



## DETERMINANTS OF DIABETES MELLITUS COMPLICATION PREVENTION IN RURAL COMMUNITIES

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### ABSTRACT

Diabetes mellitus is a major global public health problem that contributes significantly to morbidity, mortality, and decreased quality of life due to its long-term complications. Rural communities are particularly vulnerable to diabetes mellitus complications because of limited access to healthcare services, inadequate health education, low socioeconomic status, and insufficient preventive health behaviors. The purpose of this study is to analyze the determinants of diabetes mellitus complication prevention in rural communities. This quantitative study with a cross-sectional design in May 2025. The study population consisted of 348 respondents with a sample of 186 respondents selected using random probability sampling. Data were collected through questionnaires. The results showed that all questionnaire items were valid, with r-count values ranging from 0.412 to 0.845, exceeding the r-table value. Reliability testing was conducted using Cronbach's Alpha, and all variables demonstrated good internal consistency, including diabetes complication prevention (0.892), knowledge (0.846), motivation (0.874), and health examination (0.831). Analyzed using logistic regression. The results showed a significant relationship between education (0.000), type of employment (0.000), income level (0.00), knowledge (0.000), attitude (0.000), self-motivation (0.000), family support (0.000), and access to health services (0.000) with efforts to prevent DM complications. In contrast, age (0.067), gender (0.291), and anxiety level (0.080) were not significantly related. The most dominant variable was self-motivation with an OR of 144.7. The conclusion is education, occupation, income, knowledge, attitude, family support, healthcare access, and especially self-motivation significantly influenced diabetes complication prevention efforts in rural communities.

Keywords: complications; diabetes mellitus; prevention; rural communities

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## INTRODUCTION

Diabetes mellitus Type 2 (DM2) is one of the disease chronic which greatly affects health individuals, families, and communities, especially in developing countries like Indonesia. More of the 500 million people worldwide suffer from diabetes, International Diabetes Federation (2021) estimates amount DMT2 incident will Keep going increased. Indonesia itself be in order fifth in the world with 19.47 million people suffering from diabetes. This condition This exacerbated by the prevalence high diabetes complications like nephropathy, retinopathy, and disease cardiovascular, which contribute on improvement number morbidity and mortality.

According to International Diabetes Federation (IDF), Indonesia has 7.6 million DM sufferers, with 50% experiencing complications I stretched age between 20 and 79 years (Suardana et al., 2019). Complications This can appear as results from change metabolic, which changes structure and function macromolecules in body. Retinopathy diabetic, nephropathy, neuropathy, cardiomyopathy, and complications macroangiopathy like atherosclerosis is a number of complications that can occur emerge (Pane et al., 2022; Ellita et al., 2019). There is a number of factor risk of diabetes that supports occurrence complications like age, type gender, long-term diabetes length, and condition physiological factors. According to Diani et al. (2019) main influencing factors ability somebody for prevent complications of diabetes mellitus is age. Study results show that age over 45 years

correlated significant with risk complications microvascular like retinopathy diabetic. Control blood sugar levels become problem main in prevent complications in people aged 46 to 65 years. While study other show that, the decline function metabolic and vascular happen along increase age where people are more old own risk more complications high (Komariah & Rahayu, 2020).

Peters & Woodward (2018) in his research explain if gender also has an effect to incident DM complications where known Woman more prone to disease cardiovascular compared to men, because hormonal variables and differences style life. Studies show that Woman tend more obedient to treatment and practice style life healthy, women more often undergo inspection routine health for help detect complications at this stage beginning However they are also more prone to complications neuropathy peripheral (Komariah & Rahayu, 2020).

Diabetes mellitus level (DM) with complications correlated in a way positive. Damage vessels blood small (microvascular) and large (macrovascular) can happen consequence hyperglycemia chronic in patients with DM that has been ongoing more from ten years, so that effort prevention measures taken in overcome complications become more many (Diani et al., 2019). According to You et al. (2021) hyperglycemia chronic increase risk complications correlated with diabetes suffered in period a long time so that cause damage micro and macrovascular.

You et al. (2021) also explain If condition physiological like HbA1c levels, blood pressure blood, and index mass the body can also show level risk complications, will but No Lots studies that examine function characteristics This in a way comprehensive in public rural. Psychological factors like level stress, anxiety, and motivation self also have very important contribution. Maulasari (2020) in his research mention If patients who have anxiety tend own control glycemic worse, which increases risk complications. While level managed anxiety with Good can increase compliance to management self and prevention complications. The same results were also shown in research conducted by Shang et al. (2021) that excessive stress can bother blood sugar control, and prolonged anxiety can make things worse compliance to treatment.

Motivation in prevention complications Diabetes mellitus (DM) has contribution Which significant. Nastiti & Rosyid (2022) explain good motivation intrinsic and extrinsic is very important for build behavior sustainable prevention. Patients who have motivation that high, pushing they for exercise, have a healthy diet, and control blood sugar in a way consistent. Intervention based motivation, such as diabetes education, has proven increase ability patient for control self they Alone, Which in a way significant lower risk complications. In addition to the factor's characteristics and psychological components social like condition family, support family, involvement social, and access to service health also plays a role important in prevent complications diabetes.

