Journal of Health Promotion and Behavior (2025), 10(01): 128-139
Masters Program in Public Health, Universitas Sebelas Maret

Original article
Open Access

# Application of Information Motivation Behavior Skill on Tertiary Preventive Behavior of Type 2 Diabetes Mellitus Patients

**Jihan Nabilla[1)], Didik Gunawan Tamtomo[2)], Bhisma Murti[1)]**

[1)]Master's Program in Public Health, Universitas Sebelas Maret
[2)]Faculty of Medicine, Univeristas Sebelas Maret

*Received: 5 November 2024; Accepted: 8 December 2024; Available online: 25 January 2025*

## ABSTRACT

**Background:** Diabetes mellitus (DM) is a priority disease that not only requires control efforts but is also important for prevention efforts. Complications that occur in type II DM patients can be prevented with tertiary preventive behavior. This tertiary preventive behavior can be done by applying the Information Motivation Behavior (IMB) skill model. The purpose of this study is to explore the influence of the application based on the IMB model on tertiary prevention behavior in type II DM patients.
**Subjects and Method:** This study is cross sectional from April-May 2024. The sample used was 200 type 2 DM patients aged >18 years and selected by random sampling technique at the Blora Health Center, Central Java. The dependent variable was the tertiary preventive behavior of type 2 DM patients. The independent variables were information, motivation and behavioral skills. Data collection using questionnaires and data analysis using path analysis with Stata 13.
**Results:** Tertiary preventive behavior of patients with type 2 diabetes mellitus was directly influenced by behavioral skills (b= 5.80; CI 95%= 4.73 to 6.87; p <0.001), information (b= 1.25; CI 95%= 0.01 to 2.50; p= 0.047) and gender (b= -1.60; CI 95%= -0.60 to -2.59; p= 0.002). Tertiary preventive behavior of type 2 DM patients through behavioral skills is indirectly influenced by information, motivation, age and education. Information is indirectly influenced by motivation and education. There was no significant effect on gender on behavioral skills.
**Conclusion:** Tertiary preventive behavior is directly influenced by behavioral skills, information and gender. Tertiary preventive behavior is indirectly influenced by information, motivation, age, and education through behavioral skills. Tertiary preventive behavior is indirectly influenced by gender and education through information.

**Keywords:** information motivation behavior, tertiary preventive behavior, diabetes mellitus

**Correspondence:**
Jihan Nabilla. Master's Program in Public Health, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java, Indonesia. Email: jihannabilla.9597@gmail.com. Mobile: +6282223729628

**Cite this as:**
Nabila J, Tamtomo DG, Murti B(2025). Application of Information Motivation Behavior Skill on Tertiary Preventive Behavior of Type 2 Diabetes Mellitus Patients. J Health Promot Behav. 10(01): 128-139. https://doi.org/10.26911/thejhpb.2025.10.01.12.



## BACKGROUND

Indonesia is in an epidemiological transition period where the problem of infectious diseases has not been solved, but the problem of Non-Communicable Diseases (NCDs) has become a problem that must

also be solved. Based on the results of the 2018 Basic Health Research (Riskesdas), there is an increase in the prevalence of NCDs in Indonesia when compared to the results of Riskesdas in 2013 (Ministry of Health of the Republic of Indonesia, 2018). Indonesia ranks seventh in the world with the highest diabetes rate of 10.7 million sufferers after China, India, Pakistan, USA, Mexico, and Brazil.

The number of diabetics in Indonesia is predicted to increase to 16.6 million patients by 2045, the majority of whom are dominated by type II diabetics according to the ninth edition of the IDF (International Diabetes Federation) 2019 (IDF, 2019).

Based on data from the Central Java Provincial Health Office, it is reported that the prevalence of the number of people with diabetes mellitus in Central Java Province in 2021 is 618,546 people and 91.5% have received health services according to standards. There are 11 districts/cities with a 100% percentage of health services for people with diabetes mellitus (Central Java, 2021). In Blora Regency, in 2020 there was a percentage of non-communicable diseases diabetes mellitus as many as 11,941 people. The increasing prevalence of diabetes mellitus indicates a healthy lifestyle (healthy diet; regular exercise; the dangers of smoking; etc.) that is lacking, so it is necessary to carry out early prevention and control of Diabetes mellitus (BPS, 2020).

Diabetes is a serious threat to global health regardless of socioeconomic status or the country in which it lives. People with diabetes are at risk of a number of serious and life-threatening complications leading to an increased need for medical care, a decrease in quality of life, and excessive stress on families. If not treated properly, diabetes and its complications can lead to frequent hospitalizations and premature death. Globally, diabetes is included in the top 10 causes of death (IDF, 2019).

