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# Self-Management of Patients with Diabetes Mellitus: An Integrative Literature Review

Chatarina Hatri Istiarini[1(CA)]

[1(CA)]Doctoral Program, Nursing Faculty, Saint Paul University, Philippines; / Medical Surgical Nursing Department, STIKES Bethesda Yakkum Yogyakarta, Indonesia; ch.hatri.istiarini@gmail.com (Corresponding Author)

## ABSTRACT

A condition where body's ability in responding insulin is decreasing or pancreascannot produce insulin causes hyperglycemia in clients with DM. Many studies have been done related to self-management of patients with DM. Self-management of Patients with DM needed a literature study to determine the results of one study with another so that it can be a guide in making decisions in performing nursing interventions in patients with DM related self-management. The purpose of this article was identified the evidence-based nursing practice in applying self-management of the patient with Diabetes Mellitus. A comprehensive search for primary research article was conducted in the databases MEDLINE, Biomed Central, Pub Med, and Google Scholar, published from 2009-2017. There were 10 journals about self-management in patients with DM. The descriptions were found from the 10 journals, the author divided into four things, namely about perception, education, self-care behavior, and tool of self-management. Self-management for DM patients was necessary in order to control the patient's illness. This happens because self awareness of patients to perform self-management so as to improve the quality of life for patients with DM. Patients should perform self-management of DM correctly and regularly so that it will bring a good impact on the quality of life of the patient. For that we need to make the correct Standard Operational Procedure/ SOP, so that there are directives and clear instructions.

Keywords: Self-management, Diabetes Mellitus, Interventions of self-management.

## INTRODUCTION

### Background

A condition where body's ability in responding insulin is decreasing or pancreascannot produce insulin causes hyperglycemia in clients with DM[(1).]Diabetes Mellitus (DM) is a chronic disease characterized by blood glucose level that exceeds the normal value[(2)]. DM diagnosis is established when blood glucose meter shows plasma glucose ≥ 200 mg / dl, fasting plasma glucose ≥126 mg / dl and plasma glucose from samples taken 2 hours after consuming 75 grams of carbohydrate (2 hour postprandial / pp) ≥ 200 mg / dl[(1).] An HbA1c of 48 mmol/mol (6.5%) is recommended as the cut off point for diagnosing diabetes, a value of less than 4.8 m mol/mol (6.5%) does not exclude diabetes diagnosed using glucose tests[(3)]. Indonesia is currently on the fourth rank of highest number of people with DM after the United States, China and India [(1)].

The United States has approximately 650,000 new DM cases are diagnosed each year [(1).] Based on population growth patterns, it was estimated in 2020 Indonesian DM population will be as many as 178 million people over the age of 20 years and with DM prevalence assumption of 4.6% will be acquired 8.2 million people [(2).] While the results of the proportion of death because of diabetes at the age group of 45-54 years was in the second rank with 14.7%. In the suburb, DM was in the sixth rank with 5.8%. World Health Organization (WHO) predictedan increasing number of people with DM in Indonesia from 8.4 million in 2000 to approximately 21.3 million in 2030. The data shows an increaseing number of people with DM as much as 2-3 times in 2030. While the total population in DIY in 2013 was 3.6 million [(4)]. Many studies have been done related to self-management of patients with DM. This is need a literature study to determine the results of one study with another so that it can be a guide in making decisions in performing nursing interventions in patients with DM related self-management. Hopefully, it is can of inhibiting the increment of patients with DM incidence rate.

Self-management is the process by which something systems will (one day) manage their own operation. Self-management is a key skill that will help throughout in life. It involves setting goals and managing time.

Effective self-management will help to avoid stress and provide with more opportunities to get involved in. A key skill in self-management is self regulation. Self-regulation refers to individuals monitoring, controlling and directing aspects of their learning for themselves.

**Purpose**

This review aims to identify the evidence based nursing practice in applying self-management of patient with Diabetes Mellitus. The researcher are able to know the basis for further research and it can be used for guidance in making decisions in performing nursing interventions in patients with diabetes related self-management. The research question is what experiences related to the implementation of self-management of patients with diabetes mellitus?

