Insight Medical Publishing

Journal of Healthcare Communications

ISSN 2472-1654

2020

Vol.5 No.5

The Effect of Theory-driven Intervention Program on Diabetes Health Beliefs and self-efficacy among Jordanian Type 2 Diabetic Patients

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Abstract

Purpose: The purpose of this study was to assess the effect of theory-driven intervention program on diabetes health beliefs, self-efficacy, and adherence to control practices among Jordanian type 2 diabetic patients

Methods: This was quasi-experimental interventional study in which 108 type 2 diabetic patients were recruited from one of UNRWA health centers in Zarqa city. A simple random technique was used to assign patients into two equivalent groups (intervention group and control group). Data were collected pre- and post-intervention using author-developed questionnaire based on health belief model constructs and Diabetes Management Self-Efficacy Scale (DMSES).

Results: After the intervention program, there was a significant and positive improvement in the health beliefs, self-efficacy, and self-control practices in the intervention group compared to control group

Conclusions: The results of this study showed the importance of theory driven intervention program in increasing self-efficacy, improving health beliefs and self- control practices in patients with type-2 diabetes.

Introduction

Diabetes mellitus is a huge and growing problem affecting around 382 million people in the world, in which 35 million are in Middle East and North Africa. The high percentage of people with diabetes their ages between 40 and 59 years, and 80% of them live in developing countries 1.

Type 2 diabetes is the most common form of diabetes. It is common among adults, but it is in increasing among children 1. The number of people with type 2 diabetes is rising rapidly worldwide. This rise is associated with advanced technology, increasing in elderly population, urbanization, dietary changes (consumption of high- fat and high-calorie foods), and sedentary lifestyle 2. These factors likely contribute to increased prevalence of obesity and diabetes in the Arabic speaking countries including Jordan 3. The prevalence rate of type 2 diabetes mellitus among adults aged between 20–79 of the Arabic speaking countries ranges between 4%–21% 1, with 12.3% in Jordan 3. Despite the impact of this disease in urban and high-income communities, it is becoming a major health problem in rural and low- and middle income communities 1.

Type 2 diabetes may lead to many short and long-term complications and these complications intrude a large burden on the patients, their society, and health care systems 4-6. Recent statistics have shown an increase in the mortality related to diabetes; there was 5.1 million deaths from diabetes in 2013 (one person every six seconds)1.

Many patients with type 2 diabetes remain unrecognized for their illness for long period because diabetic symptoms may take time to be aware or to emerge. During this time, the body systems are being damaged by surplus blood glucose 1.

Diabetes is an important health and development problem among Palestine refugees in Jordan. The estimated prevalence of diabetes is very high at around 10% among adults of 20 to 79 years 7; it follows the same prevalence of diabetes in Jordan (10.1%) 7. A total of 10,845 cases of type 2 diabetes mellitus were registered for UNRWA Non Communicable Diseases (NCD) services in Jordan 8. In Palestine refugees, United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) has been the main provider of primary health care (PHC) with the main goals of protecting and promoting the health of Palestine refugees. During 2012, UNRWA established a health center audit on diabetes. The results of this audit reported problems in patients' life style such as 64% were obese and 26% were overweight, many patients were physically inactive, had knowledge deficit regarding healthy nutrition and cooking practices, and proper use of medication. These results lead to developing the diabetes awareness campaigns under the slogan "Life is Sweeter with Less Sugar" 8.

Studies showed that theory-driven intervention programs that apply cognitive frameworks could have a positive effect on the outcomes. A few of these programs are presently part of the primary health care; however, they have not been used to educate and train diabetic patients 5, 9. The health belief model (HBM), the theoretical framework applied in this study, is used to assess the patients' motivation to modify to healthy behaviors. The main constructs of this model including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, health motivation and self-efficacy 10.

Perceived susceptibility is a person's opinion about his or her personal chances of developing a specific condition. An individual's opinion regarding the seriousness of a specific condition and its effects is referred to as perceived severity. Perceived benefits" refers to the individual's belief in the efficacy of the advised action to reduce risk or seriousness of impact of a specific condition. Furthermore, the individual's perceived barrier could be defined as any hindrance in the way of adopting a recommended health-related behavior 10.

Self-efficacy is a newly added construct that located at the core of Bandura's social cognitive theory 8. Perceived self-efficacy defined as an individual's judgment of his or her capabilities to organize and execute courses of actions which required to attain specified forms of performances 11.

There is a large body of literature on type 2 diabetes regarding prevalence and the risk factors associated with this disease all over the world and in Jordan. Furthermore, up to date, there have been few studies conducted on the effects of HBM-based educational intervention 10, 12, and non-HBM-based ones 13-15,9 on diabetic patients.