Diabetes mellitus is a high risk to public health and threatens the healthcare system. The effects of exposure to type 2 diabetes mellitus show an increase in the occurrence of severe complications that cause a decrease in a person's quality of life (Gillani et al., 2019). Diabetes mellitus is a priority disease that not only requires control efforts but is also important to carry out prevention efforts. Complications that occur in type 2 DM patients can be prevented by tertiary preventive behavior. This tertiary preventive behavior can be done by applying the Information Motivation Behavior skill model.

The information-motivation-behavioural skills (IMB) model was used in this study for the development and evaluation of an intervention to address the factors mentioned above and encourage the use of non-pharmaceutical interventions. Information is the theoretical basis for changing patient behavior and the basis for the implementation of actions. Motivation includes personal motivation and social motivation; Personal motivation refers to the patient's attitude towards health behaviors, while social motivation is based on the perception of social norms and social support to make behavioral changes. Behavioral skills refer to the objective skills and self-efficacy of patients that allow them to implement behavior change effectively. The IMB model explains that information, motivation, and behavioral skills are determinants of preventive behavior and have been utilized in previous research on health and risk behaviors (Fisher et al., 2009)

The model can improve adherence to changes in self-care behavior and quality of life. In recent years, several studies have used the IMB model in interventions in type 2 DM patients and found that the model can effectively improve the self-

management rate of type 2 DM patients (Yao et al., 2021).

Therefore, this study aims to explore the influence of the application based on the IMB model on tertiary prevention behavior in type 2 DM patients.

## SUBJECTS AND METHOD

### 1. Study Design

This was a cross-sectional study conducted at the Blora Health Center, in April-May 2024.

### 2. Population and Sample

The study population was type 2 diabetes mellitus patients. A sample of 200 type 2 DM patients was selected by simple random sampling.

### 3. Variables

Dependent variables of tertiary preventive behavior. The independent variables are information, motivation and behavioral skills.

### 4. Operational Definition of Variables

**Tertiary Preventive Behavior:** Individual actions that arise as an effort to apply motivational information and behavioral skills in Type 2 DM patients in daily life.

**Information:** Knowledge of Type 2 DM patients regarding Type 2 DM disease and tertiary preventive behaviors in daily life.

**Motivation:** The drive or will of the Type 2 DM patient to perform tertiary preventive behaviors in daily life

**Behavioral skills:** The ability of Type 2 DM patients to perform preventive behaviors in daily life

### 5. Study Instrument

The research instrument used for data collection is using a questionnaire.

### 6. Data Analysis

Univariate analysis was carried out with the aim of determining the frequency distribution and percentage of each variable studied, namely Information Motivation Behavior skill including information, motivation and behavioral skills for tertiary preventive behavior. The next analysis is bivariate which is carried out on each exogenous variable, namely Information Motivation Behavior skill for endogenous variables, namely tertiary preventive behavior and multivariate analysis using a pathway analysis model.

### 7. Research Ethics

Research ethics including informed consent, anonymity, and confidentiality, are handled with care throughout the research process. The approval letter for the research ethics permit was obtained from the Research Ethics Committee of Dr. Moewardi Hospital in Surakarta on March 26, 2024 with the number 874/III/HREC/2024.

## RESULTS

This research was carried out in April-May 2024 in 200 elderly people with type 2 DM in the Blora Health Center area.

### 1. Sample Characteristics

Table 1 shows that as many as 141 research subjects (70.5%) are female and 59 research subjects (29.5%) are male. Patients aged <57 years were 99 study subjects (49.5%) and 111 study subjects (55.5) were ≥57 years old. Patients with elementary education were 76 research subjects (36.2%), junior high school education as many as 39 research subjects (18.6%), high school education as many as 64 research subjects (30.5%) and as many as 31 research subjects (14.8%) with university education. For the type of work of non-working patients as many as 30 research subjects (23.3%), as housewives as many as 53 research subjects (25.2), ASN/TNI/POLRI/BUMN as many as 17 research subjects (8.1%), retirees as many as 15 research subjects (7.1%), self-employed as many as 46 research subjects (21.9%), and those who have jobs as farmers or traders as many as 49 research subjects (14.3%).

