OPTIMIZING OUTCOME OF DIABETES PATIENT CARE THROUGH HEALTH EDUCATION PROGRAMME: A LITERATURE REVIEW

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ABSTRACT

Background: Diabetes mellitus was still a current issue related to chronic disease care. increasing new cases and the failure of diabetes management made non optimally outcome of diabetes patient care. Health education programme was one of the solution of this. This study aims was to analyze the literature related to optimize outcome of diabetes patient care through health education programme. **Methods:** The study design was a literature review through using Pubmed, ScienceDirect, Proquest, and Google Scholar as database resources. Keyword used were diabetes patient care, health education programme, outcome. Inclusion criteria were original article, full text, provide about health education programme on diabetes patient, published five years recent (2018-2023), and written in English. **Results:** 12 articles selected from 434 articles. From which the result we analyze that health education programme had enhance knowledge, attitude, and practicing about glycemic control. This intervention was effective to control blood glucose level (HbA1c). The implementing of intervention was depended on three factors were type of intervention, methods, and periods. **Conclusions:** Health education programme was effective to optimize outcome of diabetes care. This outcome could be known from changing value of knowledge, attitude, practice, and glycemic control (blood glucose level). The effectivity of intervention was affected by type of intervention, methods, and periods. to optimize the result, need to use combine methods (structured education, social-media, and technology) in periods more than 6 months with strictly control to participants.

Keywords: diabetes care, outcome, health education programme

INTRODUCTION

Diabetes mellitus still to be a current issue related to chronic disease care. It happened because increasing new cases and non optimally diabetes management. This condition could be barrier related to optimally outcome of diabetes patient care (Sapra & Bhandari, 2022).

The prevalence of diabetes patients in the USA was increasing from 22.3 million (9.1% of the total population) in 2014, to 39.7 million (13%) in 2030, and up to 60.6 million (17%) in 2060 (Lin et al., 2018). Majority of them were dominated by type 2 diabetes mellitus (90–95%) (ADA, 2020). Diabetes globally negative impact in all aspect of patients live, including economic factor. Majority of medical cost for health care were 2,3 times than other patients (ADA, 2018), it impact on non optimally achieving target goal of medical and modalities treatment (Kazemian et al., 2019). Beside that, increasing incidence of acute complication including ketoacidosis, hyperglycemic hyperosmolar state, and hypoglycemia

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(Negera et al., 2020), as well as chronic complication including cardiovascular disease (hypertension), somatic neuropathy, retinopathy, chronic kidney disease (Bonora et al., 2020).

Non optimally outcome of diabetes care manifested with failing of glycemic control. This condition affected by many factors, the one of them was patients' knowledge about glycemic control (Abouammoh & Alshamrani, 2020). This condition affected by many factors, the one of them was patients' knowledge about glycemic control (Abouammoh & Alshamrani, 2020). Previous study proved that majority patients who had poor knowledge about glycemic control had never received diabetes education (Phillips et al., 2018). Poor knowledge of diabetes could impact on inadequate self-care behaviors and glycemic control (Kassahun et al., 2016; Fasil et al., 2018). Poor level of patients 'glycemic control could lead to increasing patient mortality and serious comorbidities like kidney failure, myocardial infarction, stroke, retinopathy, hypertension, and other micro and macro vascular complications (Suhara et al., 2017).

Patient education is important and as being part of diabetes care process (Phillips et al., 2018). The role of education is to enhance knowledge about diabetes and self-care practices that will lead to changing patient lifestyle behavior and reducing diabetes complications (AADE, 2020; Litchman et al., 2020). There were any difference aspect or focus of outcome of diabetes education from the result findings. One study focused on outcome of learning proccess (koqnitif aspect) (Kumar et al., 2022). This study proved that health education increased patient knowledge about diabetes causes, symptoms, complication, and preventive practice. Whereas other study focused on patient changing behavior (self-care) (Romero et al., 2022). This study proved that health education can increased patients self-care activities. How can make sure the health education was effective to optimize outcome of diabetes care still being to be developed and discussed.