## METHODS

This integrative literature review was done by reviewing the results of previous research on published articles. The steps for the integrative review used in this study were problem identification (question formulation), literature search, data evaluation, data analysis, and reporting. The central question of this integrative review was; "what experiences related to the implementation of self-management of patients with diabetes mellitus?. The Integrative literature review was developed using the preferred reported items for literature reviews and Meta-Analyses (PRISMA). A comprehensive search for primary research article was conducted in the databases MEDLINE, Biomed Central, Pub Med, and Google Scholar. Key search terms used in the integrative literature review were self-management, the patient with DM. Articles published from 2009-2017 in the English Language.

Inclusion Criteria in the integrative literature review were articles in English, with qualitative, qualitative and quantitative (mixed method) research types, about self-management for diabetes mellitus, and published online. Exclusion Criteria in the integrative literature review were written in a language other than English, the article about self-management diabetes mellitus but not the full paper. For details, see the flowchart (figure 1).

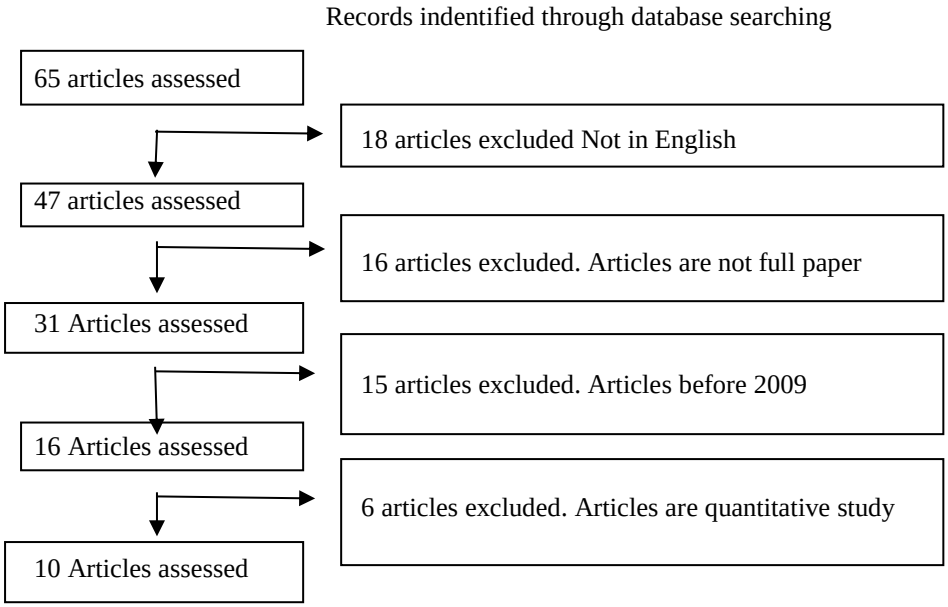


Figure 1. Flowchart of Literature Search Performed

The authors define in this literature review using all proven studies of validity and reliability. The author believes that the research has been included in the journals and gets DOI (Digital Object Identifier), has been trusted in the reliability. And the fourth step, data analysis: a research instrument was developed for data extraction and analysis from the included studies. The instrument comprised the following items: author, purpose/result,interventions, study design, sample size and statistical methods, and conclusion/recommendation/nursing implication.

## RESULTS

There were 10 journals about self-management in patients with DM. Found all the articles outlining about the self-management of patients with DM. The descriptions were found from the 10 journals, the author divided into four things, namely about perception, education, self care behavior, and tool of self-management. There was one (10%) journal that describes the perception of the patient about self-management barriers, there were four (40%) journals that describe self-management education, there were four (40%) journals that describe related to self care behavior in self management with Diabetes Mellitus patients, and one (10%) journal related to a valid tool for assessing self-management in adults with diabetes. The summary of Literature Reviewed can be seen in table 1.