Patients who feel supported by his family tend more motivated for guard pattern life healthy and following treatment, tends to more obedient to diabetes care such as diet, exercise, and control routine medical care (Meidikayanti & Wahyuni, 2017). The same thing was also conveyed in Damayanti et al.'s (2023) research on success diabetes management relies heavily on support family, good in a way emotional, instrumental, and informational. Involvement social Also can increase welfare psychological them (Bashir et al., 2022).

In Community social patient can share experience and solutions management disease with involvement social like join with diabetes community or group supporters. Group supporters can also help patient feel more believe yourself and reduce isolation social, encouraging patient for increase behavior prevention complications (Prawirasatra et al., 2017). Services health also becomes important things for patient. Service like education prolanis, routine check-ups, and consultations nutrition allows patient get information and care needed in a way regular. Factors

social This each other relate and play a role big in push behavior prevention patient to diabetes complications (Damayanti et al., 2023).

According to According to the 2021 Aceh Health Profile, there were 121,160 people with diabetes in Aceh. In 2022, the Aceh Health Office recorded 154,889 cases of diabetes, and in 2023, improvement case Where there is as many as 189,464 cases of DM and 57.36 % received service in accordance standard. Aceh Jaya Regency has coverage DM service according to standard lowest by 1.57% compared to with Central Aceh Regency, Gayo Lues, Banda Aceh City, Sabang, and Subulussalam each have their own service in accordance standard as big as 100%. Based on data from profile health Regency Aceh Jaya, showing improvement amount case known as many as 2257 people diabetes sufferers in 2021 , increasing as many as 4170 people in the year 2022 and beyond increased in 2023 to 63,512 people where prevalence diabetes sufferers do not get service in accordance standard located in Setia Bakti District , namely as many as 472 (14.4%) (Aceh Health Office, 2023; Aceh Jaya Health Office , 2023). From the study preliminary work carried out at the health center located in the region Work Setia Bakti District is known existence improvement amount DM cases every the year Where amount DM cases in 2021 were 47 cases , in 2022 as many as 257 cases and counting increase to 348 cases in 2023 , which are known to include There are 132 cases of Type I Diabetes which is insulin dependent and 132 cases of Type II Diabetes which is non -insulin dependent . insulin dependent with various complications amounting to 216 cases.

Village communities and society urban own risk comparable complications of diabetes mellitus, but a number of factors can make things worse or slow down risk said. Activities high physical in society village, as seen by farmers, can become factor protection, but pattern undereating health and lack of access to service health can also increase risk where access to service health often limited to the community rural. Interview results show Lots sufferers seldom go to facility health for routine checks where known if Diabetes mellitus is not controlled can cause various complications like disturbance metabolic that can cause attack heart stroke, foot disease that can cause amputation, and failure kidneys. The data show If prevention complications become challenge Which very difficult and need holistic approach in society rural areas. So that matter This underlying background behind study This. The purpose of this study is to analyze the determinants of diabetes mellitus complication prevention in rural communities.

## **METHOD**

Study This use method observational analytic with cross-sectional design conducted in May 2025 in Setia Bakti District. Population study totaling 348 Diabetes Mellitus sufferers spread across 13 villages, with sample A total of 186 respondents were determined use Slovin's formula and probability sampling techniques through random probability sampling. Research data obtained from primary data through interviews, observations, and questionnaires, as well as secondary data from community health center related amount DM sufferers. The results showed that all questionnaire items were valid, with r-count values ranging from 0.412 to 0.845, exceeding the r-table value. Reliability testing was conducted using Cronbach's Alpha, and all variables demonstrated good internal consistency, including diabetes complication prevention (0.892), knowledge (0.846), motivation (0.874), and health examination (0.831). Therefore, all research instruments were considered valid and reliable for data collection. Data analysis was carried out in a way univariate for see data distribution, bivariate using the chi-square test with level 95% confidence, and multivariate using logistic regression to determine the most influential variable to effort prevention DM complications.

## **RESULT**

Table 1 known that of 186 respondents research , the majority respondents own age  $\geq 35$  years as many as 121 respondents (65.1%), on the variable type sex show If some big respondents various sex Woman as many as 122 respondents (65.6%), in the group education , the majority respondents own secondary education as many as 90 respondents (48.4%) , while in the variable work show If majority work respondents as laborer farmers / fishermen / housewives as many as

107 respondents (57.5%) and in the variable income known majority level income respondents be in range under Rp. 3,000,000 as many as 121 respondents (65.1%)

Table 1.  
Characteristics Respondents

| Variables                               | f   | %    |
|-----------------------------------------|-----|------|
| Age                                     |     |      |
| ≥ 35 years                              | 121 | 65.1 |
| < 35 years                              | 65  | 34.9 |
| Gender                                  |     |      |
| Man- Man                                | 64  | 34.4 |
| Woman                                   | 122 | 65.6 |
| Education                               |     |      |
| Low                                     | 69  | 37.1 |
| Intermediate                            | 90  | 48.4 |
| Tall                                    | 27  | 14.5 |
| Work                                    |     |      |
| Laborer farmer/ fisherman/<br>Housewife | 107 | 57.5 |
| Trader                                  | 37  | 19.9 |
| civil servant                           | 36  | 19.4 |
| Employee private                        | 6   | 3.2  |
| Income                                  |     |      |
| <Rp 3,000,000                           | 121 | 65.1 |
| ≥Rp 3,000,000                           | 65  | 34.9 |

