

The Effect of Diabetes Self-Management Education, Based on The Health Belief Model, on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia

by Soenarnatalina Melaniani

Submission date: 10-Apr-2020 12:06PM (UTC+0800)

Submission ID: 1294232607

File name: The_Effect_Rondhianto_sonernatalina_2018_1.pdf (609.95K)

Word count: 4496

Character count: 25958

EXECUTIVE EDITOR

Prof Vidya Surwade

Associate Professor, Dr Baba Saheb Ambedkar, Medical College & Hospital, Rohinee, Delhi

INTERNATIONAL EDITORIAL ADVISORY BOARD

1. **Dr. Abdul Rashid Khan B. Md Jagar Din**, (Associate Professor)
Department of Public Health Medicine, Penang Medical College, Penang, Malaysia
2. **Dr. V Kumar** (Consulting Physician)
Mount View Hospital, Las Vegas, USA
3. **Basheer A. Al-Sum**,
Botany and Microbiology Deptt, College of Science, King Saud University,
Riyadh, Saudi Arabia
4. **Dr. Ch Vijay Kumar** (Associate Professor)
Public Health and Community Medicine, University of Buraimi, Oman
5. **Dr. VMC Ramaswamy** (Senior Lecturer)
Department of Pathology, International Medical University, Bukit Jalil, Kuala Lumpur
6. **Kartavya J. Vyas** (Clinical Researcher)
Department of Deployment Health Research,
Naval Health Research Center, San Diego, CA (USA)
7. **Prof. PK Pokharel** (Community Medicine)
BP Koirala Institute of Health Sciences, Nepal

NATIONAL SCIENTIFIC COMMITTEE

1. **Dr. Anju Ade** (Associate Professor)
Navodaya Medical College, Raichur, Karnataka
2. **Dr. E. Venkata Rao** (Associate Professor) Community Medicine,
Institute of Medical Sciences & SUM Hospital, Bhubaneswar, Orissa.
3. **Dr. Amit K. Singh** (Associate Professor) Community Medicine,
VCSG Govt. Medical College, Srinagar – Garhwal, Uttarakhand
4. **Dr. R G Viveki** (Professor & Head) Community Medicine,
Belgaum Institute of Medical Sciences, Belgaum, Karnataka
5. **Dr. Santosh Kumar Mulage** (Assistant Professor)
Anatomy, Raichur Institute of Medical Sciences Raichur (RIMS), Karnataka
6. **Dr. Gouri Ku. Padhy** (Associate Professor) Community and Family
Medicine, All India Institute of Medical Sciences, Raipur
7. **Dr. Ritu Goyal** (Associate Professor)
Anaesthesia, Sarswati Institute of Medical Sciences, Panchsheel Nagar
8. **Dr. Anand Kalaskar** (Associate Professor)
Microbiology, Prathima Institute of Medical Sciences, AP
9. **Dr. Md. Amirul Hassan** (Associate Professor)
Community Medicine, Government Medical College, Ambedkar Nagar, UP
10. **Dr. N. Girish** (Associate Professor) Microbiology, VIMS&RC, Bangalore
11. **Dr. BR Hungund** (Associate Professor) Pathology, JNMC, Belgaum.
12. **Dr. Sartaj Ahmad** (Assistant Professor),
Medical Sociology, Department of Community Medicine, Swami Vivekananda Subharti
University, Meerut, Uttar Pradesh, India
13. **Dr Sumeeta Soni** (Associate Professor)
Microbiology Department, B.J. Medical College, Ahmedabad, Gujarat, India

NATIONAL EDITORIAL ADVISORY BOARD

1. **Prof. Sushanta Kumar Mishra** (Community Medicine)
GSL Medical College – Rajahmundry, Karnataka
2. **Prof. D.K. Srivastava** (Medical Biochemistry)
Jamia Hamdard Medical College, New Delhi
3. **Prof. M Sriharibabu** (General Medicine) GSL Medical College, Rajahmundry,
Andhra Pradesh
4. **Prof. Pankaj Datta** (Principal & Prosthodontist)
Indraprastha Dental College, Ghaziabad

