2015b;7:80-90.
9. D'Souza MS, Venkatesaperumal R, Ruppert SD, Karkada SN, Jacob D. Health-related quality of life among Omani men and women with DM. *J Diabetes Res* 2016b;2016:38-44.
10. Didarloo A, Alizadeh M. Health-related quality of life and its determinants among women with diabetes mellitus: A cross-sectional analysis. *Nurs Midwifery Stud* 2016a;5:e28937.
11. Didarloo A, Shojaeizadeh D, Alizadeh M. Impact of educational intervention based on interactive approaches to beliefs, behavior, hemoglobin A1c, and quality of life in diabetic women. *Int J Prev Med* 2016b;7:38.
12. D'Souza MS, Karkada SN, Parahoo K, Venkatesaperumal R, Achora S, Cayaban AR. Self-efficacy and self-care behaviors among adults with DM. *Appl Nurs Res* 2017;36:25-32.
13. D'Souza MS, Ruppert SD, Parahoo K, Karkada SN,

- Amirtharaj A, Jacob D, *et al.* Foot care behaviors among adults with DM. *Prim Care Diabetes* 2016a;10:442-51.
14. Figueira AL, Boas LC, Coelho AC, Freitas MC, Pace AE. Educational interventions for knowledge on the disease, treatment adherence and control of diabetes mellitus. *Rev Lat Am Enfermagem* 2017;25:e2863.
 15. Guariguata L, Whiting DR, Hambleton I, Beagley J, Linnenkamp U, Shaw JE, *et al.* Global estimates of diabetes prevalence for 2013 and projections for 2035. *Diabetes Res Clin Pract* 2014;103:137-49.
 16. Holmes EA, Hughes DA, Morrison VL. Predicting adherence to medications using health psychology theories: A systematic review of 20 years of empirical research. *Value Health* 2014;17:863-76.
 17. Jimmy B, Jose J, Al-Hinai ZA, Wadair IK, Al-Amri GH. Adherence to medications among Type 2 diabetes mellitus patients in three districts of al dakhliyah governorate, oman: A cross-sectional pilot study. *Sultan Qaboos Univ Med J* 2014;14:e231-5.
 18. Levensky ER, O'Donohue WT. *Promoting Treatment Adherence: A Practical Handbook for Health Care Providers.* Thousand Oaks, Calif: SAGE Publications, Inc.; 2006.
 19. Mooradian AD. Cardiovascular disease in Type 2 diabetes mellitus: Current management guidelines. *Arch Intern Med* 2003;163:33-40.
 20. Nazmi A, Khan S, Hadithi D. Self-monitoring of blood glucose level among diabetic patients in Muscat, Oman: A pilot study. *Saudi J Health Sci* 2013;2:54-7.
 21. Reach G. A novel conceptual framework for understanding the mechanism of adherence to long term therapies. *Patient Prefer Adherence* 2008;2:7-19.
 22. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res Clin Pract* 2010;87:4-14.
 23. Vluggen S, Hoving C, Schaper NC, de Vries H. Exploring beliefs on diabetes treatment adherence among dutch Type 2 diabetes patients and healthcare providers. *Patient Educ Couns* 2018;101:92-8.
 24. World Health Organization. *Global Report on Diabetes.* Geneva: World Health Organization; 2016.
 25. Wu SF, Huang YC, Lee MC, Wang TJ, Tung HH, Wu MP, *et al.* Self-efficacy, self-care behavior, anxiety, and depression in taiwanese with Type 2 diabetes: A cross-sectional survey. *Nurs Health Sci* 2013;15:213-9.

How to cite this article: D'Souza MS, Al Salmi NM. Self-efficacy Impact Adherence in Diabetes Mellitus. *Clin Res Diabetes Endocrinol* 2018;1(2):1-4.