**Table 1. Sample Characteristic Description**

| Variable | Category | Frequency (n) | Percentage(%) |
|---|---|---|---|
| **Gender** | Male | 33 | 16.5 |
| | Female | 162 | 83.5 |
| **Age (year)** | <66 | 94 | 47 |
| | ≥66 | 106 | 53 |
| **Education Level** | Primary school | 37 | 18.5 |
| | Junior high school | 80 | 40 |
| | Senior high school | 69 | 34.5 |
| | College | 14 | 7 |
| **Occupation** | Housewife | 83 | 41.5 |
| | Farmer/Merchant | 99 | 49.5 |
| | Pensioner | 18 | 9 |

**2. Univariate Analysis**

Table 2 shows the information score about the tertiary preventive behavior of good Type 2 DM patients as many as 194 people (97%), and information about the tertiary preventive behavior of bad Type 2 DM patients as many as 6 people (3%). The majority of research subjects received high motivation as many as 199 people (99.5%), while research subjects with low motivation scores were 1 person (0.5%). Subjects with good behavior skills were 199 people (99.5%), while subjects with poor behavior skills were 1 person (0.5%). Subjects with good tertiary preventive behavior were 191 people (95.5%), while subjects with poor behavioral skills were 9 people (4.5%).

**3. Bivariate Analysis**

**Table 3. Bivariate analysis of the relationships of information, motivation, and behavioral skills on tertiary preventive behavior.**

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| **Information** | | |
| Good | 194 | 97 |
| Poor | 6 | 3 |
| **Motivation** | | |
| Good | 199 | 99.5 |
| Poor | 1 | 0.5 |
| **Behavioral skills** | | |
| Good | 199 | 99.5 |
| Poor | 1 | 0.5 |
| **Tertiary preventive behavior** | | |
| Good | 191 | 95.5 |
| Poor | 9 | 4.5 |

**Information on Tertiary Preventive Behavior**

The information had a positive relationship with the tertiary preventive behavior of Type 2 DM patients and the relationship was statistically significant. Each increase in one unit of information will be followed by an increase in tertiary preventive behavior of Type 2 DM patients by 5.0 units (OR= 5.0; CI 95% = 2.48 to 7.52; p <0.001). With a confidence level of 95%, every increase in one unit of information will be followed by an increase in tertiary preven-

tive behavior of DM Type 2 patients from 2.48 to 7.52.

**Motivation for Tertiary Preventive Behavior**

Motivation has a substantial relationship with the tertiary preventive behavior of Type 2 DM patients and the relationship is statistically significant. Each increase in motivation unit will be followed by an increase in tertiary preventive behavior of Type 2 DM patients by 4.67 units (OR= 4.67; CI 95% = 1.80– 7.55; p = 0.002). With a confidence level of 95%, every increase in one unit of motivation will be followed by an increase in tertiary preventive behavior of Type 2 DM patients from 1.80 to 7.55.

**Behavioral Skills Against Tertiary Preventive Behavior**

Behavioral skills had a positive relationship with tertiary preventive behavior of Type 2 DM patients and the relationship was statistically significant. Each increase in one unit of behavioral skills will be followed by an increase in tertiary preventive behavior of Type 2 DM patients by 8.18 units (OR = 8.18; CI 95% = 6.81–9.54; p <0.001). With a confidence level of 95%, every increase in one unit of behavioral skills will be followed by an increase in tertiary preventive behavior of DM Type 2 patients 6.81 to 9.54.

**Table 3. Bivariate Analysis**

| Variables | OR | 95% CI | | p |
|---|---|---|---|---|
| | | Lower limit | Upper limit | |
| Information | 5.0 | 2.48 | 7.52 | <0.001 |
| Motivation | 4.67 | 1.80 | 7.55 | 0.002 |
| Behavioral skills | 8.18 | 6.81 | 9.54 | <0.001 |

Table 3 shows the results of multivariate analysis where in this study uses path analysis on variables of information, motivation, behavioral skills and tertiary preventive behavior.

**Information on Tertiary Preventive Behavior of Type 2 DM Patients**

Information directly affects the behavioral skills of DMT2 patients. Each increase of 1 unit of information score will be followed by an increase in behavioral skills in DM Type 2 patients by 4.07 units (b= 4.07; CI 95%= 2.92 to 5.21; p<0.001).

**Motivation for Behavioral Skills of Type 2 DM Patients**

Motivation has a direct effect on the behavioral skills of DMT2 patients. Each increase of 1 unit of motivation score will be followed by an increase in behavioral skills in Type 2 DM patients by 1.81 units (b= 1.81; CI 95%= 0.72 to 2.91; p= 0.001).