Table 1. List of sources included in review and description of the study

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| Author | Onwudiwe NC, Mullins CD, Winston RA, Shaya FT, Pradel FG, Laird A, Saunders E[5] |
| Purpose & Results | Purpose**:** Identifying barriers to disease self-management is a critical step in achieving optimal health outcomes. Our goal was to explore patients' perceptions about barriers to self-management of diabetes that could possibly help explain poor health outcomes among minority patients.<br>Results: The focus groups confirmed that previously reported barriers to self-management persisted and identified new concerns that could be associated with poor health outcomes among minority patients with diabetes. Attitudes, perceptions and behaviors surrounding diabetes and self-management of the condition did vary across individuals, however, the variation appeared to reflect the individual's knowledge and opinions rather than patient's age, sex, or culture. The primary barrier to diabetes self-management resulted from lack of knowledge of target blood glucose and blood pressure. Several participants found some of the health information to be quite confusing. |
| Intervention | Four focus groups were conducted among 31 predominately African American patients with diabetes who were enrolled in the Baltimore Cardiovascular Partnership Study, a NIH-funded multiyear prospective partnership study. The topic guide consisted of a series of open-ended questions about knowledge of current health status, medication use, and continuity of care, blood glucose level and nutrition. |
| Study Design | Qualitative: Four focus groups were conducted among 31 predominately African American patients with diabetes who were enrolled in the Baltimore Cardiovascular Partnership Study, a NIH-funded multiyear prospective partnership study. |
| Sample size & Statistical Methods | o 31 predominately African American patients with diabetes who were enrolled in the Baltimore Cardiovascular Partnership Study<br>o A NIH-funded multiyear prospective partnership study.<br>o The topic guide consisted of a series of open-ended questions |
| Conclusion/ Recommendation/ Nursing Implication | Diabetes is a major public health concern and the lack of awareness of target blood glucose and blood pressure further complicates the problem. The limited health literacy seen in this study could help explain several of the barriers to self-management. The barriers to self-management identified in this qualitative study are amenable to intervention that could improve health outcomes |
| Author | Mathew, R., Gucciardi, E., Melo, M. D., & Barata, P.[6] |
| Purpose & Results | Purpose: To better understand differences in diabetes self-management, specifically needs, barriers and challenges among men and women living with type 2 diabetes mellitus (T2DM).<br>Results**:** Women disclosed their diabetes more readily and integrated management into their daily lives, whereas men were more reluctant to tell friends and family about their diabetes and were less observant of self-management practices in social settings. Men focused on practical aspects of SMBG and experimented with various aspects of management to reduce reliance on medications whereas women focused on affective components of SMBG. Women restricted foods from their diets perceived as prohibited whereas many men moderated their intake of perceived unhealthy foods, except in social situations. Women used socially |

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| | interactive resources, like education classes and support groups whereas men relied more on self-directed learning but also described wanting more guidance to help navigate the healthcare system. |
| Intervention | The average age of participants was 57 years and just over half (51.4%) were female. Analyses revealed five themes: disclosure and identity as a person living with diabetes; self-monitoring of blood glucose (SMBG); diet struggles across varying contexts; utilization of diabetes resources; and social support. |
| Study Design | Qualitative: Five focus groups and nine individual interviews were conducted to explore men and women's diabetes self-management experiences. |
| Sample size & Statistical Methods | o 35 participants were recruited from a diabetes education center (DEC) in Toronto, Canada.<br>o Data-driven thematic analysis<br>o To elaborate on the multi-dimensional aspects of diabetes self-management for men and women, and compare and contrast these experiences in order to better understand differences. |
| Conclusion/ Recommendation/ Nursing Implication | Men and women reported wanting physician support for both affective and practical aspects of self-management. The findings highlight the differences in needs and challenges of diabetes self-management among men and women, which may inform gender-sensitive diabetes, care, counselling and support. |
| Author | Norris S .L, Lau J, Smith S.J, Christopher H. Schmid C.H, & Engelgau M. M. [7] |
| Purpose & Results | Purpose: To evaluate the efficacy of self-management education on GHb in adults with type 2 diabetes.<br>Results: On average, the intervention decreased GHb by 0.76% (95%) more than the control group at immediate follow-up; by 0.26% (0.21% increase - 0.73% decrease) at 1-3 months of follow-up; and by 0.26% at 4 months of follow-up. GHb decreased more with additional contact time between participant and educator; a decrease of 1% was noted for every additional 23.6 h of contact. |
| Intervention | We found 72 randomized controlled trials that examined the efficacy of DSME on a variety of outcomes, and these have been previously reviewed Of these studies, 40 examined GHb outcomes. We excluded nine of these from the meta-analysis for a variety of reasons. Five were excluded for design issues: compared choice versus no choice groups, and results for standard versus nutrition education were not presented separately. |
| Study Design | Qualitative: The randomized controlled trial, a systematic sampling approach with a narrative summary. |
| Sample size & Statistical Methods | o A total of 31 studies of 463 initially identified articles met selection criteria.<br>o A meta-analysis of the effect on glycaemic control |
| Conclusion/ Recommendation/ Nursing Implication | Self-management education improves GHb levels at immediate follow-up, and increased contact time increases the effect. The benefit declines“3 months after the intervention ceases, however, suggesting that learned behaviours change over time. Further research is needed to develop interventions effective in maintaining long-term glycaemia control. |
| Author | Shrivastava S. R., Shrivastava P. S., & Ramasamy J., [8] |
| Purpose & Results | Purpose: To identifying role of self-care in management of diabetes Mellitus<br>Result: All these seven behaviours have been found to be positively correlated with good glycaemia Control, reduction of complications and improvement in quality of life. |
| Intervention | Individuals with diabetes have been shown to make a dramatic impact on the progression and development of their disease by participating in their own care. |
| Study Design | Qualitative: focus group interviews, in-depth interview |
| Sample size & Statistical Methods | Realizing the multi-faceted nature of the problem, a systematic, multi-pronged and an integrated approach is required for promoting self-care practices. |
| Conclusion/ Recommendation/ Nursing Implication | Conclusion: Seven essential self-care behaviours in people with diabetes which predict good outcomes namely healthy eating, being physically active, monitoring of blood sugar, compliant with medications, good problem-solving skills, healthy coping skills and risk-reduction behaviour. |

