Effectiveness of the Oral Health Care Program in Older People with Type 2 Diabetes Mellitus Muang District, Nakhon Ratchasima Province: A Randomized Controlled Trial

Phetnin N* Vichayanrat T** Anunmana C***

Abstract

This study aimed to assess the effectiveness of the oral health care program with type 2 diabetes mellitus to improve oral health perception, oral hygiene and glycemic status among older patients. An experimental study was conducted in two health centers in Muang district, Nakhon Ratchasima Province between July 2019 and October 2019. Thirty-five uncontrolled diabetic older patients with chronic periodontitis in each health center were recruited. The intervention group (Yangyai health center) attended four times of the oral health care program that applied from the Health Belief Model. The control group (Khok Krut health center) received the routine program. Outcomes were assessed for the Health Belief Model questionnaires, oral hygiene and glycemic status (HbA1c) at baseline and three months, respectively. Data were analysed by using a descriptive statistic, chi-square, independent t-test, paired t-test. The p-value <0.05 was considered statistically significant. After the three months follow-up, independent t-test analysis showed significant differences in the Health Belief Model scores, oral hygiene index (Simplified Oral Hygiene Index (OHI-S)) and HbA1c between the intervention group and control group (p<0.05). Paired t-test analysis showed that, at three months, the intervention group improved significantly from baseline to final visit in the Health Belief Model scores (p≤0.001), reduced oral hygiene index from 3.31±1.04 to 0.88±0.46 (p<0.001), and reduced HbA1c level from 8.94±1.95% to 8.08±1.66% (p<0.001).This oral health care program in older people with type 2 diabetes through the Health Belief Model can improve oral health perception, oral hygiene and decreased glycemic status.

Keywords: HbA1c/ Oral hygiene index/ Oral health care program/ Type 2 diabetes mellitus/ Older people

Introduction

Ever since 2005, Thailand has become an aging society, with 10% of the population being 60 years or older. In 2017, the proportion of older people of the total had reached 17%, drawing Thailand closer to becoming a complete-aged society.[1] Nakhon Ratchasima province also becomes an aging society because of the older population increasing continuously from 14.8% in 2015, 15.2% in 2016, and 19% in 2017.[2] Prevalence of diabetes mellitus has been increasing in Thai population from 6.9% in 2009 to 8.8% in 2014 and is highest in the population age 60-69 (16.7%), and 15.9% were found in male and 21.9% in female.[3] In Nakhon Ratchasima province, older people with type 2 diabetes mellitus become rising rapidly based on Health Data Center from Ministry of Public Health (HDC program) which showed that the number increased from 120,410 patients in 2017 to 129,351 patients in 2019 and is highest in the population of age over 60 years from 66,472 patients in 2017 to 75,561 patients in 2019, most patients were found in Muang district of which 14,217 patients were diabetes mellitus.[4] Diabetes mellitus (DM) is a chronic systemic metabolic disorder that causes morbidity and mortality due to long-term complications, which affect the important organs like the eyes, blood vessels, heart, kidney, and nerve.[5] Periodontal disease is the sixth complication of diabetes

* Master of Science Program in Geriatric Dentistry, Faculty of Dentistry, Mahidol University, Bangkok.
** Department of Community Dentistry, Faculty of Dentistry, Mahidol University, Bangkok.
*** Department of Prosthodontics, Faculty of Dentistry, Mahidol University, Bangkok.

mellitus. The risk of periodontitis is increased by approximately threefold in diabetic patients compared with non-diabetic patients.[6] Periodontal disease and diabetes mellitus have a bidirectional relationship. The effect of diabetes mellitus increases the risk for periodontal disease and periodontal inflammation also negatively affects glycemic control.[7] So, it is important to decrease the adverse effects of oral complications on glycemic control in diabetic patients, especially in diabetic patients with periodontitis, through health promotion for prevention and management.[8] The Health Belief Model[9] is one of the oldest models of behavior analysis that has been used in numerous studies of health behaviors. This model, diabetic older patients need to know that they feel at risk of periodontal disease and to understand the seriousness of the complications. Moreover, they should understand the benefit oral health care and reduce the barriers and enhancing their ability to prevent that complication. In Muang district, Nakhon Ratchasima Province, there are many older people with diabetes. There has never been a study on oral health programs through the Health Belief Model theory in older people with diabetes before. So, this study aimed to assess the effectiveness of the oral health care program in older people with type 2 diabetes to improve oral health perception, oral hygiene and glycemic status among type 2 diabetes mellitus older patients.