NATIONAL EDITORIAL ADVISORY BOARD

5. **Prof. Samarendra Mahapatro** (Pediatrician)
Hi-Tech Medical College, Bhubaneswar, Orissa
6. **Dr. Abhiruchi Galhotra** (Additional Professor) Community and Family
Medicine, All India Institute of Medical Sciences, Raipur
7. **Prof. Deepti Pruthvi** (Pathologist) SS Institute of Medical Sciences &
Research Center, Davangere, Karnataka
8. **Prof. G S Meena** (Director Professor)
Maulana Azad Medical College, New Delhi
9. **Prof. Pradeep Khanna** (Community Medicine)
Post Graduate Institute of Medical Sciences, Rohtak, Haryana
10. **Dr. Sunil Mehra** (Paediatrician & Executive Director)
MAMTA Health Institute of Mother & Child, New Delhi
11. **Dr. Shailendra Handu**, Associate Professor, Pharma, DM (Pharma, PGI
Chandigarh)
12. **Dr. A.C. Dhariwal**: Directorate of National Vector Borne Disease
Control Programme, Dte. DGHS, Ministry of Health Services, Govt. of
India, Delhi

Print-ISSN: 0976-0245-Electronic-ISSN: 0976-5506, Frequency: Quarterly
(Four issues per volume)

Indian Journal of Public Health Research & Development is a double blind peer reviewed international journal. It deals with all aspects of Public Health including Community Medicine, Public Health, Epidemiology, Occupational Health, Environmental Hazards, Clinical Research, and Public Health Laws and covers all medical specialties concerned with research and development for the masses. The journal strongly encourages reports of research carried out within Indian continent and South East Asia.

The journal has been assigned International Standards Serial Number (ISSN) and is indexed with Index Copernicus (Poland). It is also brought to notice that the journal is being covered by many international databases. The journal is covered by EBSCO (USA), Embase, EMCare & Scopus database. The journal is now part of DST, CSIR, and UGC consortia.

Website : www.ijphrd.com

©All right reserved. The views and opinions expressed are of the authors and not of the Indian Journal of Public Health Research & Development. The journal does not guarantee directly or indirectly the quality or efficacy of any product or service featured in the advertisement in the journal, which are purely commercial.

Editor

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Printed, published and owned by

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Published at

Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)



Indian Journal of Public Health Research & Development

www.ijphrd.com

Contents

Volume 9, Number 11

November 2018

1. The Spread Area of Malaria Vector in Timor Island, East Nusa Tenggara Province 1
Muhammad Kazwaini, Chatarina U. Wahyuni, Monika Noshirma
2. Developing Community Resilience as a Supporting System in the Care of People with
Mental Health Problems in Indonesia 6
Retno Lestari, Ah Yusuf
3. Effects of Knowledge of Vitamin D on Attitudes toward Sun Exposure among Middle-Aged and
Elderly Indonesian Adults 11
Rivan Virlando Suryadinata, Bambang Wirjatmadi, Merryana Adriani, Sri Sumarmi
4. The Effects of Age And Body Mass Index on Blood Glucose, Blood Cholesterol, and
Blood Pressure in Adult Women 16
Riza Fikriana, Shrimarti Rukmini Devy
5. The Antioxidant Activity and Organoleptic Properties of Soursoup Leaf Tea (*Annona Muricata* L.) and
Moringa Leaf (*Moringa Oliefera* L.) in Combination with Guava Leaf (*Psidium Guajava*) 22
Roy J. Irawan, Trias Mahmudiono
6. Parent Communication Regarding Sexual and Reproductive Health of Adolescent:
A Qualitative Systematic Review 27
Fransiska Imavike Fevriasanty, Oedojo Soedirham
7. Five Types of Personality and the Locus of Internal Control in relation to Preeclampsia Pregnancy 33
Lusiana Meinawati, Kusnanto Kusnanto, Oedojo Soedirham
8. The Effect of Diabetes Self-Management Education, Based on The Health Belief Model,
on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia 37
Rondhianto, Kusnanto, Soenarnatalina Melaniani
9. How does the Dayak Ngaju Community Treat Malaria? A Qualitative Study on the Use of Traditional
Medicine in Central Kalimantan Province, Indonesia 43
Trilianty Lestarisa, Soedjajadi Keman
10. The Effect of Young Coconut Water against Morning Sickness among Women in the
First Trimester of Pregnancy 48
Tri Ratna Ariestini, Windhu Purnomo
11. Factors Affecting the Incidence of Chronic Energy Deficiency among Pregnant Women
Attending the Pulubala Community Health Centre 53
Zuriati Muhamad, Sri Sumarmi
12. Implementation of Birth Preparedness and Complication Readiness (BPCR) in High Risk Pregnancies 58
Ika Mardiyanti, Nursalam, Arief Wibowo