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| Author | Grillo M. D., Neumann C. R., Scain S. F., & Rozeno R. F.[9] |
| Purpose & Results | Purpose: to review of the effect of different types of educational interventions for self-management of glycaemia control in patients with DM.<br>Results: The educational process comprises an important part of DM treatment, as it enables patients to manage their disease. |
| Intervention | the effect of different types of educational interventions for self-management of glycaemia control in patients with DM included 11 studies (1,532 patients) |
| Study Design | Qualitative: The effect of group education was assessed in a systematic review with meta-analysis. |
| Sample size & Statistical Methods | RCTs and non-randomized studies. |
| Conclusion/ Recommendation/ Nursing Implication | The learning process is complex, and its effectiveness will depend on factors that include self-management commitment of the patient, willingness to learn, family support, bond with the team, financial position, cultural influences, beliefs and attitudes regarding health care. |

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| Author | Palmer C.[10] |
| Purpose & Results | Purpose: To explores opportunities to provide education to patients with diabetes mellitus on the important self-care topics of nutrition and hypoglycaemia during a primary care visit.<br>Results: With the prevalence of diabetes increasing annually, NPs will leaders in helping patients manage their diabetes at home. |
| Intervention | Asking patients what they have eaten in the past 24 hours |
| Study Design | o Qualitative: Along with asking about meal content, asking specifically about snacks, beverages, and timing of Meals can help patients make behavioural changes. Ask about barriers to successful meal planning and assist patients in overcoming these barriers. Have some handouts prepared with meal ideas to provide after the clinic visit.<br>o In this method, a plate of food should contain about 40% vegetables, 30% grains, 20% protein, and 10% fruit along with a small serving of dairy. |
| Sample size & Statistical Methods | Providing self-management education to patients with type 2 diabetes mellitus Several plate-based meal-planning methods are available.<br>In this method, a plate of food should contain about 40% vegetables, 30% grains, 20% protein, and 10% fruit along with a small serving of dairy. |
| Conclusion/ Recommendation/ Nursing Implication | With the prevalence of diabetes increasing annually, NPs will leaders in helping patients manage their diabetes at home. In order to promote self-management, NPs must not only manage the pharmaco-therapeutics and surveillance associated with diabetes, but reinforce behavioural modifications at every visit. |

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| Author | Jones H., Berard L. D., MacNeill G., & Whitham D., Yu C., [11] |
| Purpose & Results | Purpose: To evolving from a traditional didactic teaching program to one using a variety of educational, psychological and behavioral interventions, and a combination of didactic, interactive and collaborative teaching methods.<br>Result: The most effective behavioral interventions involve a patient-centered approach, shared decision making, the enablement of problem-solving skills and the use of action plans directed toward patient-chosen goals. |
| Intervention | In persons with type 2 diabetes, such as reductions in glycated hemoglobin (A1C) of 0.36% to 0.81%. |
| Study Design | Qualitative: a systematic intervention that involves active patient participation in self-monitoring (physiological processes) and/or decision making (managing). Several meta-analyses have demonstrated that SME is associated with clinically important benefits |
| Sample size & Statistical Methods | in persons with type 2 diabetes, such as reductions in glycated hemoglobin (A1C) of 0.36% to 0.81% |
| Conclusion/ Recommendation/ Nursing Implication | Conclusion: There has been a clear increase in the use of multifaceted programs that incorporate behavioral/psychosocial interventions, as well as knowledge and skills training, with a marked reduction in didactic educational programs that focus on knowledge or skill acquisition only. Interventions that include face-to-face |