Based on this phenomenon, the researcher intent to analyze articles related to health education to optimize outcome of diabetes care using recent articles publish 5 years recent. The study goal was to examine integrative studies related to effect of health education on diabetes care outcome.

METHODS

Study design was literature review using PRISMA approach that consisted of four steps including identification, screening, eligibility, and included. Identification was searching articles from journal databases sources (PubMed (MEDLINE), Proquest, Sciencedirect, and google scholar to identify articles based on title/ abstrack that same with the purpose of the study. In this section, we found 434 articles from pubmed (n=48 articles), ScienceDirect (n=35), proquest (n=41), and google scholar (n=351). After the title/ abstract identified, the articles that duplicated were excluded (n=14).

The second steps was screening. In this study, there were 108 articles available based on quality of article (title, abstract, introduction, methods, result). Using manual screening, there were 48 articles exluded related to low level of study. 60 articles reviewed because of met standart as PRISMA considered. The third step was eligibility. In this section, there were 24 articles reviewed were excluded because non specific outcome of diabetes patients, whereas 18 articles accessed based on inclusion criteria. Inclusion criteria of the study were original article, full text, provide about health education programme on diabetes patient, published five years recent (2018-2023), and written in English. Whereas, exclusion criteria were not original article, not focus on diabetes outcome, the periods of intervention was not clear. The last step was article included. There were 12 articles were selected with

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inclusion criteria and eligible to analyse. The process of searching articles be presented in figure 1 below

RESULT

Articles were published in China (n=4 articles), Indonesia (n=1 article), India (n=1 article), Taiwan (n=1 article), Saudi Arabia (n=1 article), Kuwait (n=1 article), Eqypt (n=1 article), Ethiopia (n=1 article), and Germany (n=1 article); intervention using structured education (n=8 articles), social media (n=2), technology (n=2), periods interventions were 2 months (n=1), 3 month (n=4 articles), 6 months (n=4 articles), 12 months (n=2), 2 years (n=1). Statistical analyses showed that health education programme health education programme had enhance knowledge, attitude, and practicing about glycemic control. This intervention was effective to control blood glucose level (HbA1c). The summaries of articles had been analysed and presented in Table 1.