Table 2.  
Analysis Univariate

| Variables                                            | f   | %    |
|------------------------------------------------------|-----|------|
| Knowledge                                            |     |      |
| Not enough Good                                      | 116 | 62.4 |
| Good                                                 | 70  | 37.6 |
| Attitude                                             |     |      |
| Negative                                             | 101 | 54.3 |
| Positive                                             | 85  | 45.7 |
| Anxiety Level                                        |     |      |
| Heavy                                                | 43  | 23.1 |
| Currently                                            | 66  | 35.5 |
| Light                                                | 77  | 41.4 |
| Self-Motivation                                      |     |      |
| Not Good                                             | 106 | 57.0 |
| Good                                                 | 80  | 43.0 |
| Family Support                                       |     |      |
| Does not support                                     | 98  | 52.7 |
| Support                                              | 88  | 47.3 |
| Service Access Health                                |     |      |
| Not enough Affordable                                | 127 | 68.3 |
| Affordable                                           | 59  | 31.7 |
| Effort Prevention Complications of Diabetes Mellitus |     |      |
| Not enough Good                                      | 100 | 53.8 |
| Good                                                 | 86  | 46.2 |

Table 2 explain If of 186 respondents research, it is known majority respondents have level knowledge No Good as much as 62.4%, 54.3 % negative attitudes to effort prevention DM complications, 41.4% had level mild anxiety, 57.0 % had motivation not enough good, 52.7% no own support family, 68.3% have access service poor health affordable, 53.8% have effort prevention complications diabetes mellitus not enough Good.

Based on the bivariate analysis presented in the table 3, the results demonstrated significant

associations between education level, occupation, income, knowledge, attitude, self-motivation, family support, and access to health services with efforts to prevent Diabetes Mellitus (DM) complications, as indicated by p-values < 0.05. Respondents with higher educational attainment, better income, good knowledge, positive attitudes, strong self-motivation, adequate family support, and affordable access to health services were more likely to demonstrate good preventive efforts toward DM complications. Furthermore, the variables of knowledge, self-motivation, and attitude showed notably high Odds Ratios (OR), indicating a strong influence on preventive behaviors related to DM complications. In contrast, age, gender, and emergency/stress level were not significantly associated with prevention efforts, as their p-values were > 0.05. These findings suggest that psychosocial, socioeconomic, and environmental support factors play important roles in improving efforts to prevent Diabetes Mellitus complications among respondents.

Table 3.  
Analysis Bivariate

| Analysis Bivariate    |                                     |      |      |      |                |         |
|-----------------------|-------------------------------------|------|------|------|----------------|---------|
| Variables             | Prevention Efforts DM complications |      |      |      | OR<br>(95% CI) | P Value |
|                       | Not good                            |      | Good |      |                |         |
|                       | f                                   | %    | f    | %    |                |         |
| Age                   |                                     |      |      |      |                |         |
| ≥ 35 years            | 71                                  | 38.2 | 50   | 26.9 | 1.76           | 0.067   |
| < 35 years            | 29                                  | 15.6 | 36   | 19.4 | (0.918-3.392)  |         |
| Gender                |                                     |      |      |      |                |         |
| Man- Man              | 30                                  | 16.1 | 33   | 17.7 | 0.722          | 0.291   |
| Woman                 | 70                                  | 37.6 | 53   | 28.5 | (0.376-1.386)  |         |
| Education             |                                     |      |      |      |                |         |
| Low                   | 44                                  | 23.7 | 25   | 13.4 | 10.12          | 0,000   |
| Intermediate          | 52                                  | 28   | 38   | 20.4 | (2,921-43,74)  |         |
| Tall                  | 4                                   | 2.2  | 23   | 12.4 |                |         |
| Work                  |                                     |      |      |      |                |         |
| Laborer farmer/       | 71                                  | 38.2 | 36   | 19.4 | 1.97           | 0,000   |
| fisherman/Housewife   |                                     |      |      |      | (0.249-15.38)  |         |
| Trader                | 23                                  | 12.4 | 14   | 7.5  |                |         |
| civil servant         | 3                                   | 1.6  | 33   | 17.7 |                |         |
| Employee private      | 3                                   | 1.6  | 3    | 1.6  |                |         |
| Income                |                                     |      |      |      |                |         |
| <Rp 3,000,000         | 94                                  | 50.5 | 27   | 14.5 | 34.23          | 0,000   |
| >Rp 3,000,000         | 6                                   | 3.2  | 59   | 31.7 | (12.67-105.00) |         |
| Knowledge             |                                     |      |      |      |                |         |
| Not Good              | 97                                  | 52.2 | 19   | 10.2 | 114.01         | 0,000   |
| Good                  | 3                                   | 1.6  | 67   | 36   | (31.11-599.19) |         |
| Attitude              |                                     |      |      |      |                |         |
| Negative              | 90                                  | 48.4 | 11   | 5.9  | 31.03          | 0,000   |
| Positive              | 10                                  | 5.4  | 75   | 40.3 | (22.86-109.58) |         |
| Emergency Level       |                                     |      |      |      |                |         |
| Weight                | 25                                  | 13.4 | 18   | 9.7  | 1,750          | 0.080   |
| Medium                | 41                                  | 22   | 25   | 13.4 | (0.774-4.013)  |         |
| Light                 | 34                                  | 18.3 | 43   | 23.1 |                |         |
| Self -Motivation      |                                     |      |      |      |                |         |
| Not enough Good       | 98                                  | 52.7 | 8    | 4.3  | 477.75         | 0,000   |
| Good                  | 2                                   | 1.1  | 78   | 41.9 | (91.61-4288.1) |         |
| Support Family        |                                     |      |      |      |                |         |
| No Support            | 79                                  | 42.5 | 19   | 10.2 | 13,265         | 0,000   |
| Support               | 21                                  | 11.3 | 67   | 36   | (6,244-28,490) |         |
| Service Access Health |                                     |      |      |      |                |         |
| Not enough Affordable | 94                                  | 50.5 | 33   | 17.7 | 25.16          | 0,000   |
| Affordable            | 6                                   | 3.2  | 53   | 28.5 | (9.45-76.714)  |         |