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| | delivery, a cognitive-behavioral method and the practical application of content are more likely to improve glycaemia control. |
| Author | Pamungkas R. A., Sudarman D., Siokal B.,[12] |
| Purpose & Results | Purpose: The purpose of this study is to describe, compare and critique six existing self-management programmers that are commonly used to guide self-management for type 2 Diabetes Mellitus (DM) patients<br>Result: Diabetes self-management program is effective to improve behavioral change and clinical outcomes among patients with type 2 DM. Further research is needed to test the effectiveness of self-management combine with other strategies which are goal setting strategy and follow-up strategy in patients with type 2 DM. |
| Intervention | Face to face and telephone interviews were conducted by Nurses. The educational intervention taught patients disease knowledge and self management techniques with the hope to avoid the Initiation of dialysis. Positive feedback was used to praise goal Achievements.<br>A comparison of Scr, GFR, and A1c at 6 months prior to the intervention; time of participant registration; three months post intervention and six months post Intervention. Psychological, physiological, and process indicators were measured. |
| Study Design | Qualitative: interviews. Nurses used the telephone or mail to collect self management Skills acquisition and collected laboratory results from medical records or supplied to nurses by Participants.<br>Quantitative: Pre-test and post test design. |
| Sample size & Statistical Methods | Sample size: N=30 DM2 patients with nephropathy in Japan (GFR 15-59, urinary albumin: Creatinine ratio ≥ 300) |
| Conclusion/ Recommendation/ Nursing Implication | Conclusion: The intervention resulted in improved self-efficacy, self management ability, and A1c results six months post the Intervention. The participants maintained renal function without the need to begin renal Dialysis. Developing close relationships with patients with chronic conditions and helping them identify their personal self-management habits that improve or worsen their health status help patients to make positive lifestyle changes yielding positive health Outcomes. |
| Author | Kamradt M., & Bozorgmehr K.[13] |
| Purpose & Results | Purpose: This study aimed to translate the SDSCA into German and examine its psychometric properties.<br>Result: The revised German version of the SDSCA (SDSCA-G) is a reliable and valid tool assessing self-management in adults with type 2 diabetes in Germany. |
| Intervention | To a random sample of 315 patients with diabetes mellitus type 2, used self-reporting tools assessing diabetes self-management in English is the Summary of Diabetes Self-Care Activities (SDSCA) measure. |
| Study Design | Qualitative: used self-reporting tools assessing diabetes self-management in English.<br>Quantitative: Reliability was analyzed using Cronbachs alpha coefficient and item characteristics were assessed. Exploratory and confirmatory factor analysis (EFA and CFA) were carried out to explore the construct validity. A multivariable linear regression model was used to identify the influence of predictor variables on the SDSCA-G sum score. Results The Cronbachs alpha for the SDSCA-G (all items) was =0.618 and an acceptable correlation between the SDSCA-G and Self-management Diabetes Mellitus-Questionnaire (SDQ) (=0.664) was identified. |
| Sample size & Statistical Methods | Sample size: The German version of the SDSCA (SDSCA-G) was administered to a random sample of 315 patients with diabetes mellitus type 2. Participants in this cross-sectional study were randomly recruited from the overall pool of patients with diabetes type 2 in 20 primary care practices (PCPs) located in Germany. |
| Conclusion/ Recommendation/ Nursing Implication | Conclusion: The revised German version of the SDSCA (SDSCA-G) is a reliable and valid tool assessing self-management in adults with type 2 diabetes in Germany. |
| Author | Rian Adi Pamungkas R. A., Chamroonsawasdi K., & Vatanasomboon P.[14] |
| Purpose & Results | Purpose: This study aimed to review and describe the impacts of DM self-management education (DSME) that involve family members on patient outcomes related to patient health behaviours and perceived self-efficacy on self- |