**Gender Behavioral Skills of Type 2 DM Patients**

There was a difference in tertiary preventive behavior scores between male and female patients, but it was not statistically significant. Female patients had an average tertiary preventive behavior score of -0.41 units lower than that of men (b= -0.41; CI 95%= -0.67 to -1.49; p= 0.459).

**Age on Behavioral Skills of Type 2 DM Patients**

Age has a direct effect on the behavioral skills of DMT2 patients. Each increase of 1 age unit will be followed by a decrease in the behavioral skills score of 1.78 (b= -1.78; CI 95%= -0.69 to -2.87; p= 0.001).

**Education on Behavioral Skills of Type 2 DM Patients**

Education has a direct influence on the behavioral skills of DMT2 patients. Every

increase of 1 unit of educational scot will be followed by an increase in behavioral skills by 2.02 units (b= 2.02; CI 95%= 0.82 to 3.22; p= 0.001).

**The Effect of Behavioral Skills on Tertiary Preventive Behavior of Type 2 DM Patients**

Behavioral skills have a direct influence on the tertiary preventive behavior of DMT2 patients. Every 1 unit increase in behavioral skills will be followed by an increase in tertiary preventive behavior by 5.80 units (b= 5.80; CI 95%= 4.73 to 6.87; p<0.001). Information

**On Tertiary Preventive Behavior of Type 2 DM Patients**

Information directly affects the tertiary preventive behavior of DMT2 patients. Every increase of 1 unit of information will be followed by an increase in the tertiary preventive behavior score of 1.25 units (b= 1.25; CI 95%= 0.01 to 2.50; p= 0.047).

**Gender on Tertiary Preventive Behavior of Type 2 DM Patients**

Gender directly affects the behavioral skills of DMT2 patients. Women were 1.60 units less likely to experience a 1 unit increase in behavioral skills (b= -1.60; CI 95%= -0.60 to -2.59; p= 0.002).

**Motivation for Type 2 DM Patient Information**

Motivation directly affects the tertiary preventive behavior of DMT2 patients. Every 1 unit of motivation increase will be followed by an increase in information by 2.95 units (b= 2.95; CI 95%= 1.82 to 4.09; p <0.001).

**Education on Type 2 DM Patient Information**

Education has a direct influence on tertiary preventive behavior of DMT2 patients. Every 1 unit increase in education will be followed by an increase in information of 3.66 units (b = 3.66; 95% CI = 2.57 to 4.76; p <0.001).

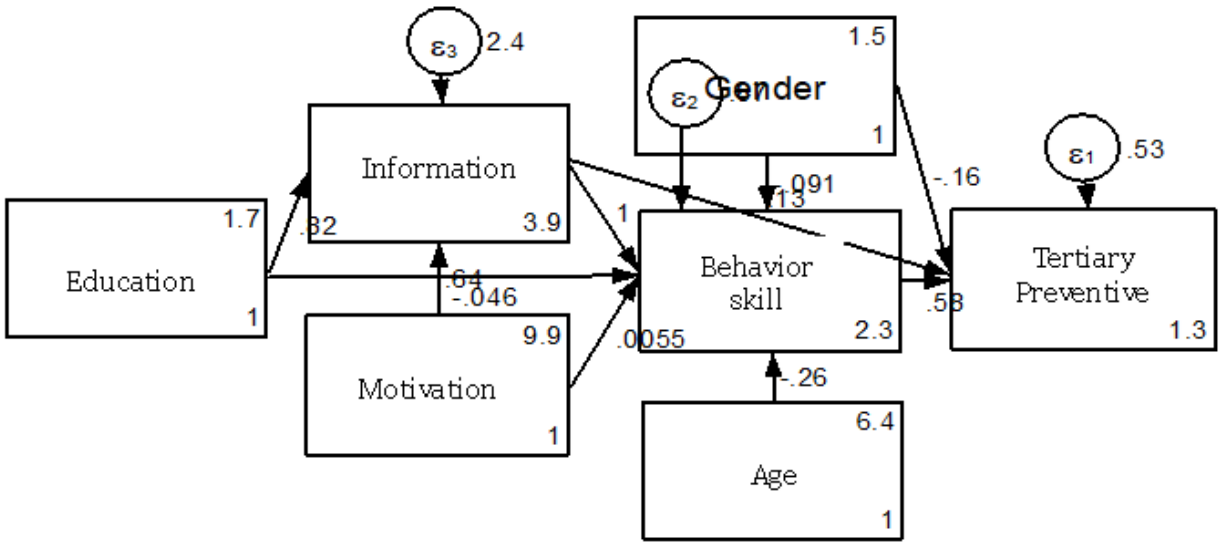


**Figure 1. Structural Model Analysis of Information Motivation Behavior Skill with Tertiary Preventive Behavior of Elderly DM Type 2**