The table 4 indicate that self-motivation consistently remained the most dominant factor associated

with efforts to prevent Diabetes Mellitus (DM) complications across all regression models. In Model 1, income level showed a significant association with preventive efforts (OR = 26.26;  $p = 0.000$ ), while education level, type of work, and age were not statistically significant. In Model 2, self-motivation emerged as the strongest predictor (OR = 17.31;  $p = 0.000$ ), followed by income level (OR = 12.51;  $p = 0.004$ ) and level of knowledge (OR = 12.45;  $p = 0.038$ ). However, attitude, age, type of work, education level, and anxiety level did not show significant relationships. In the final model (Model 3), self-motivation remained the most influential variable with the highest Odds Ratio (OR = 144.74;  $p = 0.000$ ), indicating that respondents with good self-motivation were substantially more likely to engage in effective DM complication prevention efforts. Income level also remained statistically significant (OR = 12.7;  $p = 0.007$ ), whereas education level, type of work, age, attitude, knowledge level, anxiety level, family support, and access to health services were not significantly associated after adjustment for confounding variables. These findings suggest that self-motivation and economic status are the primary determinants influencing preventive behaviors toward DM complications.

Table 4.  
Analysis Multivariate

| Variables                 | Model 1<br>(OR/p Value)<br>Conf. interval | Model 2<br>(OR/p Value)<br>Conf. interval | Model 3<br>(OR/p Value)<br>Conf. interval |
|---------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| Level of education        | 1.24 (0.549)<br>0.6132 - 2.507            | 0.95 (0.950)<br>0.199 - 4.55              | 0.99 (0.993)<br>0.202 - 4.878             |
| Type of work              | 1.26 (0.393)<br>0.744 - 2.120             | 0.71 (0.545)<br>0.237 - 2.138             | 0.62 (0.468)<br>0.167 - 2.276             |
| Income Level              | 26.26 (0.000)<br>9,778 - 70.53            | 12.51 (0.004)<br>2.217 - 70.52            | 12.7 (0.007)<br>1,976 - 81.43             |
| Age                       | 1.52 (0.313)<br>0.675 - 3.418             | 4.43 (0.257)<br>0.337 - 58.15             | 3.28 (0.365)<br>0.252 - 42.65             |
| Attitude                  | -                                         | 1.60 (0.617)<br>0.254 - 10.83             | 1.71 (0.570)<br>0.27 - 10.79              |
| Self-Motivation           | -                                         | 17.31 (0.000)<br>18,845 - 1156,133        | 144.74 (0.000)<br>16.06 - 1304.1          |
| Level of Knowledge        | -                                         | 12.45 (0.038)<br>1.156 - 133.9            | 6.81 (0.141)<br>0.529 - 87.60             |
| Anxiety Level             | -                                         | 0.87 (0.872)<br>0.161 - 4.71              | 1.13 (0.895)<br>0.189 - 6.71              |
| Support Family            | -                                         | -                                         | 1.16 (0.895)<br>0.226 - 5.952             |
| Access to Health Services | -                                         | -                                         | 4.65 (0.134)<br>0.621 - 34.83             |

