

Systematic Review: Diabetes Mellitus Risk Prevention Program in Indonesia

Umi Malikhatul Basiroh ¹

¹ Universitas Negeri Semarang, Central Java, Indonesia

Corresponding author: umimalika@gmail.com

Abstract: One of the health problems of Non-Communicable Diseases (NCDs) is Diabetes Mellitus. According to WHO, there are still 382 million people suffering from the disease. Diabetes Mellitus in the world on 2019. Diabetes Mellitus can be prevented by controlling its risk factors. The purpose of writing this article is to find out the Diabetes Mellitus risk prevention program in Indonesia. The method used in writing this article is a literature review study with a systematic review method. The articles reviewed were obtained through a search on Google Scholar in the period 2020-2024 with the search keywords being Prevention Program, Diabetes Mellitus Risk. Using PRISMA, 6 journal articles were obtained which will be reviewed. The results of the study indicate that Diabetes mellitus can be prevented by diet management (eating patterns), lifestyle changes, physical activity, education and family support. Therefore, the diabetes mellitus prevention program with a diet management approach (eating patterns), lifestyle changes, physical activity, education and family support can continue to be improved, so that family and community awareness is much better in preventing non-communicable diseases Diabetes Mellitus.

Keywords: Prevention Program; Risk; Diabetes Mellitus

INTRODUCTION

Health problems that many people globally are facing lately covers a wide range of diseases. One of the health problems that is a problem Currently, non-communicable diseases (NCDs) include obesity, hypertension, and Diabetes Mellitus. According to WHO, there are still 382 million people suffering from this disease. Diabetes Mellitus in the world on 2019. (Purnama, et al; 2023)

Diabetes Mellitus can be prevented by controlling its risk factors. Risk Factors Type 2 Diabetes Mellitus based on the theory of Isnaini and Ratnasari (2018) there are several factor risk Which relate with incident Diabetes Mellitus, that is factor socio demographics, behavior, And condition clinical or mentally individual. Factor socio demographics including age, gender, occupation, education level and marital status. Behavior or style

life Which meant is habit Eat, smoke, And activity physique. Whereas condition clinical or mentally is index time body, circumference stomach, and stress is very important because when information about the level of risk factors is known from an early age early then we will be able to develop appropriate interventions and programs. The right way to prevent the occurrence Diabetes Mellitus that is, increase awareness And vigilance community regarding their health condition by checking their glucose levels. regularly, increase physical activity, especially for people with low levels of activity, implementing a healthy and balanced diet. And for people with diabetes Mellitus Type 2 Can do treatment in a way routine And always consult as well as guard pattern eat and apply the method healthy living. (Purnama, et al; 2023).

METHOD

This study is a systematic review using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method. This method is carried out systematically by following the correct research stages or protocols. The systematic review procedure consists of several steps, namely: 1) compile background and purpose; 2) research question; 3) searching for the literature; 4) selection criteria; 5) practical screen; 6) quality checklists and procedures; 6) data extraction strategy; 7) data synthesis strategy (Ningsih, Adi & Saraswati, 2019).

Literature search was obtained from Google Scholar with Publish or Perish v7 Software. The keywords used are prevention program, risk, diabetes mellitus. In addition to keywords, the article search was based on articles written between 2020-2024 and obtained 35 journal articles. The final result, as many as 6 articles met the inclusion criteria for analyzed. The selected journal articles are based on several inclusion criteria. The inclusion criteria in this study include the following: 1) The research article was published in 2020-2024; 2) The type of research design is cross sectional; 3) The research study discusses the diabetes mellitus risk prevention program; 4) Using the test statistically.

RESULTS AND DISCUSSION

Results review literature on article with range time rise year 2020- 2024, use Language Indonesia And Language English And overall study found 6 Article based on Topic systematic discussion review.