The Effect of Diabetes Self-Management Education, Based on The Health Belief Model, on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia

Rondhianto¹, Kusnanto², Soenarnatalina Melaniani³

¹Doctoral Program of Public Health, Universitas Airlangga, Faculty of Nursing, Universitas Jember;

²Faculty of Nursing; ³Department Biostatistics and Population Study, Faculty of Public Health, Universitas Airlangga

ABSTRACT

Lack of knowledge on disease management may distress type 2 diabetic patients, which could negatively affect their quality of life. The health belief model has been widely used to improve the patient's knowledge, skill, and abilities in relation to self-care. The study aimed to examine the effect of diabetes self-management education, based on the Health Belief Model (HBM), on the psychosocial outcome (self-efficacy, self-care behaviour, distress, and quality of life), and glycemic control (measured by their blood glucose level). A randomised control trial was employed, using a pre-test-post-test design. Our study recruited 120 type 2 diabetic patients who were equally assigned to the intervention group (n= 60) and the control group (n=60). The data was analysed using an independent t test with a significance level of 0.05. After the intervention, the intervention group and control group showed significantly different scores in self-efficacy, self-care behaviour, diabetes distress, quality of life, and blood glucose level. Diabetes self-management education based on the HBM had a significant effect on the psychosocial outcome of patients with type 2 diabetes.

Keywords: health education, health belief model, type 2 diabetes, psychosocial outcome, glycemic control.

INTRODUCTION

Diabetes Mellitus (DM) is a major chronic disease in the world which can cause heart disease, blindness, renal failure and lower extremity amputations.^{1, 2} Globally, the number of people living with type 2 DM was approximately 424.9 million people in 2017.² Type 2 diabetes affected almost 6.7% of the Indonesia population, approximately 10.3 million people, in 2017.² Worldwide, Indonesia is ranked 6th among countries with a high percentage of the population with type 2 DM, after China, India, the United States, Brazil and Mexico.² Diabetes type 2 is the third leading cause of death in Indonesia after stroke (21.1%) and coronary heart disease (12.9%).³

Living with diabetes can be difficult for patients and their families. Diabetic patients can show negative psychological responses, including feeling guilty and hopeless, losing confidence, having a low self-image, and becoming anxious and angry.^{4,5} Diabetes distress is an additional burden for patients and their families, as a result of the cost incurred due to long-term care and treatments. Appropriate treatment is required to prevent disability, poor productivity, low quality of life and increased mortality.⁶ Patients and their families should acquire the knowledge, skills and self-efficacy related to the proper self-management of DM for successful treatment.^{7, 8} The Health Belief Model (HBM) is a constructed model that has been widely used to predict adherence to self-care behaviour.⁹ It consists of five core components, including perceived severity, perceived susceptibility, cues to action, perceived benefits and perceived barriers. Perceived severity relates to beliefs on the severity level of the disease and the consequences relevant to the illness. Perceived susceptibility represents to what extent the person perceives their risk of having the illness. Cues to action reflects the internal or external

Corresponding Author:

Rondhianto
Doctoral Program of Public Health,
Faculty of Public Health, Universitas Airlangga
Faculty of Nursing, Universitas Jember
Email: rondhianto-2017@fkm.unair.ac.id

indications such as physical symptoms (internal) and medication reminders (external). Perceived benefits involves the individual's perception toward the advantages and accessibility of the actions that they are to take. Perceived barriers includes the negative consequences from the actions taken.⁹ The study aimed to examine the effect of diabetes self-management education, based on HBM, on psychosocial outcome (self-efficacy, self-care behaviour, distress and quality of life), and glycemetic control.

METHOD

The study employed a randomised control trial with a pre-test- post-test design. The study population was made up of 382 patients with type 2 DM attending the Patrang community health center (CHC) in Jember district, East Java in Indonesia. The inclusion criteria was that the patients had been diagnosed with type 2 DM within the last six months, who showed compos mentis mindfulness and were generally in good condition. Their age should have been between 40 and 65 years old, they lived within the Patrang CHC service area, and expressed a willingness to participate in the study. Patients with a cognitive impairment (dementia and active psychosis) were excluded. 260 patients met the inclusion and exclusion criteria.

