

Controlling Blood Sugar Levels with Diet in Diabetes Mellitus Sufferers: *Literature Review*

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Abstract: Wrong eating patterns in Diabetes Mellitus (DM) sufferers will cause blood sugar levels increases, so dietary factors or planning eating is very important in control blood sugar levels. Good diet become component main success DM management. The purpose of study This is For know control blood sugar levels with diet in diabetes mellitus sufferers through literature study. Search journal using Google database scholar, pubmed, conchance and springer ago produced 3 journals For followed up. Journal analyzed using appropriate PRISMA diagrams with inclusion criteria used that is journal use Language English and Indonesian, using design RCT research, and published between January 2018 to June 2024 about control blood sugar levels with diet in diabetes mellitus sufferers. Proven diet capable lowering blood sugar in diabetes mellitus sufferers.

Keywords : Diet, Diabetes Mellitus , Hyperglycemia

1. INTRODUCTION

Non- Communicable Diseases (NCDs) have become problem separately for every country around the world, one of them is Diabetes Mellitus (DM). That matter due to diabetes mellitus tend experience upgrade from year to year . Diabetes mellitus Alone is disturbance metabolic marked body with increase internal sugar levels blood (hyperglycemia) as consequence from failure insulin secretion , insulin action or both (Eltrikanawati et al ., 2020). Circumstances This give rise to possible hyperglycemia result various possible complications result damage to parts body such as heart organs , vessels blood , eyes , kidneys and nerves (Trinovita et al , 2020). Somebody can said suffer from diabetes if the results of the Temporary Blood Sugar (GDS) test show results >200 mg/dl (11.1 mmol/L) and Fasting Blood Sugar (GDP) test results of 126 mg/dl (>7.0 mmol/L). There are three type of diabetes , namely Type 1 Diabetes ; Type 2 Diabetes and Gestational Diabetes (current Diabetes pregnant), around 90-95% of people with diabetes have type 2 (Ramadhani et al ., 2022).

The World Health Organization (WHO) predicts that diabetes will become reason main 7 deaths in 2030 (Sriwahyuni & Darmawan, 2021). The International Diabetes Federation (IDF) said that estimated there were 463 million people in 2019 , figures the predicted increase to 578.4 million in 2030 and 700.2 million in 2045. In Indonesia, it occupies ranking to six in the world and recorded as many as 10.3 million people suffer from DM. Diabetes mellitus lasts

a long time even lifetime life and number sufferer disease This Keep going increasing in the world, including in developing countries (Febriyan , 2020).

Increasing possible cases of diabetes mellitus in Indonesia triggered by change style life society , that is not enough exercising . Possible factors contribute to its height prevalence of diabetes mellitus (Yuniartika et al , 2021). Control internal sugar levels Blood is very important for people with Diabetes Mellitus and those who don't only addressed For normalize rate glucose blood but also control factor risk others that are often encountered in DM sufferers . DM control is possible done with controlling stress/ disease , obesity , food , exercise physical , care , education , knowledge and resources information have something related with Diabetes Mellitus disease .

The wrong diet will cause Blood sugar levels in DM sufferers increase , so that dietary factors or planning eating is very important in control blood sugar levels . Good diet become component main success DM management . Planning pattern the meal in question like arrange amount calories and carbohydrates to help internal DM sufferers guard glucose blood , fat and pressure blood (Dafriani , 2017).

Aging process can influence homeostasis , for one is change function pancreatic beta cells as insulin producer , so will cause disturbed secretion hormones and results in an increase blood sugar levels , so diabetes mellitus sufferers must undergo style healthy life (Yuniartika et al , 2021). The American Diabetes Association (2017) stated that aspect important management style life for diabetes mellitus patients with do therapy nutrition and doing activity physique in a way regular . Research conducted by Ritonga (2020) at South Tapanuli Regional Hospital found that about pattern eating the wrong thing is reason occurrence of diabetes mellitus . Dietary habit is a arrangement consumption Eat based on amount nor type food with objective guard health and nutritional status . If body too Lots consume food so sugar levels will hampered enter to in cell so that happen increase collision internal sugar levels blood (Kabosu et al ., 2019). The purpose of study This is For know Control blood sugar levels with diet in diabetes mellitus sufferers through literature study .