Table 1. Literature Review

| No | Researcher | Title | Method | Research result |
|-----------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. | Alianatasya, N., & Muflihatin, SK (2020) | The Relationship Between Diet and Controlled Blood Sugar Levels in Type II Diabetes Mellitus Patients at Abdul Wahab Sjahranie Regional Hospital, Samarinda | Quantitative; Cross Sectional | There is a Relationship Between Diet and Controlled Blood Sugar Levels in Type II Diabetes Mellitus Patients |
| 2. | Harahap, ML (2020) | The influence of lifestyle on the incidence of diabetes mellitus in pre-elderly at the Padangsidempuan City Regional General Hospital | Quantitative; Cross Sectional | There is an influence of lifestyle on the incidence of diabetes mellitus |
| 3. | Suprpti, D. (2020). | Relationship Between Diet, Psychological Condition, and Physical Activity with Diabetes Mellitus in the Elderly at Kumai Health Center | Quantitative; Cross Sectional | There is a Relationship Between Diet, Psychological Conditions, and Physical Activity with Diabetes Mellitus |
| 4. | Arania, R., Triwahyuni, T., Prasetya, T., & Cahyani, SD (2021) | . The Relationship Between Work and Physical Activity with the | Quantitative; Cross Sectional | . There is a Relationship Between Work and Physical Activity with the Incidence of Diabetes Mellitus |

| | | | | |
|----|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------|
| | | Incidence of Diabetes Mellitus at the Mardi Waluyo Clinic, Central Lampung Regency | | |
| 5. | Suwanti, E., Andarmoyo, S., & Purwanti, LE (2021). | The relationship between family support and quality of life of type 2 diabetes mellitus patients | Quantitative; Cross Sectional | There is a relationship between family support and the quality of life of type 2 diabetes mellitus patients |
| 6. | Astutisari, IDAE C., Darmini, AYDAY, Ayu, IAPWI, & Wulandari, P. (2022). | The Relationship Between Diet and Physical Activity with Blood Sugar Levels in Type 2 Diabetes Mellitus Patients at Manggis I Health Center. | Quantitative; Cross Sectional | There is a Relationship Between Diet and Physical Activity with Blood Sugar Levels in Diabetes Mellitus Patients |

Management Diet (Eating Pattern)

Therapy nutrition is component important from management diabetes let go from type his diabetes. Objective therapy nutrition is For approaching normalization of glucose, blood pressure, lipids, And heavy body. On DM type 1, carbohydrate is determinant main need insulin. Depends on regimen insulin Which prescribed, therapy nutrition usually in the form of carbohydrate with amount Which determined (Beck & Cogen, 2015). Based on one of the studies, carbohydrate counting and insulin correction were significantly correlated with level HbA1c Which lower (Pulungan et al., 2021). Universal recommendations base is that carbohydrate must provide 50-60% of daily energy intake and not more than 10% should be from sucrose or carbohydrate processed other. Fat must provide less than 30% and protein should provide 10-20% of daily energy intake (Come on, 2008). Besides That, pattern Eat Healthy on child with DMT1 must reinforced with provide regular food and snacks and balanced nutrition such as vegetables and fruit, and prevent overeating who does not controlled (New) et al, 2019).

Change Style Life

Prevention of DMT2 is done by healthy lifestyle or behavior with diet and exercise. Diet is done by decline calories individual and monitor marker cardiometabolic like pressure blood, fat, and inflammation. Diet can help control blood glucose levels, maintain blood pressure, blood fat levels and normal body weight, enough sleep, And increase quality health (Marin- Penalver et al. 2016, Russell et al. 2016). Sport can increase sensitivity insulin, control level glucose blood, improve lipid profile and blood pressure, lose weight, reduce risk disease cardiovascular, and reduce depression (Marin- Penalver et a. 2016).

Decrease heavy body structured, activity physique, And diet very important for them Which at risk tall suffer DMT2 with own heavy body excessive or obesity. Pattern Eat beneficial for sufferer prediabetes covering pattern Eat low calories and low fat. Study addition required for plan pattern Eat low carbohydrate for sufferer prediabetes. Pattern Eat Which measurable with consume food fibrous tall, grains, nuts, fruit- fruits and vegetables, and reduce food processed Also important. Intake peanut, give, yogurt, coffee, and tea can lower risk DMT2, but meat red and sugar increase risk obesity And DMT2. Pattern Eat Which lower level HbA1C important for prediabetic patients (Olokoba et al. 2012, Kolb and Martin 2017).