Using the 95% confidence interval ($\alpha = 0.05$) and a statistical power of 80% ($\beta = 0.20$), the sample size for the intervention group and control group was 55 subjects each. To anticipate the participants dropping out, an additional 10% was determined, resulting in 60 subjects recruited for each group. Simple random sampling was applied in order to select the study participants.

The intervention group received a six-week educational program using the HBM approach over six sessions. The control group received their usual daily care. Every educational session lasted for approximately 120 minutes. The intervention group received knowledge about diabetes and self-management activities based on the four main sources of self-efficacy including performance accomplishment, vicarious experience, verbal persuasion, and physiological and emotional arousal. The six intervention sessions were divided into two home visit sessions (sessions 1 and 6) and four group sessions (sessions 2-5). The educational program was prepared based on the national standard for diabetes self-management education and support, and the management and prevention of type 2 DM from

the Indonesian Endocrinology Association (PERKENI). Additional information was obtained from the American Diabetes Association (ADA). The pre-test was conducted before the intervention started, while the post-test was conducted three months after the intervention.

The pre-test and post-test questionnaires used four scales to measure the psychosocial outcome, including the diabetes management self-efficacy scale (DMSES), the diabetes distress scale (DDS), the summary of diabetes self-care activities (SDSCA), and the diabetes quality of life scale (DQOL), in addition to the glycemetic control test tool. The DMSES questionnaire used was a modified version by Shi, Ostwald, & Wang (2010) from the van der Bijl instrument.¹⁰ The DMSES questionnaire consisted of 20 items with a Likert scale of 1-5. The results of the validity test showed an r-value of 0.658, and reliability test of $\alpha = 0.975$. The DDS questionnaire of 17 items was adopted from the instrument developed by Polonsky, et al. (2005).¹¹ The results of the DDS validity test showed an r-value that was larger than 0.537, with a reliability test of $\alpha = 0.874$. The SDSCA questionnaire consisted of 12 items with a scoring system of 0 – 7, using the Wu modified version (2009) from the Toobert SDSCA instrument.¹² The SDCA validity test result was $r = 0.632$, with the reliability test being $\alpha = 0.923$. The DQOL questionnaire had 30 items with multiple selection available, scored using the Likert scale. The DQOL result of the validity was $r > 0.36$, and the reliability test $\alpha = 0.956$. The data analysis used an independent t-test to examine the group differences with a significance p-value of $\alpha \leq 0.05$.

RESULTS

Table 1 shows the mean of patient age was 57.60 years. Most of the patients were female (65%), employed (65%), and had an education level of junior high school (41.67%). The average duration of illness among the patients was 45.07 months. The patient characteristics showed no significant difference between the intervention group and the control group. Table 1 displays the baseline score of self-efficacy, self-care behaviour, diabetes distress, quality of life and blood glucose level. The mean scores for self-efficacy, self-care behaviour, diabetes distress, and quality of life were 41.63, 15.13, 39.00, and 65.77 respectively, with no significant difference between the intervention group and the control group. Likewise, the average blood glucose level was 207.62 mg/dl, and no significant difference was observed between the intervention group and the control group.

Table 1: Baseline characteristics of all patients (n = 120) in the intervention group and the control group (n = 60/group)

Variable	All patients (n, %) or mean ± SD	Intervention group (n, %) or mean ± SD	Control group (n, %) or mean ± SD	P-value
Age (years)	57.60 ± 6.25	57.50 ± 6.83	57.70 ± 5.65	0.862
Gender				
Female	76 (63.33%)	42 (70%)	34 (56.67%)	0.132
Male	44 (36.67 %)	18 (30%)	26 (43.33%)	
Employment				
Employed	78 (65%)	38 (63.33%)	40 (66.67%)	0.718
Unemployed/retired/house- wife	42 (35%)	22(36.67%)	20 (33.33%)	
Duration of illness	45.07 ± 33.05	45.33 ± 37.45	44.80 ± 28.28	0.930
Level of education				
Elementary school	39 (32.5%)	18 (30%)	21 (35%)	0.769
Junior high school	50 (41.67%)	24 (40%)	26(43.33%)	
Senior high school	23 (19.17%)	12 (20%)	11 (18.33%)	
Higher education	8 (6.67%)	6 (10%)	2 (3.33%)	
Self-efficacy score	41.63 ± 8.75	41.83 ± 9.67	41.43 ± 7.80	0.803
Self-care behaviour score	15.13 ± 4.86	14.93 ± 4.64	15.33 ± 5.10	0.654
Diabetes distress score	39.00 ± 6.11	39.33 ± 6.87	38.67 ± 5.28	0.552
Quality of life score	65.77 ± 15.37	66.03 ± 17.09	65.50 ± 13.57	0.850
Blood glucose level (mg/dl)	207.62 ± 63.69	207.62 ± 63.69	197.37 ± 65.91	0.078