## DISCUSSION

### Connection Characteristics respondents with effort prevention complications DM

Based on results study show that no there is connection significant between age ( $p$ -value= 0.067), type gender ( $p$ -value = 0.291) with effort prevention complications of diabetes mellitus. Meanwhile there is connection significant between education ( $p$ -value= 0.000), occupation ( $p$ -value= 0.000), income ( $p$ -value= 0.000) with effort prevention complications of diabetes mellitus in the workplace Setia Bakti District. Same results were also shown in study Widyasari (2017) where found If majority participants study be in range age 46-50 years by 22%, range age 36 – 40 years by 20% and minority be in range age 31-35 years by 12%. The same fact is also shown in Imelda's research (2019) which states If age is one of the components that can influence compliance and complications in diabetes mellitus patients. This matter in accordance with the concept conveyed by Imelda (2019) which explains If patient with diabetes mellitus have greater risk big along increase age, especially at the age of more from 45 years, because at that age This start happen improvement intolerance glucose. With increase age, function body in a way physiological will decrease Because decline secretion or insulin resistance, so that control glucose becomes not enough effective. According to Arania *et al.* (2021) the factors risk supporters

occurrence complications of DM are type female genital own higher risk of type 2 diabetes tall than men. Women have 3-7 times greater risk tall than men, who only own 2-3 times greater risk high. This is show that There is difference big between women and men. The same results were also shown in research (Widyasari, 2017) revealed If ratio type sex will decide trend risk disease No infectious especially DM among men and women Where Woman known more risky to DM complications. Research result This supported by research conducted by Faizal *et al.* (2024) who found of the 50 respondents who had diabetes mellitus, 26 (32.9%) worked as farmers and 24 (30.4%) work elsewhere. Meanwhile of the 29 respondents who did not experiencing diabetes mellitus, 10 (12.7%) working as farmers and 19 (24.1%) work elsewhere. Most of them respondents' diabetes mellitus group Work as farmer.

Research results also revealed If respondents with type work laborer farmers / fishermen / housewives 1.9 times more likely more own effort prevention less complications Good compared to with respondents with type work as employee private. According to (Faizal *et al.*, 2024) work in fulfillment need can measured from field work that is pursued by a person, either in a group respondent who work as farmers, traders, civil servants, teachers, self-employed, laborers, or housewives. Environment work can increase risk caught disease in a way direct and no directly, one of which is diabetes mellitus. Activity physical on the spot Work is one of the factors work that affects risk of diabetes mellitus.

Same fact was also revealed in research (Fortuna *et al.*, 2023) is known majority respondents own level income or salary below the minimum wage with percentage 54%. In line with results study Faizal *et al.* (2024) stated that if there is correlation between level income with and amount cases of diabetes mellitus found ( $p\text{-value } 0.018 < 0.05$ ). This in accordance with the concept conveyed Unhanisyah (2023) in his research Where use facility health for public will be influenced by the level low income. Predisposing factors, contributing factors supporters, and factor amplifier is a number of the way people see health of his choice. Age and level social economy is factor predisposition or factor reinforcement, and factors supporters is availability facility health and facilities supporters.

According to assumptions researchers, respondents aged  $> 35$  years tend more understand importance guard health and more Serious do prevention DM complications compared respondents aged  $< 35$  years. Respondent's women are also valued more active look for information health and following education compared to men, even though risk of diabetes mellitus and efforts prevention is basically the same for second type gender. In addition, respondents with education tall more proactive undergo pattern life healthy, regular check-ups, and prevention DM complications, whereas respondents educated low tend utilize service health moment condition Already worsening. Type of work and level of income also affects ability respondents in fulfil need health, where respondents with work and income still more easy access service health and fulfill need nutrition compared to respondents with income No more certain prioritize need everyday. Low-income public rural areas also cause limitations time exercise, rest, and limited access service health consequence cost and distance travel.

### **Connection Knowledge with effort prevention DM complications**

Based on results research on variables knowledge known If respondents with level good knowledge tend to have 114 times good response in effort prevention complications of diabetes mellitus that he suffered from compared to with respondents who have level lack of knowledge good. Analysis results *chi square* shows mark significant is  $p\text{-value} = 0.000$  or  $< 0.05$ . The results of the analysis This explain that there is significant relationship between knowledge respondents with effort prevention complications of diabetes mellitus in the workplace Setia Bakti sub-district. This matter in line with results research shown in Santoso's research (2019) found that as many as 25 respondents (80.12%) indicated good behavior and level good knowledge, with a  $p\text{-value}$  of

0.000 ( $<0.05$ ), indicates connection between level knowledge and behavior control factor risk. In line with study This Winanti Nur Azizah (2022) also found the same thing, there is connection between level knowledge with behavior prevention of diabetes mellitus, with mark  $p = 0.013$  and OR value = 3.571. This fact shows If respondents which has knowledge lower 3 times riskier big for do behavior better prevention of diabetes mellitus A little.

According to analysis researchers, knowledge is one of the factors that can influence actions taken for prevent diabetes mellitus. because actions based on knowledge Better than actions that are not based on knowledge, researchers have an opinion matter this is also caused by the level education that the majority have respondents research, where known If majority respondents have level low education. Low education can impact negative on knowledge about diabetes mellitus (DM) and efforts prevention complications. People with level low education tend own knowledge that more A little about DM, including prevention and management, which in turn can reduce effort prevention DM complications. With good knowledge about DM, someone can more actively guard health they, like check self or blood sugar control continuously. Matter This in accordance with the concept that explain If the more Lots knowledge possessed someone, should the more Lots behavior prevention measures taken. With the same way, prevention of diabetes mellitus need understanding about factor risks and prevention strategies for diabetes mellitus and the ability they for express, describe, identify, and state, including understanding or mention something, but also has ability for interpret with Correct something he knows (Lilis Sri, 2024; Silalahi, 2019)