Materials and Methods

Subjects The population for this study was diabetic patients who have received services at Yangyai and Khok Kruat Health Centers, Muang District, Nakhon Ratchasima Province. The sample size was calculated by formula developed by Cochran (1963) and calculated from the previous study.[10] The sample size was 35 in each group. Thus, the total number of samples was 70 patients. Patients aged over 60 years who accepted this study, had at least 10 natural teeth and had periodontal screening and recording (PSR)≥code 3. The patients with serious systemic disease or complications including stroke, severe heart disease, hyperosmolar hyperglycemic nonketotic syndrome (HHNS), severe neuropathy, end-stage renal failure on hemodialysis, and serious mental disorder were excluded. Patients who had manual dexterity problems, patients who depended on the caretaker, had a communicable disorder such as deafness and blindness, patients who could not speak Thai were also excluded. Yangyai and Khok Kruat Health Centers were randomly assigned to the intervention and the control groups. Yangyai Health Center received the intervention program, and Khok Kruat Health Center received routine program (control group). 257 older diabetic patients in Yangyai Health Center and 253 older diabetic patients in Khok Kruat Health Centers were selected following the inclusion criteria and randomized by simple random sampling technique to select 35 patients in both of the intervention and control groups (Figure 1).The research proposal was approved and reviewed by the ethical committee of the Faculty of Dentistry/ Faculty of Pharmacy, Mahidol University, Institutional Review Board (No.MU-DT/PY-IRB 2019/042.0307; July 3,2019).

Examiner calibration

Standardized interviewer: To avoid bias, the two interviewers were the health officer who did not work in the intervention or the control health center. The interviewers were blinded to the group assignments. The interviewers attended a training program before collecting data.

Standardized dentists: Two dentists were the same throughout the baseline and did not work in the intervention or the control health center. Both dentists measured both the intervention and control groups. They did not know where is the intervention or the control group. Intra-examiner reliability of dentists A and B were determined by using the Cronbach's coefficient alpha which was 0.99 and 0.99, indicating an excellent agreement. Inter-examiner reliability between examiners A and B tested by using the Cronbach's coefficient alpha was 0.98, indicating that inter-examiner reliability was excellent.
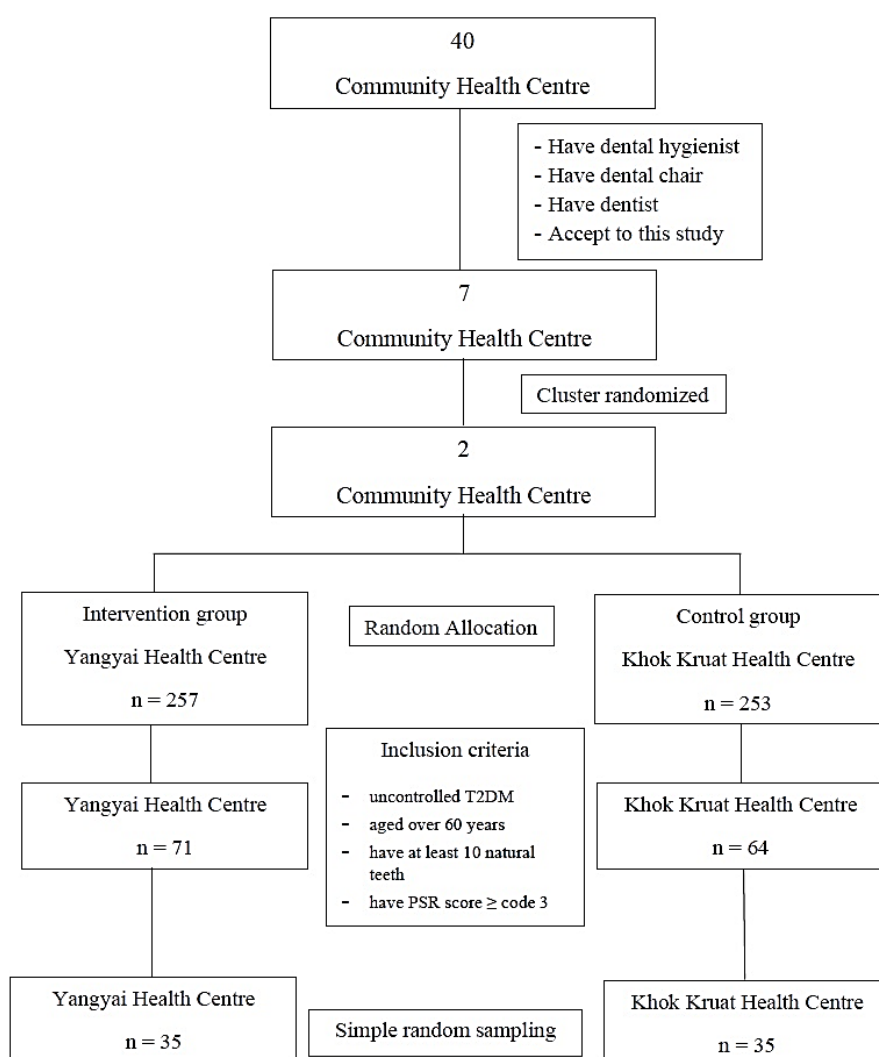
Figure 1 Consort Flowchart of study allocation