**Table 3. Results of analysis of information motivation behavior skills pathways with tertiary preventive behavior of elderly DM type 2**

| Dependent Variable | Independent Varibel | Path Coefficient (b) | CI 95% | | p |
|---|---|---|---|---|---|
| | | | Lower Limit | Upper Limit | |
| **Direct Effect** | | | | | |
| Behavioral skills | ← Information | 4.07 | 2.92 | 5.21 | <0.001 |
| | ← Motivation | 1.81 | 0.72 | 2.91 | 0.001 |
| | ← Gender | -0.41 | -1.49 | 0.67 | 0.459 |
| | ← Age | -1.78 | -2.87 | -0.69 | 0.001 |
| | ← Education | 2.02 | 0.82 | 3.22 | 0.001 |
| **Indirect Effect** | | | | | |
| Tertiary preventive behavior | ← Behavioral skills | 5.80 | 4.73 | 6.87 | <0.001 |
| | ← Information | 1.25 | 0.01 | 2.50 | 0.047 |
| | ← Gender | -1.60 | -2.59 | -0.60 | 0.002 |
| Information | ← Motivation | 2.95 | 1.82 | 4.09 | <0.001 |
| | ← Education | 3.66 | 2.57 | 4.76 | <0.001 |
| N observation: 200 | | | | | |
| Likelihood ratio= 296.77 | | | | | |

## DISCUSSION

Based on the analysis in table 4.5, there is a direct influence of information on the behavioral skills of DMT2 patients. Each increase of 1 unit of information score will be followed by an increase in behavioral skills in DM Type 2 patients by 4.07 units (b= 4.07; CI 95%= 2.92 to 5.21; p<0.001). This can be interpreted that the behavioral skills in Type 2 DM patients will increase by 4.07 units if there is an increase of 1 unit of information score.

This research is in line with Chen et al. ( 2018) which stated that information is a prerequisite for healthy behavior in the IMB model. Researchers have shown that information can directly influence the self-management behavior of diabetic patients, and that high-level knowledge related to diabetes is beneficial for patients' glycemic control (Chen et al., 2018). In addition, sufficient diabetes-related information can improve medication adherence and regular glycemic monitoring of DMT2 patients, which will also help avoid exacerbation of the disease (Qin et al., 2017).

Information data collection was carried out by interviews that aimed to communicate patients and evaluate their cognitive abilities regarding knowledge of type 2 diabetes mellitus. According to researchers, the information possessed by type 2 DM patients is very influential with daily behavior skills, especially to maintain blood sugar stability.

There was a direct influence of motivation on the behavioral skills of DMT2 patients. Each increase of 1 unit of motivation score will be followed by an increase in behavioral skills in Type 2 DM patients by 1.81 units (b= 1.81; CI 95%= 0.72 to 2.91; p= 0.001). This can be interpreted that behavioral skills in Type 2 DM patients will increase by 1.81 units if there is an increase of 1 unit of motivation score.

The motivations in this discussion include personal motivation and social motivation, which are independent and direct predictors of self-management behavior in Type 2 DM patients (Gao et al., 2013). Positive motivation can increase physical activity and healthy eating in patients with Type 2 DM (Meunier et al., 2016). The above statement is in line with

the results of this study which states that behavioral skills will increase along with increased motivation in type 2 DM patients.

There was a difference in tertiary preventive behavior scores between male and female patients, but it was not statistically significant. Female patients had an average tertiary preventive behavior score of -0.41 units lower than that of men (b= -0.41; CI 95%= -0.67 to -1.49; p= 0.459).

A study states that women appear to be more sensitive to predictors and contexts of the social environment, such as education, income, and employment, for the development of future diabetes risk (Ciarambino et al., 2022). This has an effect on the decline in the behavioral skills of type 2 DM patients, especially those who are female.

There is a direct effect of age on the behavioral skills of DMT2 patients. Each increase of 1 age unit will be followed by a decrease in the behavioral skills score of 1.78 (b= -1.78; CI 95%= -0.69 to -2.87; p= 0.001). This can be interpreted that the behavioral skills of type 2 DM patients will decrease by 1.79 times for every increase in the age of type 2 DM patients.

