RELATIONSHIP BETWEEN FOOD INTAKE ON DIABETES TYPE 2 MELLITUS

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ABSTRACT

Type 2 diabetes mellitus (2DMT2) global health problem with a considerable impact on life. Prevalence DM in world on year 2021 reach 537 million soul. DMT2 is disease metabolic Which be marked with increase in blood glucose concentration. One of the risk factors that can cause DMT2 is food intake. intake food is reason main enhancement rapidly incident DM in countries develop. Rate glucose blood especially influenced by carbohydrate food, height intake food Ready serve, drinkcarbonated, intake meat red, food sweet as well as intake rice white Which excessive Also suspected can contribute to enhancement risk resistance insulin on DMT2. Based on matter the writer interested conducted a literature study regarding the relationship between food intake and type 2 diabetes mellitus. Based on the study the library done, can concluded that there is a significant relationship between intake food with DMT2 so that food intake can affect the incidence of DMT2 in individuals. Various types of food components can affect the risk of developing DMT2, therefore healthy food intake and regular eating patterns can done to reduce risk happening various type disease.

Keyword: intake food, diabetes mellitus type 2, Diet

Introduction

Diabetes mellitus type 2 (DMT2) is problem health Which becomemajor concern in the world. DMT2 has been recognized as a serious health problem with impact Which Enough big on life man, Because can influence capacity functional And quality life individual. [1] *International Diabetes federation* (IDF) on year 2021 state that number incident DM reach 537 million soul with range age 20-79 year, number the estimated increase on year 2030 to 643 million as well as in 2045 estimated become 783 million. In Asia Southeast, the incidence of DM reached 90 million people with 747,000 of them died. [2] .

Based on data Which obtained from Riskesdas year 2018, prevalence DM in Indonesia reach 8.5%, And estimated By 2030 the DM incidence will reach 194 million soul Which suffered by individual age20 year or more. [3] . Type 2 diabetes mellitus is included One disturbance metabolic Which most general Which be marked with exists concentration glucose blood Which increase. Disease This caused by combination two factor, that is pancreatic β-cell damage and disabilitynetwork For respond insulin or resistanceinsulin Which cause enhancement rate glucose plasma. [4] Factor risk Which cancause DMT2 can shared becomefactor risk Which No can modifiedsuch as age, genetics, race, and ethnicity, as well as factorsrisk Which can modified like pattern diet, physical activity, and smoking habits.

intake food And style life is the main reason for the increase rapidly incident DM in countries develop. intake energy And compositionmacronutrients suspected own role main in development DMT2. [6] intake energy outside level Which needed can push enhancement mass fat And change composition body, matter the cause implication negative on glucose metabolism, especially in oxidation, storage glucose, And secretion insulin. [7] Rate glucose blood especially influenced by dietary carbohydrates, but if protein,fat and fiber are consumed in moderate amountsNo under control Also can influence rate glucose blood. Height intakefood Ready serve, drink carbonated, intake meat red, food sweet as well as excessive intake of white rice is also suspected can contribute to enhancement risk of insulin resistance on DMT2. [8]

Based on description on, writerinterested For do studies References about connection between intake foodto diabetes mellitus type 2. Writing article This aim For knowHow intake food can influence the incidence of DMT2 in order for the reader can pay attention to intake and diet Which Healthy For increase quality health as well as reduce risk happeningvarious type disease, specifically DMT2. Article This made with method *literature reviews* or studies bibliography/review References. Method study

This study Andreview in a manner critical idea, knowledgeor findings on literature. Writing article This started with do searchReferences Which relate with subject study. Library sources are obtained through *literature searching* on *databases* PubMed NCBI, as well as *Google Scholar* by keyword “intake food", "diet", And "diabetes mellitus type 2” in the publishing period of the year 2012-2022. References obtained later identification, analysis and interpretation For get conclusion about connection between intake food to DMT2.