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| | management such as medication adherence, blood glucose monitoring, diet and exercise changes, health outcomes including Psychological well-being and self-efficacy, and physiological markers including body mass index, level of blood pressure, cholesterol level and glycaemia control.<br>Result: The family support components of DSME intervention and the impacts of these interventions had on improving the health outcomes patients with uncontrolled glycaemia patients. Family support had a positive impact on healthy diet, increased perceived support, higher self-efficacy, improved psychological well-being and better glycaemia control. |
| Intervention | Details of the family support components of DSME intervention with uncontrolled glycaemia patients. |
| Study Design | Qualitative: Joanna Briggs Institute (JBI) guidelines were used to determine which studies to include in the review. |
| Sample size & Statistical Methods | Sample size: A total of 22 intervention studies were identified |
| Conclusion/ Recommendation/ Nursing Implication | Conclusion: Family support had a positive impact on healthy diet, increased perceived support, higher self-efficacy, improved psychological well-being and better glycaemia control. |

## DISCUSSION

Related with research on self-management in patients with DM, Many researchers who have done the data with the data in the various research variables. The number of these studies requires a literature study to derive conclusions from one study with other studies so that the conclusions can be guidance in making decisions in self-nursing interventions in patients with self-management DM. With the hope, the results of this literature study can increase the degree of health in patients with DM.

Here are the results of the research on self management in patients with Diabetes Mellitus: Related about knowledge of the five pillars of DM management. In the research title "Barriers to Self-Management of Diabetes: A Qualitative Study among Low-Income Minority Diabetics [(5)]". The focus groups did help to identify barriers to self-management that could be associated with poor health outcomes among minority patients with diabetes. Differences in sex, age, marital status and culture did not seem to have an impact upon the attitudes and behaviors toward the topics under discussion. Participants' understanding and knowledge about diabetes came from various sources. The participants' perceptions about eating habits were quite diverse, no sex difference was noticed. Nearly all the participants in the focus group did find the health information they received from various sources as useful, however, there were several of the participants who found some of the health information quite confusing.

This study revealed the experience of Self Management in patients with DM between men and women. In Journal: "Self-management experiences among men and women with type 2 diabetes mellitus: a qualitative analysis[(6)]": declare that result the focus of this study was to explore diabetes self management experiences, specifically needs, challenges and barriers between men and women with DM. A salient finding was the difference between how men and women identify themselves as a person with diabetes or disclose their diagnosis to others. Women's public life tends to run parallel to their private one; they disclose their diabetes more readily to others and overtly practice their nutrition self-care behaviors regardless of social context. Men, on the other hand, are much more private in their disclosure of diabetes and tend to be less observant of nutrition recommendations in social settings, where changes in diet patterns could potentially make their diagnosis public. Men may strive to maintain their public, pre-diagnosis identity while adjusting their private identity to their illness. Concealing their illness may help preserve traditional male values such as independence, autonomy, and ownership over decision-making. One's private versus public identity may also influence their use of diabetes resources. For instance, men turn to books and the internet for further education over more socially interactive resources, such as counseling classes and support groups which are used more by women. In contrast, women tend to disclose their diabetes more often to those in their social surroundings. Because traditional male characteristics do not apply to women, they may not view diabetes as negatively altering their identity. This reflects an important attitude shift in chronic illness management in that individuals are separate from their diseases, not defined by them. As bring examined the impact of chronic illness on gender identity among women with either chronic fatigue syndrome and found that women often experience early identity loss but later recognize the personal benefits to be gained from their condition, including greater insight into their lives. Similarly, Koch et al. reported that many of their male participants believed diabetes changed them for the better because the diagnosis encouraged them to make positive lifestyle changes.

To evaluate the efficiency of self management education for patients with DM. Diabetes self-management education (DSME).In the research: "To evaluate the efficacy of self-management education on GHb in adults with