Jordan is a developing country, and it is very necessary to raise the awareness and knowledge of type 2 diabetes and its control measures.

This study could serve as the basis for developing and implementing future theory-driven intervention programs in order to promote specific healthy behavioral strategies for type 2 diabetes control. Moreover, health care providers need to assess the population's knowledge of type 2 diabetes to plan an effective intervention programs. Therefore, the purpose of this study was to assess the effect of theory-driven intervention program on diabetes health beliefs, self-efficacy, and adherence to control practices among Jordanian type 2 diabetic patients.

Moreover, this study has two research hypotheses:

1. There is no difference in health beliefs, self-efficacy and adherence to self-control practices between the control and the intervention groups before initiation of HBM – based diabetic intervention program among the Jordanian type 2 diabetic patients; and
2. The intervention group that received HBM – based diabetic intervention program will demonstrate a higher level of health beliefs, self-efficacy and adherence to self- control practices at 3 months in comparison to the control group.

Materials and Methods

Study Design, Setting and Sample

Quasi-experimental, pretest-posttest design was used to examine the effectiveness of HBM – based diabetic intervention program on the health beliefs, self-efficacy, and adherence to self-control practices among the Jordanian type 2 diabetic patients at one of UNRWA health centers in Zarqa city in the period between September 2014 until March 2015. Patients with type 2 diabetes, who regularly attended to the center for treatment and follow up were offered enrolment in the study. The inclusion criteria were that patients: (a) diagnosed with Type 2 diabetes, (b) agreed to participate in the study, (c) had ability to read and write, and (d) had attended at least one follow-up visit. Patients unwilling to participate in the study were excluded from participating in this study. Sample size was calculated by using G* power 3.1.7 software 16. In this study, comparisons between groups with t tests (one tail) for independent samples, medium effect size (d = .50), a sample of 51 participants in each group was needed to provide 80% power to detect difference at 0.05 significance level 17 . The final number of participants who completed the phases of the study was 108. A simple random technique was used to assign patients into two equivalent groups (intervention group and control group) according to their assigned number. The control group did not receive the intervention program.

Instrumentation

Three instruments were used in this study. The first instrument was the demographic data sheet that used to identify any potential group variances. It is consisted of questions on variables, such as gender, age, income/year, health insurance, and having glucose- check machine. The second instrument was developed by authors and consisted of 27-items Diabetes Health Belief Scale based on health belief model and literature review. The items were measured using a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items covered the health belief models constructs of perceived susceptibility, severity, benefits, barriers, health motivation, and self-efficacy. The third instrument was the Diabetes Management Self-Efficacy Scale (DMSES) that is a specific-type instrument that was developed by the members of the International Partnership in Self-Management and Empowerment 18. Its psychometric properties were found to be acceptable for populations with type 2 diabetes in several countries 19-22. It is consisted of 20 items. Scoring the self-efficacy section of the questionnaire was based on the patient's ability to adopt a specific behavior ranging from 1 to 10. Moreover, pre-intervention and post-intervention fasting blood glucose level and body mass index (BMI) were checked.

The instruments were translated into Arabic. The content validity of the Arabic translated instruments were evaluated based on the feedbacks of research experts in this field. In addition, these instruments were pilot tested on 20 patients in order to test data collection procedures and to compute the reliability coefficient. According to pilot study results, items were clear to the most of patients. Internal consistency was used in ascertaining reliability of the

instrument between individual items. The Cronbach's Alpha that obtained for Diabetic Health Belief Scale and DMSES was

0.90 and 0.96 respectively

Data Collection

At the baseline phase, all patients in the two groups were interviewed to fill the structured instruments. The patients in the intervention group then divided into four groups who attended the educational and training sessions. A posttest was conducted after three months to evaluate the health beliefs, self-efficacy and adherence to diabetic self-control practices.

Intervention

The intervention program was based on HBM, which focuses on the influence of health beliefs (perceived susceptibility and severity to diabetes, perceived benefits and barriers for taking health action such as exercise, diet, and blood glucose check that influence diabetic control practices and general health motivations) on health behavior changes to overcome barriers to self-control practices and to enhance self- efficacy. The intervention consisted of 2-hour educational session and 1- hr training session. The 2-hr educational session included educational materials, strategies, and information from the American Diabetes Association. A group discussion with open-ended questions on methods of enhancing health beliefs and self-efficacy was facilitated at the end of the first and last group meetings. Poster and a booklet were delivered at the end of each educational session. One-hour training session was also delivered and focused on self-control practices including daily foot care, blood glucose monitoring, and weight monitoring. Picture illustrations, videotapes, demonstrations, and self-monitoring demonstrations were used.