Intervention group The intervention group received four weeks of oral health care program which included the first week, a 1-hour oral health education program for type 2 diabetes mellitus by an interdisciplinary team that applied from the Health Belief Model.[9] The first week, a 1-hour oral health education program for type 2 diabetes mellitus was oral health and diabetes mellitus education from the dentist by using the slide presentation including oral complications of type 2 diabetes, the relationship between type 2 diabetes and oral health, oral health care and diabetic diet. The slide was developed by a general dentist, periodontist, physician, nurse practitioners and nutritionist. The second week, this part was group practicing oral cleaning and self-oral examination by dentist and dental hygienist. The last two weeks were scaling and root planing by appointment (5 patients per day in two weeks) and performed by a dentist. Before that treatment, an individual oral hygiene instruction was provided by a dental hygienist. It included tooth brushing, using an interdental brush, cleaning dentures, and instructions on how to self-check oral health (Figure 2).
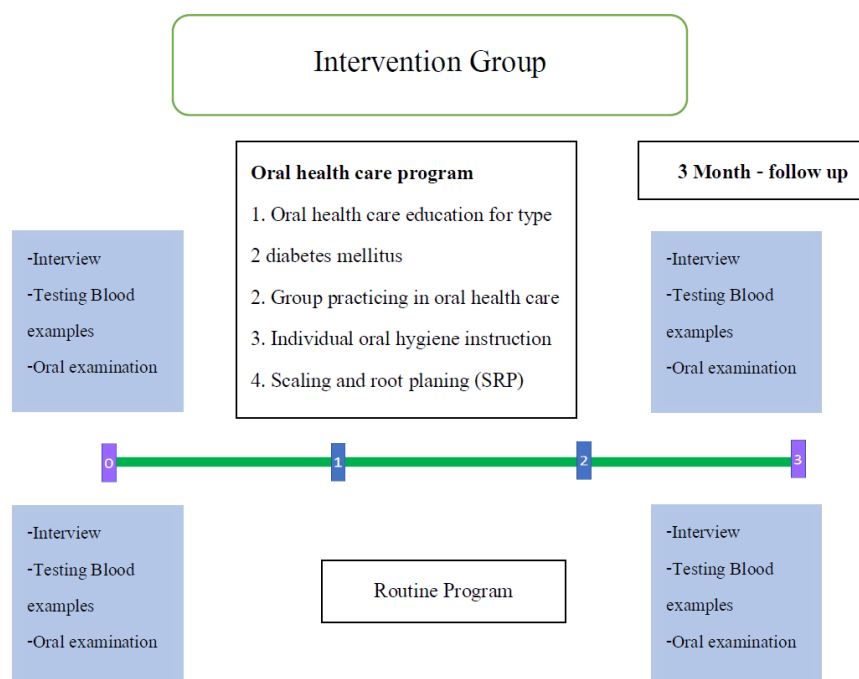
Figure 2   Flowchart of study procedure

Control group The control group received a routine program including seeing the doctor once a month, collecting pharmacy from the nurse, making an appointment for the next visit, measuring FPG every 3 months, measuring HbA1C every 6 months, and oral examination once a year.

Outcome measurement Diabetic patients in both groups received face to face interview about general characteristic, oral examination, and blood sample testing at baseline and 3 months follow up. The single-blind technique was used. The patients did not know that which group they were recruited in.