diabetes" [7].This meta-analysis provides evidence of the efficacy of DSME for individuals with type 2 diabetes on glycaemic control, and it delineates the factors that contribute to its efficacy. GHb improves with DSME. This study has important implications for current clinical and public health practice and research. Glycaemic control is an important predictor of many of the chronic complications of diabetes. There are seven important things in self care management with DM. Here are seven essential self-care behaviors in management of people with diabetes which predict good outcomes namely healthy eating, being physically active, monitoring of blood sugar, compliant with medications, good problem-solving skills, healthy coping skills and risk-reduction behavior. Though multiple demographic, socio-economic and social support factors can be considered as positive contributors in facilitating self-care activities in diabetic patients, role of clinicians in promoting self-care is vital and has to be emphasized. Realizing the multi-faceted nature of the problem, a systematic, multi-pronged and an integrated approach is required for promoting self-care practices among diabetic patients to avert any Long-term complications. In self management Education patients with DM must have a good standard. Here is the National standard that can be used. The Standards are applicable to educators in independence practice as well as those in large multicenter Programs and everyone in between. The National Standards for Diabetes Self-Management Education are designed to Fine quality DSME and support and to assist diabetes educators in providing evidence-based education and self- Management support. The educational process comprises an important part of DM treatment, as it enables patients to manage their disease. The learning process is complex, and its effectiveness will depend on factors that include self-management commitment of the patient, willingness to learn, family support, bond with the team, financial position, cultural influences, and beliefs and attitudes regarding health care. For healthy eating, In terms of eating for patients with DM, in the study: "Providing self-management education to patients with type 2 diabetes mellitus: Addressing basic nutrition and hypoglycemia", (2017), providing self-management education to patients with type 2 diabetes mellitus several plate-based meal-planning methods are available. The U.S. Department of Agriculture has done away with the Food Guide Pyramid in favour of the My Plate method for all Americans. In this method, a plate of food should contain about 40% vegetables, 30% grains, 20% protein, and 10% fruit along with a small serving of dairy. The My Plate method and Create Your Plate are endorsed by the ADA, which recommend about 50% of the plate include non-starchy (less than 5 g/serving of carbohydrate) vegetables, about 25% grains, and 25% protein.

These results indicate that extension of diabetes health education towards self-management support could effectively improve the self management skills of diabetes patients, reduce the medical costs, and improve the patients' quality of life. improving the diabetes self-management skills, controlling the level of glycol lipid metabolism, reducing the incidence of acute and chronic complications, reducing the medical costs, and other aspects through the extension from long-term systemic strengthened educational interventions towards diabetes self management support. Moreover, the extension implementation of health education to diabetes self-management support was verified to be feasible and effective. In research about "Effect of Diabetes Education Program on Glycaemia Control and Self Management for Patients with Type 2 Diabetes Mellitus", (2009) state: the current diabetes education program had no effect on the self-management or self-efficacy of patients with diabetes, although did show some degree of association with blood glucose control and diabetes knowledge level. We conclude that a more effective diabetes education program needs to be developed and applied to daily practice for the improvement of self-efficacy in patients with diabetes mellitus.

And in research: Self Management Program among Type 2 Diabetes Mellitus Patients [8], represent: Diabetes self-management program is effective to improve behavioral change and clinical outcomes among patients with type 2 DM. So it is necessary to have self management so that the habit patterns get better. It is need self-reporting tools assessing diabetes self-management. The revised German version of the SDSCA (SDSCA-G) is a reliable and valid tool assessing self-management in adults with type 2 diabetes in Germany [9].

How to support the family towards self management? In research with the title: "Family Support Integrated with Diabetes Self-Management among Uncontrolled Type II Diabetes Mellitus Patients" [10] result in this research is produced that family support had a positive impaction healthy diet, increased perceived support, higher self-efficacy, improved psychological well-being, and better glycaemia control. This research found evidence that DSME with family support improved self-management behaviours and health outcomes among uncontrolled glycaemia T2DPatients. The findings suggest DSME models that include family engagement can be a useful direction for improving diabetes care.

Self Management in patients with Diabetes Mellitus must be done regularly. There is a national standard that can serve as a guide for self-management. Family support is the key to the success of DM patients in self-management.

**Limitation in this study:** The author is not able to control many at least sample of respondents in each study in this Integrative Literature Review. So each study in this journal with different number of samples and the author does not have a provision of the number of samples each journal. So this is able to influence the results of each research.

## CONCLUSION

Self-management for DM patients is necessary in order to control the patient's illness. This happens because self awareness of patients to perform self-management so as to improve the quality of life for patients with DM. Patients should perform self-management of DM correctly and regularly so that it will bring a good impact on the quality of life of the patient.

## RECOMMENDATION

**In conducting health education:** Health providers, especially Nurses are expected to provide health education in accordance with the needs of patients. The educational process comprises an important part of DM treatment, as it enables patients to manage their disease. The learning process is complex, and its effectiveness will depend on factors that include self-management commitment of the patient, willingness to learn, family support, bond with the team, financial position, cultural influences, and beliefs and attitudes regarding health care. And family support had a positive impact healthy diet, increased perceived support, higher self-efficacy, improved psychological well-being and better glycaemia control. These results indicate that extension of diabetes health education towards self-management support could effectively improve the self management skills of diabetes patients, reduce the medical costs, and improve the patients' quality of life. Improving the diabetes self-management skills, controlling the level of glycolipid metabolism, reducing the incidence of acute and chronic complications, reducing the medical costs, and other aspects through the extension from long-term systemic strengthened educational interventions towards diabetes self management support.