Following this is style life Which related to the level of diabetes risk according to epidemiologists (Kolb and Martin 2017): (1) routine eat food Which No or not enough fibrous increase risk diabetes 3 time fold, (2) consumption sweet drinks with sugar increase risk diabetes as big as 20-30%, (3) little physical activity increases the risk by 40%, (4) watching TV for a long time(increases risk by 3% per hour of viewing) television), traffic exposure (noise) and fine particles) increase the risk by 20- 40%, For noise more from 10 dB or 10 µg/ m3 more Lots dust fine, (6) Smoking increases the risk by 30- 60% for heavy smoker, (7) short sleep duration increases the risk by 9% per hour of sleep duration short, (8) stress or depression low increase risk diabetes depends on level stress or depression, (9) position low socioeconomic increases the risk by 40-100%, (10) weight gain body and waist circumference increases risk diabetes.

Activity Physique

Activity physique Which routine give Lots benefit for child sufferer DMT1, like increase sensitivity insulin and lower need insulin, as well as For prevent the occurrence complications I or chronic. Activity physique Which recommended is aerobic exercise done for 60 minutes/day. Children with DMT1 Which do physical activity for 60 minutes/day at least 5 day per Sunday reported own quality a better life than the one of do activity physique (Pulungan, Dear, Annisa, 2021). Besides That, activity routine can reduce stress and increase welfare physiological in a way overall. However, sports can put individuals with DM type 1 on improvement risk hyperglycemia (if the patient has insulin that insufficient) or hypoglycemia (due to muscle restore glycogen) during and after exercise (Beck & Cogen, 2015).

Education

Educational programs for increase motivation, skills, change style life, understanding diet, exercise body, and treatment diabetes will improve quality life sufferer diabetes. Benefit from program This misunderstand the importance of reducing intake calories, improvement activity physique, and increasing knowledge about diabetes so that can lower heavy body, reduce stress, reduce risk disease cardiovascular, and prevent the occurrence of complications (Chatterjee and Davies2015).

Change style life for diabetes control, including by learn more about diabetes, get maintenance in a way routine, learn method control diabetes self Alone, monitor condition diabetes, and inspect in a way routine For term long (Harikumar et al. 2015). Patients actively control yourself, utilize technology monitoring and treatment, and communicate with doctor (Chatterjee And Davies 2015).

Education about DMT1, play role Which important for increase awareness and become program prevention related to diabetes. Education can be done through gradually. Stage First can do whendiagnosis is established for the first time or during take care stay. On stage This, power health can to educate patient and his familyabout knowledge basics about DMT1, arrangement nutrition, insulin use, and help First if complications I DMT1 occurs. The next stage, education can give moment patient do take care road (The round et et al., 2021).

According to Come on year 2008, sufferer DMT1 need equipped knowledge for endure life including regarding the granting insulin, blood glucose monitoring, introduction and treatment of hypoglycemia, hyperglycemia, and ketoacidosis, adapt insulin, and diet for growth, sport, as well as sick day. They also need to be encouraged to build proper behavior for control maintenance glycemic in early childhood (Ayoola, 2008). Giving education and training on DMT1 children involve collaboration with various party, like Teacher in school, or power educators in child care centers and various institution parenting other. Training This aiming for monitor development cognitive in children and meet the needs child with DMT1 (New) et al, 2019).

Family Support as Therapy psychosocial

Therapy DMT1 on child, history psychosocial family especially person old and caregiver closest child need be noticed. Family entitled to receive psychosocial counseling related to with DMT1 management in children. This is can impact on therapy term long covering development academic, intellectual, emotional and social development of children. In addition, children with DMT1 have risk experience disturbance learning and processing information. So that the neuro- physiological And psychological on child very needed for support stability child psychology during the early stages of DMT1 therapy (New) et al , 2019).