Based on studies literature Which done, on study Which done in Iran by Beigrezaei *et al.* (2019) on 315 participant aged 18-60 year related relationship between dietary pattern and DMT2 was found that a healthy diet pattern has a relationshipsignificantly with a reduced risk of T2DM (OR=0.51;95%CI=0.27-0.9; p=0.019) .
compared to with pattern diet Eat West Which in a manner significant related with enhancement risk DMT2 (OR=9.25; 95%CI=4.95–17.4; p<0.001). intake food healthy in this study included fish, product milk low fat, fruits, vegetables And etc. Whereas pattern diet West including intake meat red Which more tall, meat processed, grain processed risky 9 fold caught diabetes mellitus. [9]

Study about connection patterneat with the incidence of diabetes mellitus which done by Ritonga & Ritonga (2017) in Tapanuli District Hospital for 76 participants shows that 64.5% have a pattern Eat not enough Good And 35.5% own patternEat Good. Based on test *chi square* onthis research obtained *p value* = 0.000 so there is a significant relationship between patternsEat with incident diabetes mellitus. [10]

Based on research related to influence diet on the incidence of diabetes mellitusWhich done by Widiyanto & Rahayu (2019) in Public health center city Pekanbaru Also obtained results similar, that pattern Eat influential to incident diabetesmellitus (OR=0.161; 95% CI = 0.028-0.93;p=0.031) with pattern Eat Which regular is a protective factor against events diabetes mellitus. Studies the show that 47.1% participant with pattern Eat irregular and 12.5% have an eating pattern Which regular. [11]

Based on research related to relationships habit Eat to incident diabetes mellitus in RSU city of Banda Aceh which was carried outby Yusnada *et al.* (2017) shows that there are 75.4% of participants have a habit Eat Which excess And 24.6% own adequate eating habits. Statistical test results *chi square* obtained (OR=5,067; 95%CI=2.324-11.048; p<0.001) Which means that there is influence Which meaning between habit Eat to incident diabetes mellitus and eating habits excess can risky 5 time fold caught diabetes mellitus compared to individualsWhich have a habit Eat Enough. [12]

According to studies Which done by Schwingshackl *et al.* (2017) found that intake food Which optimal can lower risk DMT2 between other 2 portion/day grain intact (60g/day), 2-3 portion/day vegetables (160-240g/day), 2-3 portion/day fruits (160-240g/day), 3portion/day milk (400-600g/day) can produce subtraction 42% risk DMT2 compared to with individual Which No consume these foods. Consumption 2 portion/day meat red (170g/day), 4portion/day meat processed (150g/day), 1portion/day egg (55g/day) And 3 portion/day drink sweet (750ml) associated with enhancement risk DMT2 three time fold compared to with No consuming food the. No consuming food the can reduce riskT2DM is about 70%. Potential risk reduction DMT2 with choose consumption grain intact, vegetables, fruits, And milk Which optimal, as well as No consuming meat red, meat processed as well as egg in a manner excessive. [13]

Diabetes mellitus type 2 is disturbance metabolic with sign exists hyperglycemia chronic. intake food Which bad has identified as Wrong Onefactor risk Which can influence incident DMT2 And through a number of studies Which has done show that there is connection Which significant .
intake food or pattern Eat to DMT2. [9,11] swift current globalization leading to major lifestyle changes intake food Which can herding people to consume more food fast serving and processed. [14]

intake food Which dominated by red meat and its products, processed foods preserved and low in grain, fresh vegetables and fruits related toincrease in blood glucose levels in individuals as well as risky cause DMT2. [15] Connection positive between intake food the to DMT2 can causedby component food Which No Healthy like meat red And various product processed. On A studies meta-analysis found that the consumption of additional meat red 100g/day can increase risk development of DMT2, and consumption of 50g or more product meat processed per day

can increase risk DMT2 as big 30%. [13] Excessive intake of red meat products can cause process absorption substance excess *heme* iron . Excess iron internal the can increase resistance And increase risk DMT2. [16]

intake grain like product riceprocessed And product wheat Which excessive can increase risk DMT2. Studies show that consumption 200-400g/daygrain processed can increase risk DMT2 as big 6-14%. [17] a number study show that consumption wheat intactcan lower blood glucose levels individuals with DMT2 than consumption of whole grains processed grains. This can be caused because the grains are likely to be digested by the flora normal in the large intestine into fatty acids short chains which are then reabsorbed without change rate glucose blood Which circulate. [18]

intake vegetable diversity fresh No related with development DMT2 on individual. Vegetables Which cooked withwell and increase his intake up to 300gin a manner positive can reduce risk DMT2 as big 9%. Vegetables And fruits is the main source of fiber. [18] Effect from fiber food Which can give impact positive for metabolism including secretion various hormone, adipokines, sour bile and acid amino. Fiber intake Also own connection with increase sensitivity insulin And status metabolism. Through interaction with microbe intestines will produce short chain fatty acidsfermentation fiber Which can influence metabolism lipids, glucose And cholesterol through effect on receptor related G-protein [19]