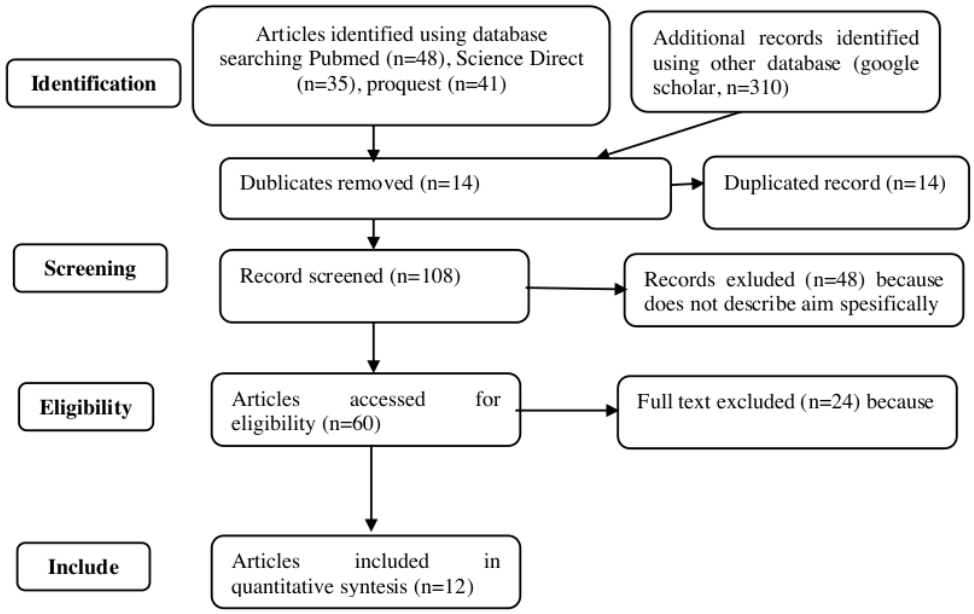

Figure 1. Reviewing articles proccess using PRISMA

Table 1. Articles Selected from Reviewing Process

Author	Title	Country	Methods	Result
Andriyanto et al. (2019)	Increasing knowledge, attitude, skill, and glucose control in type-2 Diabetes Patients through EMAS intervention	Indonesia	• Study design: quasy-experiment with one group pre-post test • Sample: type 2 diabetic patients (n=86) • Intervention: EMAS (Education, nutrition management, physical activities, and stress management) • Periods: 6 months with 8 sessions	EMAS intervention was significant to enhance knowledge (p=0,001), attitude (p=0,001), skill (p=0,001), and glucose control (p=0,04) of diabetic patients

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Author	Title	Country	Methods	Result
Ililu et al. (2019)	Diabetes Self-Management Education (DSME)- Effect on Knowledge, Self-Care Behavior, and Self- Efficacy Among Type 2 Diabetes Patients in Ethiopia: A Controlled Clinical Trial	Ethiopia	• Study design: quasy-experiment with two group pre-post test • Sample: type 2 diabetes patients (n=116) • Intervention: DSME • Periods: 6 months	DSME intervention was effective to enhance knowledge (p=0,044), self care behaviour spesifically on diet recommendation (p=0,019), and performed footcare (p=0,009). Whereas, not effective to enhance self efficacy.
Hermanns et al. (2019)	The impact of a structured education and treatment programme (FLASH) for people with diabetes using a flash sensor-based glucose monitoring system: result of a randomized controlled trial	Germany	• Study design: randomized controlled trial • Sample: type 2 diabetes patient on intensive insulin therapy (n=216) • Intervention: structured education and treatment programme (FLASH) • Periods: 6 months	The intervention was effective to reduce HbA1c (p=0,033), to enhance the time spent in the target glucose range, and using of glycemic information provide by FSGM
Leong et al. (2022)	Social Media-Delivered Patient Education to Enhance Self-management and attitude of Patients with Type 2 Diabetes During the Covid-19 pandemic: Randomized Controlled Trial	Taiwan	• Study design: Randomized Controlled Trial • Sample: type 2 diabetes patients (n=91) • Intervention: social media- delivered patient education using 51 video (diabetes knowledge, daily care, nutrition care, drug, and quizzes) • Periods: 3 months	The intervention was effective to enhance knowledge (p<0,001), positive improvement in attitude (p=0,001), self care activities (p=0,03), whereas not working specifically in HbA1c changing (p=0,34).
Zheng et. al (2019)	Effect of an outpatient Diabetes Self-Management Education on Patients with Type 2 Diabetes in China: A Randomized Controlled Trial	China	• Study design: Randomized Controlled Trial • Sample: type 2 diabetes patients (n=30) • Intervention: Self-management Diabetes education programme in 2 session: theory and practice • Periods: 3 months	The intervention was effective to enhance outpatient diabetes self-management (SDSCA and PAID, FBG, postprandial 2-h blood glucose, and HbA1c (p<0,01).
Chawla et al. (2019)	Impact of health education on knowledge, attitude, practices and glycemic control in type 2 diabetes mellitus	India	• Study design: quasy experiment • Sample: type 2 diabetes patients (n=50) • Intervention: health education about disease, drug, dietary, and life style modification using leaflet • Periods: 3 months	The intervention was effective to enhance knowledge (p=0,004), attitude (p=0,003), practice (p=0,001), KAP SUM (p=0,003), Reduction in HbA1c (p=0,01).