People diagnosed with diabetes at an older age are more likely to have adverse cardiovascular risk factors compared to those diagnosed at a younger age. Because increasing age is a strong predictor of vascular complications, with the same duration of diabetes, people diagnosed at a younger age tend to have a lower risk of absolute events compared to people diagnosed at an older age (Nanayakkara et al., 2021).

There is a direct influence of education on the behavioral skills of DMT2 patients. Every increase of 1 unit of educational scot will be followed by an increase in behavioral skills by 2.02 units (b= 2.02; CI 95%= 0.82 to 3.22; p= 0.001). This can be interpreted that behavioral skills in Type 2 DM patients will increase by 2.02 units if there is an increase of 1 unit of educational score.

Research conducted by Shiferaw et al in 2021 stated that higher education can reduce HBA1c levels (Shiferaw et al., 2021). Individuals with higher levels of education are more likely to proactively seek and utilize physical health screenings, leading to increased access to general medical care and early detection of Health-related conditions (Liao et al., 2023).

This is in line with the results of research conducted by researchers where DM type 2 patients who have higher education are more likely to have good behavior skills so that they can better control their daily lifestyle.

There is a direct influence of behavioral skills on Tertiary Preventive Behavior of DMT2 patients. Every 1 unit increase in behavioral skills will be followed by an increase in tertiary preventive behavior by 5.80 units (b= 5.80; CI 95%= 4.73 to 6.87; p<0.001). This can be interpreted that tertiary preventive behavior in Type 2 DM patients will increase by 5.08 units if there is an increase of 1 unit of behavioral skill score.

Behavioral skills consist of personal objective skills and self-efficacy, which are also positively related to diabetes self-management behavior. Behavioral skills are also positively related to T2DM self-care behavior (Yao et al., 2019). Behavioral skills have mediated the relationship between information and behavior, and motivational behavior (Gao et al., 2013). This is related to the results of research conducted by researchers which stated that behavioral skills have an effect on tertiary preventive behavior.

There is a direct influence of information on the tertiary preventive behavior

of DMT2 patients. Every increase of 1 unit of information will be followed by an increase in the tertiary preventive behavior score of 1.25 units (b= 1.25; CI 95%= 0.01 to 2.50; p= 0.047). This can be interpreted that tertiary preventive behavior in Type 2 DM patients will increase by 1.25 units if there is an increase of 1 unit of information score.

The results of this research analysis are in line with research conducted by Chai et al. in 2018 which stated that the better a person's information about DM, the better a person is on a DM diet. In addition, changes in a person's behavior can also control the condition of their disease, so that they can survive longer with a good quality of life (Chai et al., 2018). The information obtained by Type 2 DM patients will affect tertiary preventive behavior so that patients can control their body condition.

There was a direct influence of gender on the behavioral skills of DMT2 patients. Women were 1.60 units less likely to experience a 1 unit increase in tertiary preventive behavior (b= -1.60; CI 95%= -0.60 to -2.59; p= 0.002).

A study states highlighting women's specific considerations such as the high prevalence of obesity, lack of physical activity, and concerns about diabetes diagnosis. This lifestyle change intervention may provide better outcomes in the management of DMT2 in women. Given the trend of poor glucose control during the perimenopausal period, glycemic management should be improved during this period to prevent or delay diabetes complications in women (Pradeepa et al., 2023).

There was a direct influence of motivation on the tertiary preventive behavior of DMT2 patients. Every 1 unit of motivation increase will be followed by an increase in information by 2.95 units (b= 2.95; CI 95%= 1.82 to 4.09; p <0.001). This can be interpreted that the information in Type 2 DM patients will increase by 2.95 units if there is an increase of 1 unit of motivation score.

Motivation is an individual's behavior or attitude to satisfy his needs, it is because basically manumur has needs and desires. Motivation is also a person's thinking in looking at a task or target (Nashrullah et al., 2021). A person who has high motivation will increase his curiosity about something. This is in line with the results of the study where information in type 2 DM patients will increase if motivation also increases.

There is a direct influence of education on the tertiary preventive behavior of DMT 2 patients. Every increase of 1 educational unit will be followed by an increase in information by 3.66 units (b= 3.66; CI 95%= 2.57 to 4.76; p<0.001). This can be interpreted that the information in Type 2 DM patients will increase by 3.66 units if there is an increase of 1 unit of education score.

A person who has a higher education will obtain more information about this according to research conducted by Friis et al. (2016). The ability to understand health information, significantly mediates the relationship between educational attainment and health behaviors and that patient education and other preventive interventions, such as public health interventions, can help improve health behaviors, reduce health service disparities, and improve health (Friis et al., 2016).