CONCLUSION

The results of the study showed that Diabetes mellitus can be prevented by diet management (eating patterns), lifestyle changes, physical activity, education and family support. Therefore, the diabetes mellitus prevention program with a diet management approach (eating patterns), lifestyle changes, physical activity, education and family support can continue to be improved, so that family and community awareness is much better in preventing non-communicable diseases Diabetes Mellitus.

REFERENCE

- Purnama, H., Adzidzah, H. Z. N., Solihat, M., & Septriani, M. (2023). Determinan Risiko dan Pencegahan terhadap Kejadian Penyakit Diabetes Melitus Tipe 2 pada Usia Produktif di Wilayah DKI Jakarta: Determinants of Risk and Prevention of Type 2 Diabetes Mellitus in the Productive Age in the DKI Jakarta Area. *Journal of Public Health Education*, 2(4), 158-166.
- Agustina, R., Puspita, M., & Widiawati, S. (2024). Gambaran Glukosa Darah pada Anak Remaja di MAN Kota Jambi. *Science: Indonesian Journal of Science*, 1(2), 72-77.
- Rizkina, R. D., Rizkia, A., Widyantari, D.D., Syafinatunnajah, G., Cristagalli, G., Bharata, H., ... & Susani, Y. P. (2023). Type 1 Diabetes Mellitus in Children: Diagnosis and Management. *Jurnal Biologi Tropis*, 23(1), 104-111.
- Hardianto, D. (2020). Telaah komprehensif diabetes melitus: klasifikasi, gejala, diagnosis, pencegahan, dan pengobatan. *Jurnal bioteknologi dan biosains Indonesia*, 7(2), 304-317.
- Putri, N. H. K., & Isfandiari, M. A. (2013). Hubungan empat pilar pengendalian dm tipe 2 dengan rerata kadar gula darah. *Jurnal Berkala Epidemiologi*, 1(2), 234-243.
- Toharin, S. N. R., KM, W. H. C. S., & Kes, I. Z. M. (2015). Hubungan modifikasi gaya hidup dan kepatuhan konsumsi obat antidiabetik dengan kadar gula darah pada penderita diabetes melitus tipe 2 di RS Qim Batang tahun 2013. *Unnes Journal of Public Health*, 4(2).
- Arania, R., Triwahyuni, T., Prasetya, T., & Cahyani, S. D. (2021). Hubungan Antara Pekerjaan Dan Aktivitas Fisik Dengan Kejadian Diabetes Mellitus Di Klinik Mardi Waluyo Kabupaten Lampung Tengah. *Jurnal Medika Malahayati*, 5(3), 163-169.
- HARAHAP, M. L. (2020). Pengaruh gaya hidup terhadap kejadian diabetes mellitus pada pra lansia di rumah sakit umum daerah kota Padangsidimpuan. *Jurnal Ilmiah Maksitek*, 5(3), 48-54.
- Alianatasya, N., & Muflihatin, S. K. (2020). Hubungan Pola Makan dengan Terkendalinya Kadar Gula Darah pada Penderita Diabetes Mellitus Tipe II di RSUD Abdul Wahab Sjahranie Samarinda. *Borneo Studies and Research*, 1(3), 1784-1790.
- Astutisari, I. D. A. E. C., Darmini, A. Y. D. A. Y., Ayu, I. A. P. W. I., & Wulandari, P. (2022). Hubungan Pola Makan Dan Aktivitas Fisik Dengan Kadar Gula Darah Pada Pasien Diabetes Melitus Tipe 2 Di Puskesmas Manggis I. *Jurnal Riset Kesehatan Nasional*, 6(2), 79-87.
- Suprapti, D. (2020). Hubungan Pola Makan, Kondisi Psikologis, Dan Aktivitas Fisik Dengan Diabetes Mellitus Pada Lansia Di Puskesmas Kumai. *Jurnal Kesehatan Borneo Cendekia*, 2(1), 1-23.
- Suwanti, E., Andarmoyo, S., & Purwanti, L. E. (2021). Hubungan dukungan keluarga dengan kualitas hidup pasien diabetes melitus tipe 2. *Health Sciences Journal*, 5(1), 70-88.