The intervention program was validated by a panel of experts and pretested on 20 patients. Therefore, we expected that after patients received the intervention program, they would demonstrate the following: 1. Improvement in self-control practices of diabetes, including daily foot care, and monitoring of blood glucose, 2. Improvement in metabolic measures of body mass index (BMI), and blood glucose level, . Increase in scores on HBM-based health beliefs and self-efficacy.

Ethical Considerations

The study method and intervention program were reviewed by the ethical committee in the Faculty of Nursing at the Zarqa University and UNRWA office. Target patients willing to participate in this study received both oral and written information about the purpose, content and duration of the study. A code number was provided to each participant, which protected the anonymity of the participants. The patients were assured that withdrawal from the study at any time carried no penalty. Patients were asked to sign the informed consent if they agreed to participate in the study.

Data analysis

Data were coded and analyzed using the Statistical Package for Social Sciences for Windows SPSS 21.0 23. Descriptive statistics (mean, median, standard deviation, percentage, and frequency) were used to analyze the demographic data. Independent sample t- tests were used to compare the mean differences in health beliefs, self-efficacy, and adherence to control practices between the intervention and control groups at two time points. Paired t -test was conducted to find significant differences between the study groups..

Results

Patient Characteristics

Table 1 shows the demographic characteristics of the participants. The participants' ages ranged between 20 and 75 years (M=52.1, SD=1.7). The mean age for the participants in the control group was similar to the intervention group; both groups were almost equal in terms of gender and age. The majority of participants in both groups was females (66.7%), married (74%), had primary education (59.3%), had low income (less than 5000 JD per year) (93.5%), and had family history of diabetes (86.1%). Approximately 55% of the participants reported having gluco-check machine.

Health Beliefs

An independent sample t- test was used to examine if there were differences in the health beliefs derived from HBM constructs between the two groups before and after intervention program. Before intervention program, the results showed that there were no significant differences in the baseline health beliefs and physiological measures between the intervention and the control groups ($p > 0.05$). After intervention program, there were significant differences in the health beliefs and fasting blood sugar levels in favor of participants in the intervention group ($p < 0.001$). However, the mean scores of the physiological measures after the intervention program were similar in both intervention and control groups and there were no significant differences as seen in Table 2. Furthermore, paired t- test was used to examine if there was a difference in the health beliefs derived from HBM constructs physiological measures (MAP, BMI), and fasting blood sugar levels for each group before and after intervention program. A paired t- test showed significant differences in the post-intervention health beliefs and fasting blood sugar levels in the intervention group ($p <0.001$) and no significant differences in the control group. The intervention group gained higher post- intervention scores than control group in the health beliefs constructs because of their respective teaching and training program as seen in Table 3.

Self-Efficacy Table 4 shows the mean diabetes self-efficacy scale scores by using an independent sample t- test. The results indicated that the intervention program improved self- efficacy in the intervention group compared to the control group. The difference

between the mean scores of self-efficacy items before and after intervention program in the intervention group was statistically significant ($p < 0.001$) compared to the control group.

Adherence to Self-Control Practices

Foot Care

Foot care was one of the important topics in the intervention program. Before the intervention, patients were asked whether they knew how to take care of their feet, 16 patients in the intervention and 20 patients in the control group reported the proper way of foot care ($p= 0.057$). After the intervention program, 26 patients in the intervention and 22 patients in the control groups reported the proper way of foot care ($p= 0.003$).

Blood Glucose Monitoring

An independent sample t- test was used to examine if there was a differences in blood glucose check between the two groups before and after intervention program. Before the educational intervention, the results showed that there were no significant differences in the baseline fasting blood glucose check between the intervention and the control groups ($p > 0.05$). After the intervention program, there were significant differences in fasting blood glucose check in the intervention group ($p < 0.001$) as seen in Table 2. Furthermore, Table 3 shows that there were significant differences in fasting blood glucose check in the intervention group after intervention program by using a paired t- test ($p <0.001$), while there was no significant differences in the control group. These results reflect that intervention program encouraged blood glucose monitoring and check, in addition to decrease levels of fasting blood glucose among the intervention group.

Weight Monitoring

Weight control is important measure in management of type 2 diabetes. In this study, it was assessed by calculating BMI. An independent sample t- test was used to examine if there were differences in BMI between the two groups before and after intervention program. Before intervention program, the results showed that there were no significant differences in the baseline BMI measures between the intervention and the control groups ($p > 0.05$). However, the mean scores of the BMI after the intervention program were similar in both groups and there were no significant differences as seen in Table 2. Furthermore, a paired t- test showed no significant differences IN BMI in the pre and post-intervention in both groups ($p > 0.05$) as seen in Table3.