## AUTHOR CONTRIBUTIONS

All authors have made meaningful and significant contributions to data analysis and the preparation of the final manuscript.

## FUNDING AND SPONSORSHIP

This study is self-funded.

**ACKNOWLEDGMENT**

The researcher expressed his deep gratitude to the research subjects for the willingness of the time that had been given and thanked all parties who played a role in the preparation of this article.

**CONFLICT OF INTEREST**

There is no conflict of interest in this study.

## REFERENCES

Adam L, O'Connor C, Garcia AC (2018). Evaluating the impact of diabetes self-management education methods on knowledge, attitudes and behaviours of adult patients with type 2 diabetes mellitus. Can J Diabetes. 42(5): 470-477.e2. https://doi.org/10.1016/j.jcjd.2017.11.003.

Amico KR, Alfonso J, Fisher JD (2005). An empirical test of the Information, Motivation and Behavioral Skills model of antiretroviral therapy adherence. AIDS care. 17(6): 661–673. https://doi.org/10.1080/09540120500038058

BPS (2020). Profil Kesehatan Kabupaten Blora 2020. 7823–7830.

Chai S, Yao B, Xu L, Wang D, Sun J, Yuan N, et al. (2018). The effect of diabetes self- management education on psychological status and blood glucose in newly diagnosed patients with diabetes type 2. Patient Educ Couns. 101(8): 1427–1432. https://doi.org/-10.1016/j.pec.2018.03.020

Chang SJ, Choi S, Kim SA, Song M (2014). Intervention strategies based on information- motivation-behavioral skills model for health behavior change: A systematic review. Asian Nurs Res, 8(3): 172–181. https://doi.-org/10.1016/j.anr.2014.08.002

Chen Q, Wang H, Wang Y, Wang Z, Zhao D, Cai Y (2018). Exploring effects of self-management on glycemic control using a modified information–motivation–behavioral skills model in type 2 diabetes mellitus patients in Shanghai, China: A cross-sectional study. J. Diabetes. 10(9): 734–743. https://doi.org/10.1111/1753-0407.12655

Ciarambino T, Crispino P, Leto G, Mastrolorenzo E, Para O, Giordano M (2022). Influence of gender in diabetes mellitus and its complication. Int J Mol Sci. 23(16): 1–13. https://-doi.org/10.3390/ijms23168850

Fisher JD, Fisher WA, Amico KR, Harman JJ (2006). An information-motivation- behavioral skills model of adherence to antiretroviral therapy. Health Psychology, 25(4): 462–473. https://-doi.org/10.1037/0278-6133.25.4.462

Fisher WA, Fisher JD, Harman J (2009). The Information-Motivation-Behavioral Skills Model: A General Social Psychological Approach to Understanding and Promoting Health Behavior. J Pers Soc Psychol, 82–106. https://doi.org/10.1002/9780470753552.ch4

Fisher WA, Kohut T, Schachner H, Stenger P (2011). Understanding self-monitoring of blood glucose among individuals with type 1 and type 2 diabetes: An information- motivation-behavioral skills analysis. Diabetes Educ. 37(1): 85–94. https://doi.org/10.1177/0145721710391479

Friis K, Lasgaard M, Rowlands G, Osborne RH, Maindal HT (2016). Health Literacy mediates the relationship between educational attainment and health behavior: A Danish population-based study. J Health Commun. 21(0): 54–60. https://doi.org/10.1080/10810730.2016.1201175.

Gao J, Wang J, Zhu Y, Yu J (2013). Vali-

dation of an information-motivation-behavioral skills model of self-care among Chinese adults with type 2 diabetes. BMC Public Health, 13(1): 2–7. https://doi.org/10.1186/1471-24-58-13-100

Gillani SW, Ansari IA, Zaghloul HA, Sulaiman SAS, Rathore HA, Baig MR, Abdul MIM, et al. (2019). Predictors of Health-Related Quality of Life Among Patients with Type II Diabetes Mellitus Who Are Insulin Users: A Multidimensional Model. Curr Ther Res Clin Exp 90: 53–60. https://doi-.org/10.1016/j.curtheres.2019.04.001

Harreiter J, Roden M (2019). Diabetes mellitus—Definition, classification, diagnosis, screening and prevention (Update 2019). Wien. Klin. Wochen-schr. 131(Update): 6–15. https://doi.-org/10.1007/s00508-019-1450-4

Holman RR, Paul SK, Bethel MA, Matthews DR, Neil HAW (2008). 10-Year follow-up of intensive glucose control in type 2 diabetes. N Engl J Med, 359(15): 1577–1589. https://doi.org/-10.1056/nejmoa0806470

IDF. (2019). IDF Diabetes Atlas 9th edition. In IDF.