A structured questionnaire consisted of 2 parts as follow; part 1: general characteristics, part 2: Health Belief Model Questions. The structured questionnaires were validated by three experts in dentistry. The three experts consisted of experts in periodontology, community dentistry and advanced dentistry. The Item-Objective Congruence Index (IOC) was 0.95. A pilot study was proceeded to test the reliability of questionnaires. Another 30 diabetic patients who were received service in the 9th health promotion centers were interviewed. The Cronbach's coefficient alpha used to test the internal consistency reliability. The Cronbach's coefficient alpha divided to each part as follow: 5 parts of the Health

Belief Model and 1 part of Oral health behavior. Part 1 Perceived Susceptibility to periodontal disease: the Cronbach's coefficient alpha was 0.73. Part 2 Perceived Severity of periodontal disease: the Cronbach's coefficient alpha was 0.76. Part 3 Perceived benefits to prevent periodontal disease: the Cronbach's coefficient alpha was 0.75. Part 4 Perceived barriers to prevent periodontal disease: the Cronbach's coefficient alpha was 0.76. Part 5 Self-ability to carry out the recommended action: the Cronbach's coefficient alpha was 0.8. The Cronbach's coefficient alphas of the structured questionnaire were 0.73-0.80, indicating that the reliability was good.

Oral hygiene examination was done by two calibrated dentists using simplified oral hygiene index (OHI-S)[11] and teeth were dyed with 6% erythrosine before the examination.

Testing blood samples for HbA1c at baseline by nurses who routinely worked at Khok Kruat and Yangyai Health Centers. The result of the blood samples was retrieved from the medical record. The diabetic patients in these Health Centers were always received blood testing every three months.

Statistical analysis Statistical analysis of data was performed using the SPSS software (IBM SPSS statistics version 20. 0; SPSS Inc). Data were analysed by using descriptive statistics. Frequency distribution and a percentage were used to describe general characteristics. Mean and standard deviation were used to describe patient's blood test and oral hygiene index. Chi-square and independent sample t-tests were used to compare the difference between the intervention and the control group. Paired t-tests was used to compare inner-group differences between baseline and 3 months. All analysis used a 95% confidence interval, and statistically significant at p-value less than 0.05.

Results

The study included a total of 70 older patients with type 2 diabetes, commencing from July 2019 till October 2019. 35 participants completed the study protocol in the intervention group (n=35) and 35 participants in the control group (n=35). There were no statistically significant differences in the baseline characteristic data of patients between groups in terms of age, gender, body mass index, duration of being diabetes, systemic disease, history of smoking, occupational, educational level, income and, health insurance (Table 1).

Table 1 General characteristics of the patients between the two groups at baseline

General Characteristic (n=70)			
Variable	Intervention group (n = 35) (%)	Control group (n = 35) (%)	p-value
Age			
- Mean±SD	65.6±3.9	67.4±4.4	0.08
- Min-Max	60–74	61–75	
Gender			
- Male	7 (20.0)	10 (28.6)	0.11
- Female	28 (80.0)	25 (71.4)	
Body mass index			
- Mean±SD	24.9±4.1	24.9±3.4	0.97
- Min-Max	18.4–35.5	19–34.4	
Duration of being diabetes			
- Mean±SD	12.6±9.0	12.31±8.8	0.90
- Min-Max	1–35	1– 3	
Teeth			
- Mean±SD	18.49±6.41	21.26±8.50	0.13
- Min-Max	10-32	10–32	
Systemic disease			
- None	3 (8.6)	12 (34.3)	0.58
- Hypertension	12 (34.3)	10 (28.6)	
- Dyslipidaemia	4 (11.4)	2 (5.7)	
- Hypertension Dyslipidaemia	12 (34.3)	8 (22.9)	
- Chronic kidney disease	3 (8.6)	2 (5.7)	
- Heart disease	1 (2.9)	1 (2.9)	
Smoking			
- Never	30 (85.7)	26 (74.3)	0.24
- Ever	5 (14.3)	9 (25.7)	
- Current smoker	0 (0)	0 (0)	
Occupation			
- Work	8 (22.9)	10 (28.6)	0.25
- Non-working	27 (77.1)	25 (71.4)	
Educational level			
- Primary school	33 (94.3)	29 (82.9)	0.14
- Secondary school	2 (5.7)	6 (17.1)	
Income			
- < 5,000 baht	24 (68.6)	18 (51.4)	0.29
- 5,000 – 10,000 baht	5 (14.3)	10 (28.6)	
- > 10,000 baht	6 (17.1)	7 (20)	
Health insurance			
- Universal coverage	32 (91.4)	31 (88.6)	0.70
- Government	3 (8.6)	4 (11.4)	

p-value comparing between the two groups using chi-square and independent t-test

Health Belief Model Scores The Health Belief Model components of perceived susceptibility, perceived severity, perceived barriers, perceived benefit and self-ability of both groups at baseline and three months follow up are shown in Table 2.