Protein intake in the form of fish or poultry found no association with DMT2. [13] intake material food addition like salt own effect important on development DMT2. Enhancement intake salt can influence incident DMT2 through increased Th17 cell activity of the pathway p38/MAPK And kinase-1 Which arranged by glucocorticoids serum For increase rate cytokine proinflammatory. [20]

intake milk And the product canlower risk DMT2. Consumption milk 200g/day can reduce 3% risk of DMT2, as well as the daily intake of half a serving of milk or food processed from milk associated with decreased risk of 28% and 31%, respectively compared to with individual Which No consume milk every day. [21] Calcium a contained in milk can increase pancreatic β-cell function by maintainingbalance between intracellular calcium and extracellular, increase insulin sensitivity through enhancement transduction signal insulin on insulin target tissues and increase systemic inflammation. Another protective effect of milk can caused by proteins milk like sour palmitoleate, or Because impact on flavor full And Nodue to the direct effect of calcium or through the interaction with component milk other. [22]

intake egg can own connectionpositive and negative to increase risk DMT2. Enhancement risk DMT2 on individual Which consuming egg every day Also possible enhancement effect unwanted health risks cardiovascular disease
possibility that consumption egg Which too much can induce distraction metabolism glucose And resistance insulin. [23] Egg own benefit Which can increase or lower risk DMT2.

Egg contain cholesterol And variousnutrients such as unsaturated fatty acids, amino acids and B vitamins that it does not have effect bad on metabolism glucose. Egg Also contain choline Which can increase concentration *trimethylamine N- oxide* (TMAO) plasma Which associated with change homeostasis glucose And risk DMT2. Consumption of eggs without the yolk or replaced with nuts, grain whole, milk,yogurt or cheese associated with risk DMT2 Which more low. [24]

Level consumption rice white in Asia tend more tall that is around 3-4portion/day. intake rice Which excessive Also associated with enhancement risk DMT2. Rice white contain index glycemic And burden glycemic Which tall, so that can cause rate glucose post-prandial Which tall. Role rice white can increase risk diabetes can through mechanism other than a high glycemic load, White rice has more nutritional content low like fiber No late, magnesium, vitamins, lignans, phytoestrogens and phytic acid. Consumption rice white Which tall can cause enhancement risk diabetes Because low intake nutrition Which beneficial. Reduce consumption of white rice For reach diet Which more balanced recommended For reduce risk DMT2. [25]

Consumption food Which excessive causes glucose and body fat which accumulated in a manner excessive. Condition the cause gland pancreas especially cells β pancreas continues to work inside produce insulin in response enhancement glucose blood. If something whenpancreas is unable to meet the

demand hormone insulin, excess glucose can notcompensated for its level in the blood And urine increase. circumstances the If going on Keep going continuously will trigger onset of DMT2. [12] Blood glucose levels will stable If arrange timetable Eat with regular. Individuals with an unhealthy dietregular can increase risk happening DMT2. Arrangement pattern Eat is main component in the prevention of various disease. Pattern Eat should done regularly in the morning, afternoon and evening as well interspersed with food Intermezzo like fruit between meals. [26] Intake food Which Healthy is Wrong One method Which can done For prevent emergence various type disease on body. Individual can arrange type intakefood For maintain status nutrition And health as well as prevent orhelp process healing disease. [14]

Conclusion

Based on studies References Which done, it can be concluded that there is connection Which significant between intake food with DMT2 so that intake food can affect the incidence of DMT2 on individuals. Food components that can increase risk happening DMT2 between other intake of red meat and its processed products, whole grains grain, egg, rice white And salt in a mannerexcessive. Meanwhile, food intake can reduce risk DMT2 between other consumption grain intact, vegetables, fruit-fruit, as well as milk. intake food Which Healthy as well as pattern Eat Which regular can done For reduce risk happening various type disease specifically DMT2.

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