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Author	Title	Country	Methods	Result
Mohsen et al. (2020)	Evaluating the effect of health education program on outcomes of type I diabetic patients: A randomized controlled study	Egypt	•Study design: A randomized controlled study •Sample: outpatient diabetic clinic (n=60) •Intervention: health education programme through five session (theory and practice) using media (video, poster, and handbook) •Periods: 2 months	The intervention was effective to enhance knowledge (p=0,001), and practicing (exercise, teeth care, feet care and glycemic control).
Elfakki et al. (2022)	Effectiveness of diabetes self-care education at primary health care centres in Saudi Arabia: A pragmatic randomized trial in Tabuk	Saudi arabia	• Study design: randomized trial • Sample: type 2 diabetes patients (n=180) • Intervention: diabetes self-care education • Periods: 12 months	The intervention was effective to reduce body mass index (p=0,001), waist circumference (p=0,001), fasting blood glucose (p=0,011),
Zhang et al. (2018)	Effectiveness of Systematic Health Education Model for Type 2 Diabetes Patients	China	• Study design: randomized study • Sample: type 2 diabetes patients (n=500) • Intervention: systematic health education model • Periods: 2 years	The intervention was effective to maintain HbA1c, LDL, cholesterol, and systolic blood pressure (SBP) (P< 0,01).
Pai et al. (2021)	Effects of a health education technology program on long-term glycemic control and self-management ability of adults with type 2 diabetes: A randomized controlled trial	China	• Study design: randomized controlled trial • Sample: type diabetes patients (n=53) • Intervention: health technology education programme • Periods: 6 months	The intervention was effective to decrease HbA1c level (p<0,05), and increasing self management ability (p<0,05).
Alibrahim et al. (2021)	The effect of structured diabetes self-management education on type 2 diabetes patients attending a Primary Health Center in Kuwait,	Kuwait	• Study design: quasy experime • Sample: type 2 diabetes patients (n=150) • Intervention: diabetes self-management education (DSME) • Periods: 12 months	The intervention was effective to diabetes control through recreasing HbA1c level over 12 months
Yao et al. (2022)	Effect of structured individualized education on continuous glucose monitoring use in poorly controlled patients with type 1 diabetes: A randomized controlled trial,	China	• Study design: randomized controlled trial • Sample: type 1 diabetes patients (n=47) • Intervention: structures individualized education combined with real-time continuous glucose monitoring (rt-CGM) • Periods: 3 months	The intervention was effective to enhance TIR (p<0,001) and decreasing HbA1c in intervention group at 12 weeks (p<0,001).

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DISCUSSION

The result of study showed that health education programmes were effective to optimize outcome of diabetes care patients. the optimize outcome could be known from increasing of knowledge, attitude, and practice (Andriyanto et al., 2019; Hailu et al., 2019; Leong et al., 2022; Chawla et al., 2019; El Mohsen et al., 2020). Other studies indicators of optimize outcome were known from glycemic control (decreasing of HbA1c level) (Zheng et al., 2019; Elfakki et al., 2022; Zhang et al., 2018; Pai et al., 2021; Alibrahim et al., 2021; Yoo et al., 2022). From the result we know that not all intervention (health education program) effective to optimize both outcomes (education outcome and glycemic control outcome). There were intervention effective to enhance learning outcome (knowledge, attitude, and practice), whereas non effective to maintain blood glucose control (HbA1c level).

The different result were affected by some factors (type of intervention, methods to practice, and periods). majority intervention that effective only for learning outcomes were type of intervention using structured education approach with media leaflet, video, and booklet. and periods of intervention less than 6 months. whereas intervention were effective on glycemic control (HbA1c) were intervention using combine methods (structured education, social media-delivered, and technology) and periods of implementing were more than 6 months (12 months up to 24 months).

Previous study proved that effectivity intervention of health education was affected by various types of media and methods (Andryanto et al., 2019). Health education using tool like module and workbooks could give easily participants to understand the context of health education provided by health worker, made them more interesting with health education and willing to practice self care activity related to glycemic control (Leng et al., 2022; El Mohsen et al., 2020).

CONCLUSION

Health education programme was effective to optimize outcome of diabetes care. This outcome could be known from changing value of knowledge, attitude, practice, and glycemic control (blood glucose level). The effectivity of intervention was affected by type of intervention, methods, and periods. to optimize the result, need to use combine methods (structured education, social-media, and technology) in periods more than 6 months with strictly control to participants.

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