The component of the Health Belief Model showed no statistically significant differences between the two groups at the baseline, whereas in the final three months visit, there were statistically significant differences between the two groups. The first component, perceived susceptibility, there were statistically significant differences between the intervention and the control group score was 11.97±0.17 versus 11.43±1.22, p≤0.001. For perceived severity, there were statistically significant differences between the intervention and the control group; score was 12±0.00 versus 11.49±1.12, p=0.01. The last three components, perceived benefit, perceived barriers and self-ability, were also statistically significant differences between two groups (11.94±0.24 versus 11.31±1.59, 9.09±2.08 versus 9.89±3.16, and 11.80±0.47 versus 10.91±1.74, p≤0.05)

The mean score (95% confidence interval) of the intervention group improved significantly from baseline to three months follow up after the oral health care program was finished across all five components (10.94±1.59 to 11.97±0.17 in perceived susceptibility, 11.31±1.13 to 12±0. 00 in perceived severity, 10. 20±1.32 to 11. 94±0. 24 in perceived benefits, 11.60±0.70 to 9.09±2.08 in perceived barriers and 9.74±1.42 to 11.80±0.47 in self-ability, p≤0.001).

For the control group, all five components of the Health Belief Model were found to have no significant changes between baseline and three months follow up (11.37±1.11 to 11.43±1.22, p=0.82 in perceived susceptibility, 11.77±0.49 to 11.49±1.12, p=0.16 in perceived severity, 11.57±0.88 to 11.31±1.59, p=0.45 in perceived benefits, 10.36±2.18 to 9.89±3.16, p=0.06 in a perceived barrier, and 11.11±3.16 to 10.91±1.74, p=0.57 in self-ability.

Table 2   Comparison of the Health Belief Model (HBM) Components variables between the groups.

Health Belief Model (HBM) Components variables	Intervention Group (N=35)			Control Group (N=35)			T-test Results	
	Baseline Mean (SD)	3 months follow up Mean (SD)	Paired t test #p=	Baseline Mean (SD)	3 months follow up Mean (SD)	Paired t test ##p=	Baseline +p=	3 months follow up ++p=
Perceived Susceptibility	10.94 (1.59)	11.97 (0.17)	0.001*	11.37 (1.11)	11.43 (1.22)	0.82	0.12	<0.001*
Perceived Severity	11.31 (1.13)	12 (0.00)	<0.001*	11.77 (0.49)	11.49 (1.12)	0.16	0.19	0.01*
Perceived benefits	10.20 (1.32)	11.94 (0.24)	<0.001*	11.57 (0.88)	11.31 (1.59)	0.45	0.33	0.01*
Perceived barriers	11.60 (0.70)	9.09 (2.08)	<0.001*	10.36 (2.18)	9.89 (3.16)	0.06	0.06	0.016*
Self-ability	9.74 (1.42)	11.80 (0.47)	0.001*	11.11 (3.16)	10.91 (1.74)	0.57	0.05	0.006*

#p-value comparing between before and after outcomes within the intervention group using paired t-test
##p-value comparing between before and after outcomes within the control group using paired t-test
+p-value comparing between the two groups at baseline using independent t-test
++p-value comparing between the two groups at 3 months follow up using independent t-test

Glycemic status Changes in glycemic status (HbA1c) from baseline to three months follow up visit are shown in Table 3. Comparing glycemic status between the intervention and the control group, no statistically significant differences in HbA1c value were found (p=0.99). At three months after the intervention was finished, the mean (95% confidence interval) HbA1c for the intervention group was 8.08±1.66% as against 8.86±1.58% for the control group (p=0.04) with a statistically significant difference.

There was a statistically significant reduction in the levels of HbA1c in the intervention group before and after attending the program. The mean HbA1c at baseline and three months after, were 8.94±1.95% and 8.08±1.66%, respectively (p<0.001), whereas there was no significant reduction in the control group (8.95±1.65% at baseline versus 8.86±1.58% at three months after, p=0.37) as shown in Table 3.

Oral hygiene status Comparing oral hygiene status between the intervention and control groups, there was no statistically significant difference in the mean OHI-S at baseline (3.31±1.04 versus 3.18±0.73, p=0.56) whereas, after three months follow up, the statistically significant difference of the mean OHI-S was shown. The mean OHI-S of the intervention group was 0.88±0.46 as compared to the control group which was 2.99±0.97 (p<0.001) (Table 4).

Moreover, there was a statistically significant reduction in OHI-S in the intervention group (3.31±1.04 at baseline versus 0.88±0.46 at three months follow up, p<0.001) However, there was no significant difference in the control group (3.18±0.73 at baseline versus 2.99±0.97 at three months follow up, p=0.11) as shown in Table 4.