Discussion

A theory-driven intervention program that incorporates both health education and training sessions are believed to have a greater positive influence on the patient's health beliefs, self-efficacy, and adherence practices than traditional health educational programs 24, 25,6. The results of this study add to the evidences that theory- driven interventions are the core of diabetes management; therefore, finding a suitable theory to support the intervention program is very important. In this study, the intervention program was designed to significantly improve the health beliefs of perceived susceptibility and perceived severity to diabetic complications, perceived benefits of blood glucose check, and to significantly decrease perceived barriers to blood glucose check in order to predict an increase in self-reported health motivation.

The results of this study showed an increase in the mean scores of the following health beliefs constructs: perceived susceptibility, perceived severity, perceived benefits of blood glucose check, health motivation and self-efficacy, on the contrary, a decrease in the mean score of perceived barriers of blood glucose check after carrying out of the intervention program on the intervention group. These results were the same for the previous interventional studies that studied the effects of heath belief model application 24, 25,6.

The theory-driven intervention resulted in a statistically significant increase in the mean scores of perceived susceptibility and perceived severity in the intervention group after the intervention, with the high percentage of the patients in the intervention group agreeing that their susceptibility and severity of diabetic complications are high. This reflects that the majority of the intervention group believed that diabetic complications would influence their lives. These results are consistent with previous studies 26,6.

Consistent with the results of previous studies 8, 27, 28, 6, this study found that there was an increase in the mean scores of the perceived benefits construct and a decrease in the mean scores of the perceived barriers construct after the intervention program.

Health motivation could be related to degree of readiness of people to involve in a health behavior 29. In the present study, after three months of the intervention program, intervention group demonstrated a high level of health motivation. This indicated that there would be a trend towards increasing participation in self-control practices.

Overall, HBM-based intervention program increased the health beliefs that could encourage people to engage in self-management practices. The majority of the intervention group after intervention program had high feelings of susceptibility and severity towards development of diabetic complications and increasing in the views of the benefits and barriers of blood glucose check, the motivation for positive health, and self-efficacy.

The concept of self-efficacy describes the interaction between behavioral, personal, and environmental factors in health and chronic disease 30. These factors are incorporated in diabetes self-management, so that, the concept of self-efficacy is relative for improving self-management. Previous studies reported that self-efficacy has been shown to be important for self-management in many chronic health conditions 31-34.In diabetes, the research found mixed results for interventions that attempted to improve self-efficacy in order to improve self-management behavior 35-

37. In this study, self- efficacy of patients increased significantly after the intervention.This increase might be due to patients' thinking that the activities that were expected of them could be easily performed because of knowledge gained regarding their illnesses management by changing self-management behaviors. Even so, long-term interventions are needed in order to evaluate self-efficacy and to assess the real effect of intervention program on self-management.

Furthermore, fasting blood glucose check showed a progress in which the levels of fasting blood glucose among the intervention group decreased after intervention. This result is consistent with previous studies, which found that diabetes education program increased the frequency of blood glucose self-monitoring 38-40 and could delay the progression of or reduce the risk of long-term complications combined with type 2 diabetes 41.

The frequency of feet care and inspecting the feet daily increased in the intervention group after the intervention program. This result showed that this behavior is simple and easily practiced therefore; it could be performed more frequently. Previous studies showed that daily foot care regimens improved after diabetes self-management education 40, 42. Moreover, no significant change was observed in body mass index and weight control among the intervention group after the intervention program. Therefore, long-term interventions are needed to ensure long-term maintenance of this behavior change.

Conclusion

There were improvements in health beliefs, and a significant difference in diabetes self-efficacy between the intervention and control groups. This study showed that the intervention program, which was developed according to patients' needs and based on theoretical framework, could improve patients' management of their illness. However, patients should be supported to maintain the self-management behaviors long-term. It is recommended that long-term studies should be designed to monitor and follow-up long-term maintenance of self- management behaviors and to improve self-efficacy. Furthermore, long-term patient education programs should be developed based on patients' needs and concerns for long-term follow-up and maintenance.

Implications/ Relevance for Diabetes Educators

In spite of limitations of this study, the findings indicate that the theory driven intervention was effective for patients with diabetes. Integration of theory in interventions for patients with diabetes is clearly useful for improving diabetes outcomes. Therefore, diabetes educators are encouraged to incorporate the HBM concepts, particularly self-efficacy concept, into any forthcoming programs to help diabetic patients develop their own strategies for long-term management of their diabetes.