Table 2 shows that both groups had increased scores for self-efficacy, self-care, and quality of life from the baseline. The diabetes distress score and blood glucose level were reduced in both groups after the intervention. The post-test results show a statistically significant difference in each score of the psychosocial outcome between the intervention group and the control group. A more significant improvement in psychosocial outcome was experienced by the intervention group than the control group, indicating the positive effect of diabetes self-management education using the HBM approach.

Table 2: Comparison of the pre- and post-intervention variables of each group and the results of the independent t-test after the intervention

Variable*	Intervention group (n = 60)		Control group (n = 60)		F	p-value	t	p-value
	Pre	Post	Pre	Post				
Self-efficacy score	41.83 ± 9.67	61.87 ± 6.84	41.43 ± 7.80	56.10 ± 11.06	11.618	0.001	3.434	0.001
Self-care behaviour score	14.93 ± 4.64	23.90 ± 6.49	15.33 ± 5.10	21.83 ± 4.43	13.893	0.001	2.039	0.044
Diabetes distress score	39.33 ± 6.87	28.23 ± 3.79	38.67 ± 5.28	35.27 ± 5.76	22.865	0.001	-7.889	0.001
Quality of life score	66.03 ± 17.09	92.33 ± 11.17	65.50 ± 13.57	77.73 ± 15.67	6.775	0.010	5.878	0.001
Blood glucose level (mg/dl)	207.62±63.69	118.25±23.50	197.37±65.91	187.37±52.49	19.625	0.001	-9.310	0.001

*data expressed as mean ± standard deviation

DISCUSSION

Characteristics of the study participants: The average age of the diabetic patients was 57.6 years old, confirming the previous study stating that insulin retention tends to increase by the age of 45 years old or older.⁴ Individuals older than 45 years old have an increased risk of developing type 2 diabetes by almost 15 times compared to younger individuals.³ Most of the patients with type 2 diabetes in this study were female, again confirming the results of previous studies.^{7, 13} Elderly women may have a higher LDL cholesterol and triglyceride level than men, which affects the decreasing level of their insulin sensitivity.¹⁴ The average duration of illness among the diabetic patients in the present study was 45.07 months, or almost four years. The risk of macrovascular complication from diabetes increased in the fifth year since the diabetes was first diagnosed.¹⁵

In our study, most of the participants in both groups had completed junior high school and were employed. Level of education may influence the individual's acceptance of information and their capacity to manage stressors.^{16,17} Being employed could increase the individual's self-confidence in relation to problem solving, as having a source of income which enable them to access information, appropriate care and better treatment.^{18,19}

Self-efficacy before and after the intervention: The results of the data analysis showed that there was a significant difference in the self-efficacy between the groups after the intervention. Perceived self-efficacy affects the way that someone understands, feels, senses, drives their self-motivation, and takes action, which can generate effects through cognitive, motivational, affective and selection processes.²⁰ Improving the patient's perception of their vulnerability and the disease severity during the health education intervention could help patients to manage the disease, which increases their self-efficacy.^{21, 22}

Self-care behaviour before and after the intervention: The results showed that there were significant differences related to self-care behaviour between the intervention group and the control group. The acquisition of knowledge about the disease and care management of the disease is crucial in helping diabetic patients perform the proper self-care behaviour.⁸ Self-care depends on the patient's ability to make decisions and

daily assessments in order to implement comprehensive diabetes management.¹² Diabetes patients with a good self-care ability can control their blood sugar levels by changing to a healthier lifestyle.²³

Diabetes Distress before and after intervention: The intervention group experienced a more significant decrease in their diabetes distress score than the control group after the educational intervention. Having proper health education can help them to gain self-control so then the patient can maintain an ideal health condition and reduce stress.¹⁹ Acquiring coping strategies to reduce stress could encourage diabetic patients to seek social support from their family, friends, neighbours and co-workers.²⁴ Having cognitive skills would increase the patient's understanding and acceptance of their condition, so as to reduce the level of stress.¹⁹