Dinas Kesehatan Provinsi Jawa Tengah (2021). Profil Kesehatan Jawa Tengah Tahun 2021.

Jia W, Weng J, Zhu D, Ji L, Lu J, Zhou Z, Zou D, et al. (2019). Standards of medical care for type 2 diabetes in China 2019. Diabetes Metab Res Rev, 35(6): 1–26. https://doi.org/10.1002-/dmrr.3158

Jianpin J, Weiping JL, Zhou Z, Zou D, Zhu D, Chen L, et al. (2016). Standards of care for type 2 diabetes in China. Diabetes Metab Res Rev, 32(30): 13–23. https://doi.org/10.1002/dmrr

Kemenkes RI. (2018). Hasil Riset Kesehatan Dasar Tahun 2018. Kementrian Kesehatan RI, 53(9), 1689–1699.

Li G, Zhang P, Wang J, Gregg EW, Yang W, Gong Q, Li H, Li H, et al. (2008). The long-term effect of lifestyle interventions to prevent diabetes in the China Da Qing Diabetes Prevention Study: a 20-year follow-up study. The Lancet, 371(9626), 1783–1789. https://doi.-org/10.1016/S0140-6736(08)60766-7

Liao YS, Tsai WC, Chiu LT, Kung PT (2023). Educational attainment affects the diagnostic time in type 2 diabetes mellitus and the mortality risk of those enrolled in the diabetes pay-for-performance program. J Public Health Policy. 138: 104917. https://doi.org/10.1016/j.healthpol.2023.104917

Meunier S, Coulombe S, Beaulieu MD, Côté J, Lespérance F, Chiasson JL, Bherer, L, et al. (2016). Longitudinal testing of the Information-Motivation-Behavioral Skills model of self-care among adults with type 2 diabetes. Patient Educ Couns, 99(11), 1830–1836. https://doi.org/10.1016/j.pec.2016.06.011

Murti B, Ayuningrum. (2019). Aplikasi Path Analysis & Structural Equation Model dengan Stata. Karanganyar: Bintang Fajar Offset.

Nanayakkara N, Curtis AJ, Heritier S, Gadowski AM, Pavkov ME, Kenealy T, Owens DR., et al (2021). Impact of age at type 2 diabetes mellitus diagnosis on mortality and vascular complications: systematic review and meta-analyses. Diabetologia. 64(2), 275–287. https://doi.org/10.1007/s0-0125-020-05319-w

Nashrullah RF, Ari N, Wijaya SA, Adyani A (2021). Relationship between Motivation and Type II Diabetes Mellitus Dietary Compliance. Magna Medica

Berkala Ilmiah Kedokteran Dan Kesehatan, 8(2): 60. https://doi.org/10.-26714/magnamed.8.2.2021.60-70.

Pradeepa R, Shreya L, Anjana RM, Jebarani S, Venkatesan U, Kamal Raj N, Swami OC, et al. (2023). Sex-based differences in clinical profile and complications among individuals with type 2 diabetes seen at a private tertiary diabetes care centre in India. Healthcare (Switzerland). 11(11): 1–13. https://-doi.org/10.3390/healthcare11111634

Qin ZY, Yan JH, Yang DZ, Deng HR, Yao B, Weng JP (2017). Behavioral analysis of Chinese adult patients with type 1 diabetes on self-monitoring of blood glucose. Chin Med J. 130(1): 39–44. https://doi.org/10.4103/0366-699-9.196574

Shiferaw WS, Akalu TY, Desta M, Kassie AM, Petrucka PM, Aynalem YA (2021). Effect of educational interventions on knowledge of the disease and glycaemic control in patients with type 2 diabetes mellitus: A systematic review and meta-Analysis of randomised controlled trials. BMJ Open, 11(12). https://doi.org/10.1136/bmj-open-2021-049806

Yao J, Wang H, Yin X, Yin J, Guo X, Sun Q (2019). The association between self-efficacy and self-management behaviors among Chinese patients with type 2 diabetes. PLoS ONE, 14(11): 1–12. https://doi.org/10.1371/journal.-pone.0224869

Yao X, Zhang L, Du J, Gao L (2021). Effect of information-motivation-behavioral model based on protection motivation theory on the psychological resilience and quality of life of patients with type 2 DM. Child Psychiatry Q. 92(1): 49–62. https://doi.org/10.1007/s11126-020-09783-w.