References

1. International Diabetes Federation. (2013). Diabetes Atlas. Available at: www.idf.org.diabetesatlas
2. World Health Organization. (1994). Prevention of diabetes mellitus. Report of a WHO Study Group. Geneva: World Health Organization; No. 844.
3. Badran M, Laher I. Type II Diabetes Mellitus in Arabic Speaking Countries.
International Journal of Endocrinology. 2012. Available at: http://dxdoi.org/10.1155/2012/902873.
4. Marshall SM, Flyvbjerg A. Clinical Review-Prevention and early detection of vascular complications of diabetes. BMJ-British Medical Journal-International Edition. 2006;333(7566):475-480.
5. Davies MJ, Heller S, Skinner T, et al. Effectiveness of the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cluster randomised controlled trial. BMJ. 2008;336(7642):491-495.
6. Bayat F, Shojaeezadeh D, Baikpour M, Heshmat R, Baikpour M, Hosseini M. The effects of education based on extended health belief model in type 2 diabetic patients: a randomized controlled trial. Journal of Diabetes & Metabolic Disorders. 2013;12(45). Available at: http://www.jdmdonline.com/content/12/1/45.
7. Ellis S, Speroff T, Dittus R, Brown A, Pichert J, Elasy T. Diabetes patient counseling: a meta-analysis and meta-regression. Patient Educ Couns. 2005;52(1):97-105.
8. Sharifirad G, Hazavehie S, Mohebi S, Rahimi M, Hasanzadeh A. The effect of educational program based on Extended health belief model (HBM) on the foot care by type II diabetic patients. Iran J Endocrinol & Met. 2007;8(3): 231–239.
9. Coe A, Gatewood S, Moczygemba L, Goode J, Beckner J. The use of the extended health belief model to assess predictors of intent to receive the novel (2009) H1N1 influenza vaccine. Inov Pharm. 2012; 3(2): 1–11.
10. Taghdisi MH, Nejadsadeghi E. The effect of health education based on extended health belief model on behavioral promotion of urinary infection prevention in pregnant women. J Research & Health. 2012; 2:126–136.