Quality of life before and after the intervention: An essential key to the quality of life assessment was the satisfaction of self-care. Health workers have an important role in providing proper health education to patients and their families in promoting the self-care of diabetes with complications, in order to achieve an optimal quality of life.^{7,25} The ability to perform self-care and knowing how to reduce the risk of complications could improve quality of life.¹

Glycemic control: The intervention group had a more significantly reduced level of blood sugar than the control group after the HBM educational intervention. Knowledge about diabetes helped the patient to control the disease and to reduce the risk of disability.^{15, 22} The diabetes self-management education (DSME) significantly reduced the patient's fasting blood glucose level, improved their diabetes knowledge, self-management skill and self-efficacy.²⁶

CONCLUSION

This study has highlighted the importance of health education in improving the patient's psychosocial outcome. This educational intervention, along with the HBM approach, has significantly improved self-efficacy, self-care behaviour and quality of life, as well as reducing the level of diabetes distress and their blood glucose level. The diabetes self-management education based on the Health Belief Model is recommended to be used as a health education intervention for patients with type 2 diabetes.

Ethical Clearance: Ethical approval was granted by the School of Public Health in Airlangga University, Surabaya.

Source of Funding: Self funding.

Conflict of Interest: None.

REFERENCES

1. American Diabetes Association [ADA]. Standards of Medical Care in Diabetes—2018. *Diabetes Care*. 2018;37.
2. International Diabetes Federation [IDF]. *Diabetes Atlas 2017* Brussel: International Diabetes Federation; 2017 [Available from: <https://www.idf.org/e-library/epidemiology-research/diabetes-atlas.html>].
3. MoH. *Situasi dan analisis diabetes*. Jakarta: Kementerian Kesehatan RI; 2013.
4. Smeltzer SC, Bare BG, Hinkle JL, Cheever KH. *Brunner and Suddarth's textbook of medical surgical nursing*. 12 ed. Philadelphia: Lippincott Williams & Wilkins; 2013.
5. Penckofer S, Ferrans CE, Velsor-Friedrich B, Savoy S. The psychological impact of living with diabetes women's day-to-day experiences. *The Diabetes Educator*. 2007;33(4):680-90.
6. MoH. Menkes: Mari Kita Cegah Diabetes dengan CERDIK (Health Minister: Let us prevent diabetes by CERDIK) 2016 [Available from: <http://www.depkes.go.id/article/print/16040700002/menkes-mari-kita-cegah-diabetes-dengan-cerdik.html>].
7. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. *Journal of Diabetes & Metabolic Disorders*. 2013;12(1):14.
8. Atak N, Gurkan T, Kose K. The effect of education on knowledge, self management behaviours and self efficacy of patients with type 2 diabetes. *Australian journal of advanced nursing*. 2008;26(2):66-74.
9. Jones CJ, Smith H, Llewellyn C. Evaluating the effectiveness of health belief model interventions in improving adherence: a systematic review. *Health Psychology Review*. 2014;8(3):253-69.
10. Shi Q, Ostwald SK, Wang S. Improving glycaemic control self-efficacy and glycaemic control behaviour in Chinese patients with Type 2 diabetes mellitus: randomised controlled trial. *Journal of clinical nursing*. 2010;19(3-4):398-404.
11. Polonsky WH, Fisher L, Earles J, Dudl RJ, Lees J, Mullan J, et al. Assessing psychosocial distress in diabetes: development of the diabetes distress scale. *Diabetes care*. 2005;28(3):626-31.
12. Wu SF. Effectiveness of self-management for persons with type 2 diabetes following the implementation of a self-efficacy enhancing intervention program in Taiwan: Queensland University of Technology; 2007.
13. Miller TA, DiMatteo MR. Importance of family/social support and impact on adherence to diabetic therapy. *Diabetes, metabolic syndrome and obesity: targets and therapy*. 2013;6:421.
14. DeFronzo RA, Ferrannini E, Alberti KGMM, Zimmet P, Alberti G. *International Textbook of Diabetes Mellitus, 2 Volume Set*: John Wiley & Sons; 2015.
15. Waspadji S. *Diabetes Melitus, Penyakit Kronik, dan Pencegahannya. Dalam: Penatalaksanaan Diabetes Melitus Terpadu* Jakarta: Balai Penerbit Fakultas Kedokteran Universitas Indonesia. 2007.
16. Notoatmodjo S. *Promosi kesehatan dan ilmu perilaku*. Jakarta: Rineka Cipta. 2007;20.
17. Khan TM, Sulaiman S, Hassali MA. The causes of depression? A survey among Malaysians about perception for causes of depression. *Asian Journal of Pharmaceutical and Clinical Research*. 2008;2(2).
18. Lau-Walker M. Importance of illness beliefs and self-efficacy for patients with coronary heart disease. *Journal of Advanced Nursing*. 2007;60(2):187-98.
19. Powers MA, Bardsley J, Cypress M, Duker P, Funnell MM, Hess Fischl A, et al. *Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics*. *Diabetes Care*. 2015;38(7):1372-82.