Table 3   Comparison of HbA1c levels between and within the group.

Glycemic status	Intervention group (N=35)	Control group (N=35)	p-value[+]
HbA1c level at baseline (%)	8.94±1.95	8.95±1.65	0.99
HbA1c level 3 months after (%)	8.08±1.66	8.86±1.58	0.04*
p-value[++]	<0.001*	0.37	

+   p-value comparing between the two groups using independent t-test

++   p-value comparing between before and after outcomes within group using paired t-test

Table 4   Comparison of OHI-S between and within the group.

Oral hygiene status	Intervention group (N=35)	Control group (N=35)	p-value[+]
OHI-S at baseline	3.31±1.04	3.18 ± 0.73	0.56
OHI-S 3 months after	0.88±0.46	2.99±0.97	<0.001*
p-value++	<0.001*	0.11	

+   p-value comparing between the two groups using independent t-test

++p-value comparing between before and after outcomes within group using paired t-test

Discussion

The results of this study demonstrate that the oral health care program improved glycemic and oral hygiene status in uncontrolled type 2 diabetes mellitus older patients with chronic periodontitis.

After the completion of the program, glycemic status, including HbA1c decreased in the intervention group at three months follow up. HbA1c in the intervention group decreased from 8.98% at baseline to 8.06% at the final visit. Similar to other previous studies,[12,13] periodontal therapy in diabetic patients could reduce HbA1c level from -0.36% to -0.48% which were significantly different as compared to the control group in three months after therapy was complete. Simpson, et al.[14] found that periodontal therapy with or without additional treatment can reduced HbA1c by 0.29% at 3 months and 0.02% at 6 months after treatment was finished. However, the previous study of the effect of periodontal treatment alone in uncontrolled type 2 diabetes mellitus Thai older subjects was not significant although HbA1C values for the treatment group dropped by -0.2% three months after completion of the treatment.[15] In addition, a previous study has shown that the combination of lifestyle changes and dental care program also decreased HbA1c 0.29% after 3-months follow-ups whereas the HbA1c increased 0.09% in the control group.[10] In line with this, our program that combined the treatment and oral health education could reduce HbA1c 0.92% in the intervention group within three months.

Regarding the oral hygiene status, OHI-S in the intervention group also improved after providing the oral care program. Previous research papers show a similar result that nonsurgical periodontal therapy and oral hygiene instruction in type 2 diabetes subjects with chronic periodontitis can reduce plaque index more than 80% within 3 months.[16] The intensive oral hygiene care on periodontitis in type 2 diabetic patients can significantly reduce plaque index at six months after participating in that program.[17]

Our study demonstrated that the health belief model scores can be improved in the intervention group. Similar to many previous studies, knowledge, behavior and attitude toward type 2 diabetes and oral health have found to be increased after the intervention.[10,18-20] The model of oral health care in Thai elderly with diabetes mellitus found that the attitudes of oral health care had a higher average score than before, behaviors of the oral health changed in improved oral hygiene showed from reduced plaque index score.[19] Similar to the model of oral health care in Thai elderly diabetes mellitus patients, this model was applied from the health belief model theory. After this program, they have had a higher score in perceived susceptibility risk to periodontal disease, perceived severity of the periodontal disease, perceived benefits of periodontal prevention and reduced plaque index score.[20] These results showed the effectiveness of the oral health care program to increase the perception about diabetes mellitus and oral health among older people with uncontrolled diabetes mellitus with chronic periodontitis for three months.

The strengths of this study are 100% response rate, double-blind randomized controlled trial technique, and used biomarkers to examine outcomes. One of the limitations of this study is short of time. In the future, we suggest to incorporate a longer follow up period. Nevertheless, the oral health care program had effects that could be used in routine work by health-care workers in other health centers.

Conclusion

This oral health care program in older people with uncontrolled type 2 diabetes and chronic periodontitis that apply from the Health Belief Model can improved perceptions, oral hygiene and, glycemic status within three months.

References

1. The National Commission on the Elderly. The Situation of the Thai Elderly Report 2017. Bangkok, Thailand; 2017.

2. Organization NNs. The older population situation in Nakhonratchasima Province 2017 [cited 2019 April 28]. Available from: http://nkrat.nso.go.th/index.php?option=com_content&view=article&id=460:order2560&catid=115&Itemid=590.