### **Connection Attitude with effort prevention DM complications**

Research result depicts If respondents with attitude that negative tend 61 times more Possible for No do action effort prevention good complications of diabetes mellitus compared to with respondents who have attitude positive. *Chi square analysis* shows mark significant is  $p\text{-value} = 0.000$  or  $< 0.05$ . This result explains If there is significant relationship between attitude respondents with effort prevention complications of diabetes mellitus in the workplace Setia Bakti sub-district. Same fact was also found in research by Arifa *et al.* (2023) which shows the results of the Chi Square statistical test show that 47 respondents (59.5%) have behavior poor prevention and bad attitudes, and 37 respondents (42.0 %) had behavior good prevention and bad attitudes. Analysis results  $p\text{-value}$  of 0.024 indicates that There is connection between attitudes and behavior diabetes prevention in the workplace Sibela Health Center.

According to Lilis Sri (2024) attitude is reaction to stimulation social that has conditioned called pattern behavior, tendencies or readiness anticipatory, tendency for adapt self with environment social, or in a way simple attitude. Attitude is also interpreted as regularity in matter a person's feelings (affect), thoughts (cognition), and actions (conation) to something element environment. Attitude is also interpreted as evaluation somebody to stimulus or object (in matter health) (Arifa *et al.*, 2023). Based on analysis researchers, matter This caused by Because level knowledge the less Good about diabetes mellitus where known majority respondents' study own level low education until with medium as well as supported with affordability access poor service affordable so that cause some big participants own negative attitudes caused lack of literacy about complications caused by diabetes mellitus. View researchers attitude own close correlation with effort prevention complications diabetes militia, where attitude Which Good to management diabetes supported by good knowledge Can push public rural for more active increase effort prevention complications of diabetes mellitus like do routine check-ups. Perspective, knowledge, and level of education is very important all three influence awareness, motivation, and ability individual forget, understand, and apply information health in prevent DM complications, especially in the community rural.

### **Connection Level Anxiety with Effort Prevention Complications DM**

Research result show If majority respondents who have effort prevention less complications Good

some big various sex women and have level severe anxiety. Participants with level severe anxiety tend to have 1.7 times effort prevention less complications of diabetes Good compared to with participants with level anxiety Which light. Based on analysis *chi square* find mark significant is  $p\text{-value} = 0.080$  or  $< 0.05$ . This explains If there is significant relationship between level anxiety with effort prevention complications of diabetes mellitus.

Research result This supported the results of a study conducted by Ana *et al.* (2023) where Of the 100 people surveyed , it was found that There is connection between anxiety and dietary compliance where the majority of people who experience anxiety heavy own adequate dietary compliance as much as 50%, and a minority of people who do not experience anxiety own good dietary compliance as much as 2%. The same thing was also shown in Dedi's research (2019) found that as many as 41 respondents (83.7%) experienced level anxiety heavy, and 8 respondents (16.2%) experienced level anxiety moderate. However different with results Nurhayati's study (2020) revealed that majority respondents experience anxiety moderate, namely 48 people (80%), and depression heavy, namely 24 people (40%).

According to assumptions researcher, level anxiety in diabetes sufferers can influence effort prevention complications, especially in area rural. Sufferer anxiety Which tall can experience difficulty manage disease, like guard pattern Eat healthy, exercising, or control blood sugar. In the area rural areas, information and education about complications from diabetes mellitus perhaps difficult for obtained so that anxiety can increase as consequence from lack of knowledge. Lack of knowledge and support social as well as access service poor health affordable in rural areas too make things worse anxiety and complicate prevention complications. That matter in line with statement delivered by (Nurhayati, 2020) where level glucose in blood increase as consequence from anxiety in DM sufferers This caused by an increase hormone growth hormone, glucocorticoids (cortisol), and catecholamines (epinephrine). The therapy process for managing DM will be hampered by excessive anxiety. Psychological factors like anxiety, depression, and stress can cause problem health or disease suffered somebody become worse (Dedi, 2019)

### **Connection Motivation Self with Effort Prevention Complications DM**

Research results on variables motivation self disclose that some big respondents who have effort prevention of diabetes mellitus is less Good as many as 100 respondents (53.76%) with majority respondents own motivation less self Good as many as 98 respondents (52.69%), while some small from respondents that is as many as 86 respondents (46.24%) have effort prevention good complications of diabetes mellitus with majority respondents own motivation good self as many as 78 respondents (41.94%). Same thing found in study Andoko *et al.* (2020) who stated that majority respondents as many as 27 people (56.3%) have mean value  $\geq \text{mean}/49.7$  have motivation Which tall in effort prevention disease DM. Motivational factors can influence level efficacy self type 2 DM patients in maintenance self.