- 17
20. Bandura A. Perceived self-efficacy in cognitive development and functioning. *Educational psychologist*. 1993;28(2):117-48.
21. Edberg M. Buku Ajar Kesehatan Masyarakat Teori Sosial dan Perilaku. Alih bahasa: Anwar, dkk, Jakarta: EGC. 2010.
22. Zulman DM, Rosland A-M, Choi H, Langa KM, Heisler M. The influence of diabetes psychosocial attributes and self-management practices on change in diabetes status. *Patient education and counseling*. 2012;87(1):74-80.
23. Gao J, Wang J, Zheng P, Haardörfer R, Kegler MC, Zhu Y, et al. Effects of self-care, self-efficacy, social support on glycemic control in adults with type 2 diabetes. *BMC family practice*. 2013;14(1):66.
24. Wade C, Travis C. *Psychology*. 9 ed. Upper Saddle River, NJ: Pearson Education, Inc; 2007.
- 20
25. PERKENI. Konsensus pengelolaan dan pencegahan diabetes melitus tipe 2 di Indonesia 2015. Jakarta: PB. PERKENI; 2015.
26. Steinsbekk A, Rygg L, Lisulo M, Rise MB, Fretheim A. Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. *BMC Health Services Research*. 2012;12(1):213.
- 44

The Effect of Diabetes Self-Management Education, Based on The Health Belief Model, on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia

ORIGINALITY REPORT

19%

SIMILARITY INDEX

13%

INTERNET SOURCES

9%

PUBLICATIONS

9%

STUDENT PAPERS

PRIMARY SOURCES

- 1 www.mhfmjournal.com 1%
Internet Source
- 2 eprints.soton.ac.uk 1%
Internet Source
- 3 Mark Peyrot. "Diabetes Distress and Its Association with Clinical Outcomes in Patients with Type 2 Diabetes Treated with Pramlintide as an Adjunct to Insulin Therapy", *Diabetes Technology & Therapeutics*, 12/2008 1%
Publication
- 4 www.diva-portal.se 1%
Internet Source
- 5 Ziyad Atiah Almalki, Ghasham Salem Almarzoqi, Ghasham Salem Almarzoqi, Mohannad Solaiman Assery et al. "Awareness and Knowledge of Diabetes Mellitus Among School Teaching Staff in Taif City", *Integrative Journal of Medical Sciences*, 2018 1%

6	ethndis.org Internet Source	1%
7	web.uod.ac Internet Source	1%
8	anthropologicalstudy.blogspot.com Internet Source	1%
9	Submitted to Deakin University Student Paper	1%
10	journal.poltekkes-mks.ac.id Internet Source	1%
11	Submitted to University of Central Lancashire Student Paper	<1%
12	zombiedoc.com Internet Source	<1%
13	Richard L. Pullen. "It's electric—understanding electrodiagnostic testing", Nursing Made Incredibly Easy!, 2014 Publication	<1%
14	Submitted to Surabaya University Student Paper	<1%
15	www.sdiarticle2.org Internet Source	<1%
16	Li-Chueh Weng. "Effects of self-efficacy, self-	

care behaviours on depressive symptom of Taiwanese kidney transplant recipients", Journal of Clinical Nursing, 2/11/2008

Publication

<1%

17

www.neuroquantology.com

Internet Source

<1%

18

hrcak.srce.hr

Internet Source

<1%

19

Jiayu Li, Lipei Gu, Yujie Gu. "An educational intervention on foot self-care behaviour among diabetic retinopathy patients with visual disability and their primary caregivers", Journal of Clinical Nursing, 2019