3. Aekpalakarn W. Diabetes mellitus situation in Thailand 2017. Thai Dia J 2017;49(1):7-14.

4. The Health Data Center of Thailand. HDC report the incidence of diabetes mellitus 2019 [cited 2019 29 April]. Available from: https://hdcservice.moph.go.th/hdc/reports/report.php?source=formated/ncd.php&cat_id=6a1fdf282fd28180eed7d1cfe0155e11&id=cefa42b9223ec4d1969c5ce18d762bdd#.

5. American Diabetes Association. Standards of Medical Care in Diabetes 2019. J Clin Appl Res Educ 2019; 42:65-8.

6. Preshaw PM, Alba AL, Herrera D, Jepsen S, Konstantinidis A, Makrilakis K, et al. Periodontitis and diabetes: a two-way relationship. Diabetologia 2012; 55(1):21-31.

7. Lamster IB, Lalla E, Borgnakke WS, Taylor GW. The relationship between oral health and diabetes mellitus. J Am Dent Assoc 2008;139(Suppl 5):19s-24s.

8. Albert DA, Ward A, Allweiss P, Graves DT, Knowler WC, Kunzel C, et al. Diabetes and oral disease: implications for health professionals. Ann N Y Acad Sci 2012;1255:1-15.

9. Saengtipbovorn S, Taneepanichskul S. Effectiveness of lifestyle change plus dental care (LCDC) program on improving glycemic and periodontal status in the elderly with type 2 diabetes BMC Oral Health 2014;14:72.

10. Abraham C, Sheeran P.The Health Belief Model. In: M. Corner & P. Norman, eds. Predicting health behaviour: Research and practice with social cognition models. Open University Press 2005;28-80.

11. Greene JG, Vermillion JR. The Simplified Oral Hygiene Index. J Am Dent Assoc 1964;68(1):7-13.

12. Teshome A, Yitayeh A. The effect of periodontal therapy on glycemic control and fasting plasma glucose level in type 2 diabetic patients: systematic review and meta-analysis. BMC Oral Health 2016;17(1):31.

13. Engebretson S, Kocher T. Evidence that periodontal treatment improves diabetes outcomes: a systematic review and meta-analysis. J Clin Periodontol 2013;40 (Suppl 14):S153-63.

14. Simpson TC, Weldon JC, Worthington HV, Needleman I, Wild SH, Moles DR, et al. Treatment of periodontal disease for glycaemic control in people with diabetes mellitus. Cochrane Database Sys Rev 2015;2015(11): CD004714.

15. Promsudthi A, Pimapansri S, Deerochanawong C, Kanchanavasita W. The effect of periodontal therapy on uncontrolled type 2 diabetes mellitus in older subjects. Oral Dis 2005;11(5):293-8.

16. Raman RPC, Taiyeb-Ali TB, Chan SP, Chinna K, Vaithilingam RD. Effect of nonsurgical periodontal therapy verses oral hygiene instructions on Type 2 diabetes subjects with chronic periodontitis: a randomised clinical trial. BMC Oral Health 2014; 14(1):79.

17. Lee HK, Choi SH, Won KC, Merchant AT, Song K-B, Jeong S-H, et al. The effect of intensive oral hygiene care on gingivitis and periodontal destruction in type 2 diabetic patients. Yonsei Med J 2009; 50(4):529-36.

18. Deeraksa S, Leangubon J, Thaewpia S. The effectiveness of oral health program by learning with a group discussion for oral health behaviors of patients with diabetes mellitus in the Sanitarium Thakhuntho Sub District, Thakhuntho District, Kalasin Province. Thai Dent Nur J 2014;25(2):45-58.

19. Mangkornkeaw T. A model developement of oral health care in the elderly patient with diabetes mellitus. J Raja 2016:143-50.

20. Nantamart U, Jaikeaw W. The effectiveness of oral program in diabetes mellitus patients in Chanuman Hospital. 2018.

Corresponding Author

Namon Phetnin

Geriatric Dentistry Program,

Faculty of Dentistry, Mahidol University,

Bangkok, 10400.