11. Yates T, Davies M, Gorely T, Bull F, Khunti K. Effectiveness of a pragmatic education program designed to promote walking activity in individuals with impaired glucose tolerance. Diabetes Care. 2009; 32(8): 1404–1410.
12. Rakhshandeh Rou S, Ghaffari M, Heydarnia A, Rajab A. Evaluate the effectiveness of educational intervention on metabolic control in diabetic patients. J Diab & Metab Disord. 2009; 9: 57–64.
13. Ajzen I. The theory of planned behavior. Organ Beh Hum Decis Processes. 1991; 50:179–277.
14. Champion V L. Instrument refinement for breast cancer screening behaviors.Nursing Research.1993; 42(3): 139-143 .
15. Sharifabad M, Tonekaboni N. Perceived self-efficacy in self-care behaviors among diabetic patients referring to Yazd Diabetes Research Center. Journal of Birjand University of Medical Sciences. 2009;15(4): 91–100.
16. Faul F, Erdfelder E, Lang A, Buchner A. G* Power 3.1. 7: A flexible statistical power analysis program for the social, Behavioral and Biomedical sciences. Beh. Res. Meth. s. 2013;39:175-191.
17. Polit DF, Beck CT. Essentials of nursing research: Appraising evidence for nursing practice. Lippincott Williams & Wilkins; 2013.
18. Bijl J, Poelgeest-Eeltink A, Shortridge-Baggett L. The psychometric properties of the diabetes management self-efficacy scale for patients with type 2 diabetes mellitus. Journal of advanced nursing. 1999;30(2):352-359.
19. McDowell J, Courtney M, Edwards H, Shortridge-Baggett L. Validation of the Australian/English version of the diabetes management self- efficacy scale. International Journal of Nursing Practice. 2005;11(4):177–184.
20. Kara M, Bijl JJ, Shortridge-Baggett LM, Asti T, Erguney S. Cross-cultural adaptation of the diabetes management self-efficacy scale for patients with type 2 diabetes mellitus: scale development. International Journal of Nursing Studies. 2006;43 (5):611–621.
21. Vivienne WS, Courtney M, Edwards H, McDowell J, Shortridge-Baggett LM, Chang, PJ. Development and validation of the Chinese version of the diabetes management self-efficacy scale. International Journal of Nursing Studies. 2008;45 (4):534–542.
22. Sturt J, Heamshaw H, Wakelin M. Validation and reliability of the DMSES UK: a measure of self-efficacy for type 2 diabetes self-management. Primary Health Care Research & Development. 2010;11:374–381.
23. IBM Corporation (2012). IBM SPSS Statistics for Windows, Version 21.0. NY
24. Aghamolai T, EfteKhar H, Mohamad K. Application of health belief model in diabetic patients. Paper presented at: Congress of health promotion. Payesh2006.
25. Sharifirad G, Entezari M, Kamran A, Azadbakht L. Efficacy of nutrition education to diabetic patient: Application of health belief model. Iranian Journal of Diabetes and Lipid Disorders. 2008;7(4):379-386.
26. Baghianimoghadam M, Hadavand Khani M, Mohammadi S, Fallahzade H, Khabir F. Status of walking behavior in patients with type 2 diabetes in Yazd based on health belief model. Tahghighat Nezame Salamat. 2010; 6(3):425-435.
27. Mardani HM, Shahraki VA, Piri AR. Effects of Education Based on Health Belief Model on Dietary Adherence in Diabetic Patients. Iranian Journal of Diabetes & Lipid Disorders. 2010; 9 (1).
28. Shamsi M, Sharifirad G, Kachoyee A, Hassanzadeh A. The Effect of Educational Program Walking Based on Health Belief Model on Control Sugar in Woman by Type 2 Diabetics. Iran J Endocrinol & Met. 2010; 11(5): 490-499.
29. Kim K, Horan M, Gendler P. Osteoporosis knowledge tests, osteoporosis health belief scale, and osteoporosis self-efficacy scale. Allendale, MI: Grand Valley State University. 1991.
30. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. Psychol Rev. 1977; 84:191–215.
31. McCaul K, Glasgow R, Schafer L. Diabetes regimen behaviors: predicting adherence. Med Care. 1987; 25: 868–881.
32. Kavanagh D, Gooley S, Wilson P. Prediction of adherence and control in diabetes J Behav Med. 1993;16: 509–523.
33. Bernal H, Woolley S, Schenaul J, Dickinson J. Correlates of self-efficacy in diabetes self-care among Hispanic adults with diabetes. Diabetes Educ. 2000; 26: 673–680.
34. Aljasem L, Peyrot M, Wissow L, Rubin R. The impact of barriers and self- efficacy on self-care behaviors in type 2 diabetes. Diabetes Educ, 2001; 7:393-404.
35. Rubin R, Peyrot M, Saudek C. (1989). Effect of diabetes education on self-care, metabolic control, and emotional well-being. Diabetes Care. 1989; 12: 673– 679.
36. Hurley AC, Shea CA. Self-Efficacy: Strategy for Enhancing Diabetes Self-Care.The Diabetes Educator, 1992;18 (2): 146-150.
37. Krichbaum K, Aarestad V, Buethe M. (2003). Exploring the connection between self-efficacy and effective diabetes self-management. Diabetes Educ. 2003; 29: 653–662.
38. Norris S, Lau J, Smith S, Schmid C, Engelgau C. Self-management education for adults with type 2 diabetes. Diabetes Care. 2002; 25(7):1159-1171.
39. Parchman M, Arambul-Solomon T, Noel P, Lamne A, Pugh J. Stage of change advancement for diabetes self management behaviors and glucose control. Diabetes Educator. 2003; 29(1):128-134.
40. Steed L, Lankester J, Barnarda M, Earle K, Hurel S, Newman S. Evaluation of the UCL diabetes self-management program

(UCL-DSMP): randomized controlled trial. Journal of Health Psychology. 2005; 10(2):261-276.

41. Tang T, Gillard M, Funnell M, et al. Developing a new generation of ongoing diabetes self management support interventions: a preliminary report. Diabetes Educator. 2005; 31(1):91-97.
42. Hendricks L, Hendricks R. The effect of diabetes self-management education with frequent follow-up on the health outcomes of African American men. Diabetes Educator. 2000; 26(6):995-1002.

Table 1 Characteristics of Study Population (N=108 Control group=54 Intervention group=54)

Characteristic	Control group	Intervention group	Total
*M(SD) Age	52.1 (1.7)	52.1 (1.7)	52.1 (1.7)
	N (%)	N (%)	N (%)
Gender Male Female	18 (33.3) 36 (66.7)	18 (33.3) 36 (66.7)	36 (33.3) 72 (66.7)
Marital Status Single Married Divorced Widow	3 (5.6) 37 (68.5) 3 (5.6) 11 (20.4)	3 (5.6) 39 (72.2) 1 (1.8) 11 (20.4)	6 (5.6) 80 (74.1) 4 (3.7) 18 (16.7)
Educational Level Primary Secondary University	33 (61.1) 14 (25.9) 7 (13)	31 (57.4) 13 (24.1) 10 (18.5)	64 (59.3) 27 (25) 17 (15.7)
Income (Yearly) < 5000 JD ≥ 5000 JD	49 (90.7) 5 (9.3)	52 (96.3) 2 (3.7)	101 (93.5) 6 (6.5)
Health Insurance (Yes)	54 (100)	54 (100)	108 (100)
Family History Yes No	51 (94.4) 3 (5.6)	42 (77.8) 12 (22.2)	93 (86.1) 15 (13.9)
Having Gluco-check Machine Yes No	28 (51.9) 26 (48.1)	31 (57.4) 23 (42.6)	59 (54.6) 49 (45.4)