According to Puspitasari (2023) one of factor formation self is motivation, Efforts from prevention complications DM disease including is blood sugar control, activity physical and doing maintenance health. So that diabetes sufferers need motivation for operate controlling diabetes mellitus. Motivation is very important for push somebody for do something for reach something objectives. Puspitasari (2023) explains If appear motivation for can give contribution in form psychologically capable give committee behavior for can carry out work. The process that must be filled with humans is needs. With fulfil need this, a need can maintain or repaired. For fulfil need this, an encouragement psychological will appear for give contribution in form encouraging behavior implementation task so that motivation self is very important for behavior health and compliance treatment diabetes mellitus patients.

Assumptions researchers that lack of motivation in effort prevention DM complications are caused

by Because majority respondents have level lack of knowledge Good about diabetes, plus with access facility service poor health affordable as well as level income majority respondents who do not in accordance with UMR causing majority respondents feel reluctant For do effort prevention complications Where public evaluate If effort prevention DM complications require high time and cost . High motivation can push someone in do action prevention like guard pattern Eat healthy, exercise, and check blood sugar in a way regular. On the other hand, motivation is low can prevent people from do action prevention and improvement risk complications. However, in effort prevention complications of diabetes mellitus (DM) are many other supporting factors motivation somebody among them is level knowledge, access service health and support family from DM sufferers Alone.

### **Connection Support Family with effort prevention DM complications**

Variables support family known If majority respondents own effort prevention complications of diabetes mellitus that are less Good as many as 100 respondents (53.76%) Which where some big from respondents as much as 79 respondents (42.47%) have support families who do not support , whereas minority respondents as many as 86 respondents (46.4%) have effort prevention good diabetes complications with majority respondents own support family as many as 67 respondents 36.02%). Research result This supported by research conducted by Mutiara *et al.* (2024) who found connection between support family and behavior prevention complications in type II DM patients. Most of them respondents show support good family For behavior prevention , as many as 58 respondents (53.4%), while support low- income family show behavior inadequate prevention , as many as 4 respondents (1.6% of total respondents ) , value coefficient correlation as big as 0.301 which shows closeness with category Enough between support family and behavior prevention complications in type II DM patients at the Community Health Center Mantrijeron Yogyakarta. In line with matter said, the study conducted by (Irmawati *et al.*, 2023) revealed that support emotional is one of the type support family Which close relation with maintenance self, according to results study support emotional given to 34 respondents aged between 60 and 74 years old. Ningrum (2020) explains If role family is very important in nurse health, support from family influence on the level satisfaction individual in undergo life daily. Support family can also increase optimism individual in face disease, reduce loneliness, and increase ability self, which can help reduce complications disease and improve quality life individuals suffering from diabetes.

According to Irmanda Mufida (2024) one of therapy modalities that influence health sufferers' diabetes mellitus disease, which includes attitudes, actions, and acceptance each other support and help One each other if required for prevent complications that arise in diabetes mellitus sufferers are support family. The role of the family means caring for the sick and encouraging others. Duties main every member family is nurse member sick family, fulfilling his needs, taking care of him, and ensuring his needs fulfilled. Family is system supporter's main thing that can in a way direct give maintenance for condition health and disease member family. Family can guard health member family optimally with overcome problem, prevent behavior No healthy, and recover behavior healthy (prevention) tertiary) (Suhailah *et al.*, 2023)

Assumptions researchers, in the area rural support family is matter crucial in effort prevent DM complications. This is due to area rural usually own condition geographical Which difficult Where from fact in the field Where known If majority House respondents located in the area hills with affordability limited facilities in get service health. Support This can in the form of giving information, emotional, or instrumental. Families that are active support DM sufferers, encourage respondents for guard pattern eating and drinking medication, and exercise can prevent or postpone complications. According to researcher, one of the factors determinant successes from effort prevention complications of diabetes mellitus in the area spicy is support family Where involvement member family in effort prevention complications of diabetes mellitus such as

monitoring drink drug in a way active increase management quality life and management maintenance self-diabetes mellitus patients.

### **Service Access Relationship health with effort prevention complications DM**

Research results on access service health find results study Where majority respondents as much as 100 respondents (53.76%) have effort prevention complications of diabetes mellitus that are less Good Where some big respondents own access poor service affordable as many as 94 respondents (50.54%), value significant is  $p\text{-value} = 0.000$  or  $< 0.05$  which states that there is connection Which significant between access service health respondents with effort prevention complications of diabetes mellitus in the workplace Setia Bakti sub-district. Same thing expressed in research by Pane *et al.* (2022) find fact that Lots respondents about habit look for poor health, attitude negative, lack awareness will health and disease, and access service poor health affordable. Sako *et al.* (2023) in his studies disclose the same thing Where public rural sometimes must go through a very long journey for get maintenance medical, which of course just can make things worse condition health they. This shows that accessibility geographical is factor important in health society.

According to assumptions researcher, thing the relate with condition financial respondents research which is known If some respondents have employment status No still with income that is not in accordance with UMR. Conditions This make public with access poor service affordable for ignore effort preventive from disease Which he suffered. which on Finally can cause condition health they become worse. This shows that access finance is very important for increase access to service health in the area rural. This matter in accordance with the concept conveyed by (Noor *et al.*, 2021) which states besides factor geographical and economic factors social like education and awareness health also plays a role important in access to service primary health care. Many people rural No own access to education and health. Lack of educational programs sustainable health in the region rural cause public not enough aware will importance prevent and treat disease since early. Low awareness This causes public often No utilized service existing health. This happens even when they own adequate access (Sako *et al.*, 2023).