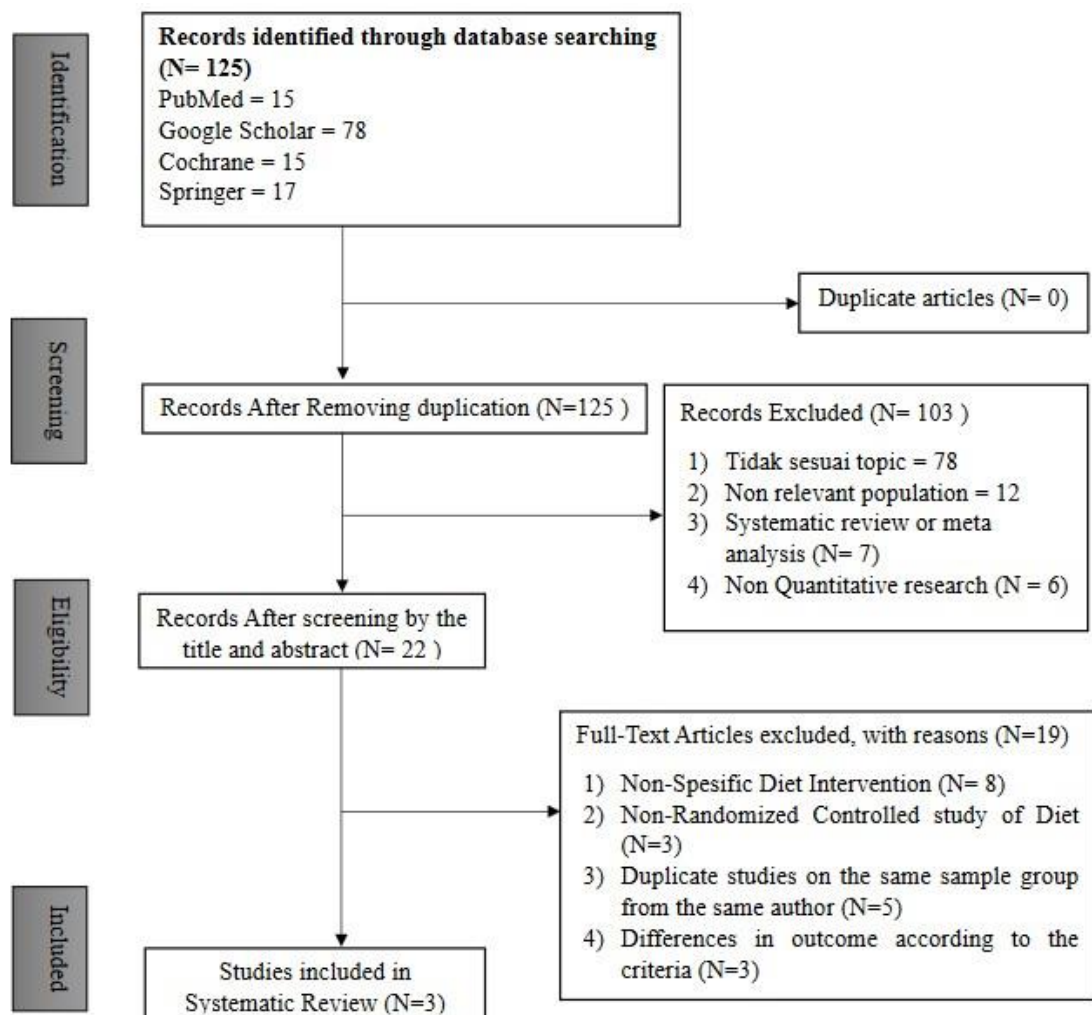
2. METHODS

Study This use design review library , that is do review systematic with choose relevant and appropriate articles with objective study . Selection process use PRISMA method for discover and determine article selected in review systematic . Criteria inclusion study This covers journal use Language English and Indonesian , using design RCT research , and published between January 2018 to June 2024 about control blood sugar levels with diet in

diabetes mellitus sufferers , keywords used including diet, blood sugar levels , diabetes mellitus.

Search process article , accompanied explanation comprehensive about the database used , keywords used , as well as the results obtained first time through the selection process article (prism) using 4 Literature Search Databases carried out in Data base searches include Google Scholar (78 articles), Pubmed (15 articles), Conchrane (15 articles), Springer (17 articles). How to search for articles in each database with write down keywords that is as following : PubMed data base “((diit) AND (diabetes mellitus)) AND (blood sugar level) AND (Glycemic index)”, Google Scholar “ Control blood sugar levels with diet in people with diabetes mellitus”, Cochrane ((Diabetes diet)) AND ((blood sugar level)) AND (Glycemic index), Springer ((Diabetes diet)) AND ((Blood sugar level)) AND (Glycemic index). Total journals obtained namely 125 journals of the 4 Databases, 103 articles were excluded, 19 full text articles were excluded, with responses, ending in 3 articles with relevant content and in accordance with the research topic.

3. PRISM



4. RESULT

References	Title and Purpose	Method	Results
Liu <i>et al.</i> , 2022	<i>A Randomized Study On The Effect Of Metformin Combined With Intensive-Exercise Diet Therapy On Glucose And Lipid Metabolism And Islet Function In Patients With Renal Cell Carcinoma And Diabetes</i> The purpose of study This is For evaluate effects of combined metformin with sports diet therapy intensive on glucose and lipid metabolism as well function pancreas in patients with carcinoma cell kidney local after resection laparoscopy .	This type of research is type study experiment involving 120 patients with case carcinoma cell kidney with diabetes mellitus treated in the department oncology in January 2018 – December 2020, sample divided in two groups that is group control and group intervention which fulfills criteria inclusion and exclusion .	The results showed that after the fasting blood sugar intervention, 2-hour PP blood sugar, HbA1c, triglycerides and cholesterol in both groups decreased significantly. The intervention group showed better results with lower decline. after treatment in both groups experienced an increase in high-density lipoprotein cholesterol (HDL-C) levels, fasting serum insulin, and assessment of the β -cell homeostasis model function (HOMA- β), and higher results were obtained in the intervention group ($P < 0.05$). In groups intervention , obtained results quality life more height and level continuity life free development disease for 12 months compared to group control . There is n't any significant difference in incident effect side between second group .