**Summary of evidence for Policy makers:** With the results of this literature review, policymakers are expected to take the results of the review literature as a standard/ guide for decision making especially self-management in patients with DM. The Standards are applicable to educators in independence practice as well as those in large multicenter programs.

## REFERENCES

1. Smeltzer C, Bare G. Medical Surgical Nursing. In: Edition XII, Brunner & Suddarth. Jakarta: EGC; 2010. p. 1220.
2. Perkumpulan Endokrinologi Indonesia. Consensus on Management of Type 2 DM in Indonesia (Konsensus Pengelolaan DM Tipe 2 di Indonesia). Perkumpulan endokrin Indonesia. Semarang; 2006.
3. Colin T. Glycated Haemoglobin. HbA1C. [Internet]. Diabetes.org. 2017 [cited 2017 Feb 9]. Available from: http://www.diabetes.org.uk/professionals/
4. Kementerian Agama Kabupaten/ Kota se-D.I.Y. [Internet]. Kementerian Agama Yogyakarta. 2015 [cited 2015 Sep 9]. Available from: http://yogyakarta.kemenag.go.id/file/file/effi/djvy1397714127.pdf
5. Onwudiwe NC, Mullins CD, Winston RA, Shaya FT, Pradel FG, Laird A, Saunders E. Barriers to Self-Management of Diabetes: A Qualitative Study Among Low-income Minority Diabetics. Journal of Ethnicity & Disease. 2011;21:27-32.
6. Mathew R, Gucciardi E, Melo M, Barata P. Self-Management Experiences among Men and Women with type 2 Diabetes Mellitus: A qualitative analysis. [Internet]. Biomedcentral. 2012. Available from: https://bmcfampract.biomedcentral.com/articles/10.1186/1471-2296-13-122
7. Norris S, Lau J, Smith S, Christopher H, Schmid C, Engelgau M.Self-Management Education for Adults With Type 2 Diabetes. A meta-analysis of the effect on glycemia control**.** Diabetes Care. 25(7):1159-1171. Available from: https://doi.org/10.2337/diacare.25.7.1159
8. ShrivastavaS, ShrivastavaP, RamasamyJ. Role of Self-Care in Management of Diabetes Mellitus. Journal of Diabetes & Metabolic Disorders. 2013;12:14. Available from: http://www.jdmdonline.com/content/12/1/14; 2013.
9. Grillo M, Neumann C, Scain S, Rozeno F. Effect of Different Types of Self-Management Education in Patients with Diabetes. Rev. Assoc. Med.Bras. 2013;59(4):July/Aug. Available from: http://dx.doi.org/10.1016/j.ramb.2013.02.006
10. Palmer C. Providing Self-Management Education to Patients with Type 2 Diabetes Mellitus: Addressing basic nutrition and hypoglycemia. The Nurse Practitioner. 2017;42(11). Available from: http://www.tnpj.com
11. Jones H, Berard D, MacNeill G, Whitham D, Yu C. Self-Management Education. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Reproduced with permission from Canadian Journal of Diabetes © 2013 Canadian Diabetes Association; 2013.
12. Pamungkas A, Sudarman D, Siokal B. Self Management Program among Type 2 Diabetes Mellitus Patients. Belitung Nursing Journal. 2016;2(3):34-39.

13. Kamradt M, Bozorgmehr K. Assessing Self-Management in Patients with Diabetes Mellitus Type 2 in Germany: Validation of a German version of the Summary of Diabetes Self-Care Activities measure (SDSCA-G). Health and Quality of Life Outcomes. 2014;12:185, DOI 10.1186/s12955-014-0185-1; 2014.
14. Pamungkas A, Chamroonsawasdi K, Vatanasomboon P. Family Support Integrated with Diabetes Self-Management among Uncontrolled Type II Diabetes Mellitus Patients. Behav. Sci. 2017;7(62); doi:10.3390/bs7030062. Available from: http://www.mdpi.com/journal/behavsci