Table 2 Independent Sample t-test Comparing HBM-Constructs, Self-efficacy, BMI, and Fasting Blood Sugar Before and After the Intervention Program between Control and Intervention Groups

Variable	Group	Pre-intervention *M (SD)*	*p-value*	Post-intervention *M (SD)*	*p-value*
Perceived susceptibility	Intervention	3.58 (0.72)	p=0.073	4.51 (0.34)	p<0.001
	Control	3.82 (0.66)		3.59 (0.64)	
Perceived severity	Intervention	3.23 (0.71)	p=0.68	3.87 (0.29)	p<0.001
	Control	3.01 (0.55)		2.87 (0.50)	
Perceived benefits of blood glucos	Intervention	3.61 (0.55)	p=0.93	4.67 (0.34)	p<0.001
	Control	3.60 (0.48)		3.44 (0.46)	

e check					
Perceived Barriers of blood glucose check	Intervention	2.37 (0.51)	p=0.052	2.03 (0.31)	p<0.001
	Control	2.23 (0.36)		2.22 (0.40)	
Health motivation	Intervention	4.10 (0.46)	p=0.54	4.70 (0.21)	p<0.001
	Control	4.06 (0.37)		3.92 (0.27)	
Self-efficacy	Intervention	7.30 (1.41)	p=0.58	9.32 (0.38)	p<0.001
	Control	7.43 (0.97)		7.09 (0.90)	
Mean arterial pressure (MAP)	Intervention	98.05 (8.88)	p=0.97	94.57 (6.11)	p=0.09
	Control	98.13 (10.65)		96.76 (7.11)	
Body mass index (BMI)	Intervention	31.14 (5.03)	p=0.41	30.00 (4.64)	p=0.10
	Control	32.03 (6.06)		31.63 (5.57)	
Fasting blood glucose	Intervention	211 (91)	p=0.76	133 (63)	p<0.001
	Control	217 (104)		223 (95)	

Table 3 Paired t-test on the level of HBM-Constructs, Self-efficacy, BMI, and Fasting Blood Sugar within Groups Before and After the intervention Program

Variable	**Group**	**Pre-intervention *M***	**Post-intervention *M***	***t*-statistics**	**p-value**
		(SD)	***(SD)***		
Perceived susceptibility	Intervention	3.58 (0.72)	4.51 (0.34)	-8.94	p<0.001
	Control	3.82 (0.66)	3.59 (0.64)	1.82	0.074
Perceived severity	Intervention	3.23 (0.71)	3.87 (0.29)	-5.81	p<0.001
	Control	3.01 (0.55)	2.87 (0.50)	1.14	0.26
Perceived benefits of blood glucose check	Intervention	3.61 (0.55)	4.67 (0.34)	-12.6	p<0.001
	Control	3.60 (0.48)	3.44 (0.46)	0.83	0.41
Perceived barriers of blood glucose check	Intervention	2.37 (0.51)	2.03 (0.31)	4.60	p<0.001
	Control	2.23 (0.36)	2.22 (0.40)	-0.36	0.72

Health motivation	Intervention	4.10 (0.46)	4.70 (0.21)	-6.80	p<0.001
	Control	4.06 (0.37)	3.92 (0.27)	1.7	0.65
Self-efficacy	Intervention	7.30 (1.41)	9.32 (0.38)	-10.20	p<0.001
	Control	7.43 (0.97)	7.09 (0.90)	1.37	0.18
Mean arterial pressure (MAP)	Intervention	98.05 (8.88)	94.57 (6.11)	2.93	p<0.01
	Control	98.13(10.65)	96.76 (7.11)	0.63	0.53
Body mass index (BMI)	Intervention	31.14 (5.03)	30.00 (4.64)	1.33	0.19
	Control	32.03 (6.06)	31.63 (5.57)	0.47	0.65
Fasting blood glucose	Intervention	211 (91)	133 (63)	-0.03	p<0.001
	Control	217 (104)	223 (95)	5.60	0.97