Publication

<1%

20

Aggra Wardatu, Ardesy Melizah Kurniati, Riana Sari Puspita Rasyid, Syarif Husin, Liniyanti D Oswari. "Hubungan Tingkat Pengetahuan tentang Makronutrien dengan Kecukupan Dan Keseimbangan Asupan Makronutrien Pasien Diabetes Melitus Tipe 2", SRIWIJAYA JOURNAL OF MEDICINE, 2019

Publication

<1%

21

journal.umpalangkaraya.ac.id

Internet Source

<1%

22

jn.nutrition.org

Internet Source

<1%

23	Sumeet Dixit, Praveen K.Tyagi, Amit K.Singh, Sudhir K.Gupta, Nidhi Malik. "CLINICO–EPIDEMIOLOGICAL PROFILE OF ROAD TRAFFIC INCIDENTS ADMITTED AT A TERTIARY CARE HOSPITAL IN GARHWAL-UTTARAKHAND", Journal of Evolution of Medical and Dental Sciences, 2012 Publication	<1%
24	clinphytoscience.springeropen.com Internet Source	<1%
25	repository.um.edu.my Internet Source	<1%
26	approvedthesis.com Internet Source	<1%
27	Avapati Raja Sekhar, Ravi Kiran Narukurthi, Siva Kumar B, Kiran Deedi M. "Role of Serum Uric Acid in the Assessment of Stroke", Journal of Evolution of Medical and Dental Sciences, 2020 Publication	<1%
28	docplayer.info Internet Source	<1%
29	ir.library.oregonstate.edu Internet Source	<1%
30	fedetd.mis.nsysu.edu.tw Internet Source	<1%

31 www.onlinelaege.com <1%
Internet Source

32 ijmshr.com <1%
Internet Source

33 spms.unair.ac.id <1%
Internet Source

34 Submitted to Fresno City College <1%
Student Paper

35 akademik.unsoed.ac.id <1%
Internet Source

36 jurnal.uinsu.ac.id <1%
Internet Source

37 Tyler C Smith, Margaret A K Ryan, Deborah L Wingard, Donald J Slymen, James F Sallis, Donna Kritz-Silverstein. "New onset and persistent symptoms of post-traumatic stress disorder self reported after deployment and combat exposures: prospective population based US military cohort study", BMJ, 2008 <1%
Publication

38 Submitted to International Medical University <1%
Student Paper

39 Submitted to Penang Medical College <1%
Student Paper

40	www.ukessays.com Internet Source	<1%
41	Submitted to 60556 Student Paper	<1%
42	www.vsrjournals.com Internet Source	<1%
43	Santwana Mantri, E. Venkata Rao, Pradeep Kumar Jena, Prakash Chandra Mohapatra. "Association of CD34+ and CD90+ Stem Cells of Cord Blood with Neonatal Factors: A Cross-sectional Study", The Indian Journal of Pediatrics, 2015 Publication	<1%
44	meltalkstech.blogspot.com Internet Source	<1%
45	Bambang Widjanarko Otok, Amalia Aisyah, Purhadi, Shofi Andari. "Propensity score matching of the gymnastics for diabetes mellitus using logistic regression", AIP Publishing, 2017 Publication	<1%
46	exp-oncology.com.ua Internet Source	<1%
47	www.deepertruthblog.net Internet Source	<1%
48	Submitted to South Dakota Board of Regents	

Student Paper

<1%

49

Submitted to Manipal University

Student Paper

<1%

50

cardiovascular.elpub.ru

Internet Source

<1%

51

Submitted to University of Calgary

Student Paper

<1%

52

edoc.pub

Internet Source

<1%

53

efmj-eg.org

Internet Source

<1%

54

Submitted to CSU, Dominguez Hills

Student Paper

<1%

55

panchayat.gov.in

Internet Source

<1%

56

apcbooks.co.in

Internet Source

<1%

57

Intan Kusumaningrum, Mira - Suprayatmi.

"PEMANFAATAN SEREH (Cymbopogon citratus) DAN STEVIA (Stevia rebaudiana Bertoni) UNTUK MENINGKATKAN

KANDUNGAN ANTIOKSIDAN PRODUK

COKELAT YANG RENDAH GULA", JURNAL

<1%

AGROINDUSTRI HALAL, 2019

Publication

58

Submitted to Queen's University of Belfast

Student Paper

<1%

59

Submitted to Cranfield University

Student Paper

<1%

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off

The Effect of Diabetes Self-Management Education, Based on The Health Belief Model, on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia

GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9