Tel.: +66 8 1257 5915

Email: namon5522@gmail.com

ผลของโปรแกรมสร้างเสริมสุขภาพช่องปากในผู้สูงอายุที่เป็นโรคเบาหวานชนิดที่ 2 ในเขตอำเภอเมือง จังหวัดนครราชสีมา: การทดลองแบบสุ่มและมีกลุ่มควบคุม

ฉมน เพ็ชรนิล* ทิพนาถ วิชญาณรัตน์** ชูชัย อนันต์มานะ***

บทคัดย่อ

การศึกษานี้เป็นการศึกษาวิจัยเชิงทดลอง มีวัตถุประสงค์เพื่อศึกษาผลของการใช้โปรแกรมสร้างเสริมสุขภาพช่องปากต่อการรับรู้ความสำคัญของสุขภาพช่องปากและ โรคเบาหวาน สภาวะอนามัยช่องปาก และการลดลงของระดับน้ำตาลในเลือดในผู้สูงอายุที่เป็นโรคเบาหวานชนิดที่ 2 ในเขตอำเภอเมือง จังหวัดนครราชสีมา ทำการศึกษาในผู้สูงอายุที่เป็นโรคเบาหวานชนิดที่ 2 และเป็นโรคปริทันต์เรื้อรัง จำนวน 35 รายต่อกลุ่ม ที่มารับบริการที่โรงพยาบาลส่งเสริมสุขภาพตำบลยางใหญ่ (กลุ่มทดลอง) และศูนย์แพทย์สุขภาพชุมชนโคกกรวด (กลุ่มควบคุม) เป็นระยะเวลา 3 เดือน ตั้งแต่เดือนกรกฎาคม 2562 ถึง เดือนตุลาคม 2562 โดยกลุ่มทดลองได้รับโปรแกรมสร้างเสริมสุขภาพช่องปากที่ประยุกต์จากทฤษฎีความเชื่อสุขภาพ กลุ่มควบคุมได้รับการรักษาตามปกติ ผู้สูงอายุจะได้รับการวัดผล 2 ครั้ง ก่อนทดลอง และ 3 เดือนหลังการทดลอง เครื่องมือที่ใช้ ได้แก่ แบบสอบถามการรับรู้โรคเบาหวานและสุขภาพช่องปากตามทฤษฎีความเชื่อสุขภาพ การตรวจสภาวะสุขปากช่องปากโดยใช้ดัชนีคราบจุลินทรีย์ วัดระดับน้ำตาลสะสมเฉลี่ยในเลือด วิเคราะห์ข้อมูลโดยใช้โปรแกรมสำเร็จรูป ด้วย การแจกแจงความถี่ ร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน และทดสอบความแตกต่างโดยใช้สถิติไคว์สแคว์ สถิติทดสอบค่าเฉลี่ย 2 กลุ่มที่เป็นอิสระต่อกัน และ สถิติทดสอบค่าเฉลี่ย 2 กลุ่มที่สัมพันธ์กัน ผลการศึกษาพบว่าผู้สูงอายุเบาหวานกลุ่มทดลองมีคะแนนการรับรู้โรคเบาหวานและสุขภาพช่องปาก ระดับน้ำตาลสะสมเฉลี่ยในเลือด และดัชนีคราบจุลินทรีย์ แตกต่างกับกลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (p<0.05) หลังจากเสร็จสิ้นการทดลอง พบว่ากลุ่มทดลองมีคะแนนการรับรู้ดีขึ้น มีดัชนีคราบจุลินทรีย์ลดลงจาก 3.31±1.04 เหลือ 0.88±0.46 และสามารถลดระดับน้ำตาลสะสมเฉลี่ยในเลือดลงจาก 8.94±1.95% เหลือ 8.08±1.66% อย่างมีนัยสำคัญทางสถิติ (p≤0.001)

คำไขรหัส: ระดับน้ำตาลสะสมเฉลี่ยในเลือด/ ดัชนีคราบจุลินทรีย์/ โปรแกรมสร้างเสริมสุขภาพช่องปาก/ โรคเบาหวานชนิดที่ 2/ ผู้สูงอายุ

ผู้รับผิดชอบบทความ

ฉมน เพ็ชรนิล
สาขาวิชาทันตกรรมผู้สูงอายุ
คณะทันตแพทยศาสตร์ มหาวิทยาลัยมหิดล
กรุงเทพมหานคร 10400
โทรศัพท์: 0 8 1257 5915
จดหมายอิเล็กทรอนิกส์: namon5522@gmail.com

* หลักสูตรวิทยาศาสตรมหาบัณฑิต สาขาวิชาทันตกรรมผู้สูงอายุ คณะทันตแพทยศาสตร์ มหาวิทยาลัยมหิดล กรุงเทพมหานคร
** ภาควิชาทันตกรรมชุมชน คณะทันตแพทยศาสตร์ มหาวิทยาลัยมหิดล กรุงเทพมหานคร
*** ภาควิชาทันตกรรมประดิษฐ์ คณะทันตแพทยศาสตร์ มหาวิทยาลัยมหิดล กรุงเทพมหานคร