### **Multivariate**

Multivariate results found If prob value  $> \chi^2$  (0.000)  $p$  the explain if the regression model in a way overall significant statistically at the level 99% confidence (0.05). This explains at least One from variables independent own significant correlation with variables dependent. In other words, this model can used for predict behavior for prevent complications of diabetes mellitus. The Pseudo  $R^2$  value (0.7883) illustrates this if 78% variation in dependent variable can explained by the independent variables in this model. The research results also illustrate If variables motivation self own OR value (144.7) CI (16.065- 1304.2) with  $p$  value (0.000)  $< 0.05$  is possible interpreted that variables motivation self consisting of from motivation intrinsic that is in the form of pretension self like will personal , suggestion and ambition For undergo life more healthy in the future come so that increase compliance in look after health like regular blood sugar checks , balanced diet and doing physical exercise as well as motivation extrinsic that is in the form of pretension outside like recommendation doctor or family in maintenance underlying health desire For do or involved in social activities such as diabetes exercise community , become participant integrated health post all put matter the have the relationship that significant with effort prevention complications DM Where respondents with motivation intrinsic and motivation in a way good extrinsic tend to do 144 times effort prevention DM complications compared with respondents who have motivation less self Good.

Same thing delivered by Nadia (2018) if somebody start believe, they will own desire for do something that drives they for do prevention DM complications. There are two types factors that influence motivation patient for prevent DM complications, namely internal and external factors. Internal factors usually originate from in self-patient alone, like habits and awareness they for

guard pattern eat healthy, exercise in a way orderly, and go to doctor in a way regular forget maintenance whereas motivation external. Motivation self or high stimulus and desire can encourage people to look for know more many, obey advice medical, and follow style life Healthy and pretense in effort prevention complications of DM. According to study conducted by Darvishi *et al.* (2025) which explains If motivation self is factor the main determining factor compliance in treatment disease term long such as diabetes.

Variables income shows results OR value (12.685) CI (1.976-81.426) with p- value  $0.007 < 0.05$  is possible explain If there is significant relationship between variables level income with effort prevention DM complications, matter the describe If respondents with level income on Rp. 3,000,000 tends to be 12.7 times Better in effort prevention DM complications if compared to with respondents who have income below Rp. 3,000,000. Research result This supported by research Unhanisyah (2023) who mentioned one of the factors affecting improvement knowledge is wages or income. This is in tune with the concept conveyed Where use facility health for public will be influenced by the level low income. Predisposing factors, contributing factors supporters and factors amplifier is a number of the way people see health of his choice. Age and level of social economy is factor predisposition or factor reinforcement, and factors supporters is availability facility health and facilities supporters (Unhanisyah, 2023). Income tall allows people to get service health, buying medicines, and maintain pattern healthy eating. This study support findings previously stated that inequality economy impact directly on effectiveness management disease chronic, such as DM.

Based on draft said, the assumption researchers level income be one of supporting elements improvement knowledge somebody about impact DM complications. Researcher analysis, respondents with level income according to the minimum wage or taller tend own Lots choice for prevent DM complications, such as choice literacy health, convenience for get service health, and concepts behavior style healthy life compared to with respondents with level more income low. According to researchers, anxiety is also influenced by the level of income Where respondents with level income low tend own higher stress levels tall in problem finance for fulfillment daily primary needs compared to with respondents who have level more income high. So that level anxiety that tends to can increase the stress of respondents which can make things worse condition suffering from diabetes.

Same thing was also expressed in Nimesh *et al.*'s (2019) research found that patients suffering from diabetes had trend for move to facility service health Because they feel No get desired support, and access to treatment hampered by costs height and obstacles transportation. A study conducted on civil servants in Southeast Malaysia found that that up to 246 people (64.6%) have behavior search poor health, with 26.2 % of they suffering from diabetes. There is evidence that behavior look for maintenance medical influenced by literacy health, steps taken in the treatment process, preferences for treatment alternative, perception threat disease, treatment themselves, and influence family (Arumugam *et al.*, 2020). This matter in accordance with the theory presented in Pane *et al.* (2022) Characteristics socio-demographics, influence of others, beliefs social culture, perception disease and its causes, and perceptions service health (especially availability and accessibility, especially in rural areas rural and regional) is a number of interrelated factors related to what can be influence choice treatment. Apart from that the factor geographical and economic factors social like education and awareness health also plays a role important in access to service primary health (Sako *et al.* , 2023).

## CONCLUSION

Based on results research, can concluded that characteristics respondents in the form of level education, type jobs, and levels income own connection significant with effort prevention complications of diabetes mellitus, whereas age and type sex No show significant relationship.

Knowledge, attitude, motivation self, support family, and access service health also has connection significant with effort prevention complications of diabetes mellitus. Meanwhile that, level anxiety No own significant relationship with effort prevention complications of diabetes mellitus. Among them related variables, motivation self-become the most dominant factor in influence effort prevention complications of diabetes mellitus.

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