Table 4 Difference in the participants' Self-efficacy items pre and post intervention Program (N=108 Control group=54 Intervention group= 54)

Variable	Group	Pre-intervention *M (SD)*	*p-value*	Post-intervention *M (SD)*	*p-value*
Checking blood glucose	Intervention	6.78 (3.13)	*p*=0.87	9.39 (0.74)	*p*< 0.001
	Control	6.87 (2.87)		6.76 (2.43)	
Correcting high blood glucose	Intervention	7.06 (2.18)	*p*=0.41	9.30 (0.72)	*p*< 0.001
	Control	7.39 (2.04)		6.57 (1.71)	
Correcting low blood glucose	Intervention	7.48 (2.11)	*p*=0.35	9.39 (0.69)	*p*< 0.001
	Control	7.83 (1.75)		7.24 (1.48)	
Choosing foods	Intervention	6.98 (2.09)	*p*=0.93	9.24 (0.58)	*p*< 0.001
	Control	6.94 (1.99)		6.57 (1.74)	
Following diet regimen	Intervention	6.91 (2.14)	*p*=0.68	9.22 (0.60)	*p*< 0.001
	Control	7.06 (1.57)		6.69 (1.43)	
Controlling body weight	Intervention	7.13 (2.16)	*p*=0.49	9.07 (0.75)	*p*< 0.001
	Control	7.39 (1.64)		6.89 (1.50)	
Examini	Interve	7.04	*p*=	9.46	*p*< 0.001

ng feet for cuts	ntion	(3.14)	0.18	(0.64)	
	Control	7.74 (2.21)		7.63 (1.99)	
Taking physical exercise	Intervention	7.30 (2.49)	*p*=0.79	9.17 (0.72)	*p*< 0.001
	Control	7.19 (1.73)		6.91 (1.46)	
Adjusting eating plan during illness	Intervention	7.06 (2.01)	*p*=0.53	9.11 (0.63)	*p*< 0.001
	Control	7.28 (1.63)		6.80 (1.38)	
Following a healthy eating pattern	Intervention	7.11 (2.02)	*p*=0.79	9.39 (0.63)	*p*< 0.001
	Control	7.20 (1.47)		6.87 (1.28)	
Taking physical exercise on doctor's advice	Intervention	7.43 (2.18)	*p*=0.69	9.33 (0.70)	*p*< 0.001
	Control	7.28 (1.61)		7.24 (1.52)	
Balancing between exercise and eating plan	Intervention	7.28 (1.86)	*p*=0.76	9.22 (0.72)	*p*< 0.001
	Control	7.37 (1.28)		7.04 (1.17)	
Adjusting eating plan: when I am away from home	Intervention	7.28 (1.96)	*p*=0.53	9.22 (0.54)	*p*< 0.001
	Control	7.06 (1.74)		6.78 (1.46)	
Eating pattern: eating out	Intervention	7.06 (`2.15)	*p*=0.77	9.20 (0.60)	*p*< 0.001
	Control	7.17 (1.76)		6.76 (1.50)	
Eating pattern: eating at a vacations and holidays	Intervention	6.91 (2.20)	*p*=0.44	9.28 (0.66)	*p*< 0.001
	Control	7.22 (2.03)		6.76 (1.67)	
Eating pattern: eating at a party or company dinner	Intervention	7.26 (2.12)	*p*=0.60	9.28 (0.63)	*p*< 0.001
	Control	7.06 (1.93)		6.72 (1.62)	
Eating plan related to stress or anxiety	Intervention	7.33 (1.85)	*p*=0.62	9.06 (0.59)	*p*< 0.001
	Control	7.15 (2.03)		6.80 (1.74)	
Visiting doctor four times a year	Intervention	8.48 (2.07)	*p*=0.45	9.83 (0.38)	*p*< 0.001
	Control	8.76 (1.68)		8.65 (1.60)	
Taking medication as prescribed	Intervention	9.11 (3.04)	*p*=0.71	9.93 (0.26)	*p*< 0.001
	Control	9.00 (2.32)		8.91 (1.03)	
Adjusting medication during illness	Intervention	7.11 (3.04)	*p*=0.26	9.26 (0.73)	*p*< 0.001
	Control	7.70 (2.32)		7.28 (1.92)	

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56th World Advanced Nursing and Nursing Practice Congress; September 21-22, 2020.

Abstract Citation:

The Effect of Theory-driven Intervention Program on Diabetes Health Beliefs and self-efficacy among Jordanian Type 2 Diabetic Patients, Advanced Nursing 2020, 56th World Advanced Nursing and Nursing Practice Congress; September 21-22, 2020.