Nursihhah and Wijaya, 2021	<p>The Relationship between Diet Compliance and Control of Blood Sugar Levels in Type 2 Diabetes Mellitus Patients</p> <p>The goal is to know connection diet compliance , activity physical and drinking drug to control Blood sugar levels in diabetes mellitus patients at Karyamedika Hospital Bantargebang Bekasi .</p>	<p>This type of research is quantitative which is supported by qualitative research with a cross-sectional design. The research was conducted in June – August 2019. The sample was 143 respondents used proportionate stratified random sampling. Univariate and bivariate analysis used the chisquare statistical test .</p>	<p>The results of the study showed that there was a significant relationship between dietary compliance and grades ($p=0.000$). Therefore, support from family and health workers can increase the knowledge of diabetes mellitus patients in controlling blood sugar levels by providing information about governance diabetes mellitus so that it can change attitudes and behavior.</p>
Putri, Rinawati and Fera, 2019	<p>The Influence of Diet Menus and Sports Models on Decrease Blood Sugar Levels and Body Weight in The Prediabetes Group</p> <p>Research purposes is influence of diet menu and exercise model to decline blood sugar levels and body weight in the groups prediabetes</p>	<p>The research method used is the analytical method with an experimental design pseudo, The population is 20 people, and the sample is the total population or A sample of 20 people was divided into 2 groups with different interventions, techniques using Accidental Sampling, and tools using SPSS 20, data</p>	<p>The research results showed an influence on the jasmine group (diet and exercise menu (jogging)) ($P \text{ value} = 0.001 < \ddot{y} = 0.05$), and in the rose group (diet and exercise menu (leisurely walking)) ($P \text{ value} = 0.004 < \ddot{y} = 0.05$) to reduce blood sugar levels and body weight. The research conclusion is a model Dietary control and exercise menus were able to influence the reduction of blood sugar levels and body weight in the</p>

		were analyzed using the independent t test	prediabetes group, group A had a more significant influence because jogging resulted in more calories being burned.
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5. DISCUSSION

Study Liu *et al.*, 2022 involving 120 patients cancer kidney with diabetes treated in the department oncology from January 2018 to December 2020. The patients shared in a way random into two groups : group control (n = 60) and group intervention (n = 60). Criteria inclusion covers patient aged 18-75 years were diagnosed cancer kidney through pathology post operation after nephrectomy laparoscopy , have type 2 diabetes , are at tumor stage T1N0M0 or T2N0M0, and function kidney good contralateral . Criteria exclusion covers patient with history abdominal surgery , severe organ dysfunction , hypertension or disease endocrine , contraindicated sports , as well mental disorders or obstructive neurology implementation dietary intervention . Research result show that after intervention , there is decline significant in blood sugar fasting , blood sugar 2 hours post eating , HbA1c, triglycerides , and cholesterol in both group . Group intervention show more results Good with more decline big . After treatment , second group experience increase rate density lipoprotein cholesterol high (HDL-C), fasting serum insulin , and functional homeostasis model assessment β cells (HOMA- β), with more results high in the group intervention ($P < 0.05$). Additionally , groups intervention show quality more life good and level continuity life free development more disease tall for 12 months compared to group control . Not found difference significant in incident effect side between second group .

Study Nursihhah and Wijaya, 2021 use approach quantitative supported analytics with qualitative data and cross-sectional design . Study This done from June to August 2019 with sample as many as 130 respondents , plus 10% for anticipate the possibility of dropping out, so in total into 143 respondents selected using proportionate stratified random sampling. Analysis univariate and bivariate were carried out using the chi-square statistical test . Research result show exists connection significant between Dietary compliance and control blood sugar

levels with p value $(0.000) < \alpha (0.05)$. The Odds Ratio (OR) of 44.686 indicates that related dietary non-compliance with risk 44,686 times more tall For blood sugar levels are not controlled compared to with dietary compliance .

Study Putri, Rinawati and Fera, 2019 use method analytic with design experiment pseudo , involving sample totaling 20 people who were divided into two groups with intervention different with Accidental Sampling technique . Data analysis was carried out using SPSS 20 with independent t test . Research result show exists influence significant in the Melati group (diet and jogging menu) with P value $= 0.001 < \alpha = 0.05$, as well as in the Mawar group (diet and exercise menu road relaxed) with P value $= 0.004 < \alpha = 0.05$, in lower blood sugar levels and body weight . Research conclusions This is that control pattern eating and exercising effect on the decline blood sugar levels and body weight in the groups prediabetes , with the group jogging showed more decline significant Because calories burned more Lots .

6. CONCLUSION

Diet in DM sufferers has a big influence on improvement blood sugar levels . Therefore that 's important DM sufferers control consumed intake use blood sugar stable .

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