Jurnal Ilmiah Wahana Pendidikan, November 2026, 12 (11.B), 13-21
DOI: https://jurnal.peneliti.net/index.php/JIWP/article/view/14656
p-ISSN: 2622-8327 e-ISSN: 2089-5364
Accredited by Directorate General of Strengthening for Research and Development
Available online at https://jurnal.peneliti.net/index.php/JIWP

Hubungan Pengetahuan Dengan Perilaku Pencegahan Diabetes Melitus Tipe 2 Pada Remaja Di Man 2 Banyumas

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Received: 10 Oktober 2026
Revised: 02 November 2026
Accepted: 14 November 2026

Abstract

Background. The growing incidence of Type 2 Diabetes Mellitus (T2DM) among adolescents has emerged as an important public health issue. This trend is largely associated with lifestyle changes, including insufficient physical activity, prolonged sedentary behavior, and unhealthy eating habits characterized by frequent consumption of ultra-processed foods. Improving adolescents' understanding of T2DM risk factors and prevention strategies is essential to encourage healthy lifestyle practices and reduce the likelihood of long-term metabolic disorders.

Purpose. This study aimed to examine the association between students' knowledge of Type 2 Diabetes Mellitus and their preventive behaviors among adolescents enrolled at MAN 2 Banyumas.

Methods. A quantitative study employing a descriptive correlational design with a cross-sectional approach was conducted involving 322 students. Participants from grades X and XI were recruited through disproportional stratified random sampling to ensure adequate representation of each grade level. Data were collected between September and October 2025 using validated questionnaires assessing sociodemographic characteristics, knowledge related to T2DM, and preventive behaviors. Statistical analysis was performed using the Spearman Rank correlation test, with statistical significance determined at $p < 0.05$.

Results. Most respondents demonstrated a good level of knowledge regarding T2DM (80.7%), whereas preventive behavior was predominantly classified as moderate (65.8%). Spearman Rank analysis revealed a statistically significant positive association between knowledge and preventive behavior ($p = 0.037$), although the correlation was very weak ($r = 0.117$). These findings suggest that adolescents with better knowledge tend to exhibit more favorable preventive behaviors.

Conclusion. Despite the weak correlation, the findings indicate that improving adolescents' knowledge may contribute to the adoption of healthier preventive behaviors. Strengthening health literacy should therefore be considered an important component of programs aimed at preventing Type 2 Diabetes Mellitus among adolescents.

Keywords: Type 2 Diabetes Mellitus; health literacy; knowledge; preventive behavior; adolescents.

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How to Cite: Dewi, K., 13977S., & Susanti, I. (2026). HUBUNGAN PENGETAHUAN DENGAN PERILAKU PENCEGAHAN DIABETES MELITUS TIPE 2 PADA REMAJA DI MAN 2 BANYUMAS. *Jurnal Ilmiah Wahana Pendidikan*, *12*(11.B), 13-21. Retrieved from https://jurnal.peneliti.net/index.php/JIWP/article/view/14656.

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from impaired insulin secretion and insulin resistance. Over the past decade, the prevalence of T2DM has increased not only among adults but also among adolescents (Stanislawski et al., 2021). Worldwide, the incidence of adolescent T2DM continues to rise, and Indonesia has also reported an increasing number of cases among individuals younger than 18 years of age (Yan et al., 2023). This trend has been linked to sedentary lifestyles, frequent consumption of foods rich in sugar and fat, and a growing reliance on ultra-processed foods, all of which contribute to the development of insulin resistance (Barrea et al., 2023; Wang et al., 2024).

Beyond lifestyle-related factors, adolescents' knowledge plays an essential role in shaping preventive health behaviors. According to the Theory of Planned Behavior, health-related actions are influenced by individual attitudes, subjective norms, and perceived behavioral control (Isnanda & Nurmala, 2022). Adolescents who possess adequate health knowledge are generally more likely to adopt healthier behavioral patterns over time (Fitriyani & Kurniasari, 2022). Nevertheless, observations at MAN 2 Banyumas indicate that many students continue to consume sugar-rich snacks regularly, suggesting the presence of metabolic risk factors that warrant further investigation.

The importance of this study is further supported by the long-term health consequences associated with inadequate preventive behaviors during adolescence. Young people diagnosed with T2DM are more likely to experience earlier and more rapid progression of both microvascular and macrovascular complications than adults because they are exposed to hyperglycemia for a longer period throughout their lives (Perng et al., 2023). Although knowledge alone does not determine behavior, sufficient health literacy provides the foundation for adolescents to recognize and evaluate their personal risk in an increasingly obesogenic environment. Therefore, examining whether students' understanding of T2DM at MAN 2 Banyumas is reflected in their preventive practices is essential for identifying appropriate and effective school-based health promotion strategies. Based on these considerations, this study aims to determine whether there is a significant association between the level of knowledge and preventive behaviors related to type 2 diabetes mellitus among adolescents at MAN 2 Banyumas.

METHODS

This study employed a quantitative approach using a descriptive correlational design with a cross-sectional framework. The research was conducted at MAN 2 Banyumas between September and October 2025. A total of 322 students from grades X and XI participated in the study. Participants were selected using a disproportional stratified random sampling technique to ensure representation from each grade level.

Data were collected using a structured questionnaire designed to assess respondents' demographic characteristics, knowledge of type 2 diabetes mellitus (T2DM), and preventive behaviors related to the disease. Prior to data collection, the instrument underwent validity and reliability testing involving 79 students from SMK Ma'arif NU 1 Ajibarang (df = 77), with a significance level of 5% (r-table = 0.221).

The knowledge questionnaire initially consisted of 35 items. Following the validity assessment, two items were excluded because they did not meet the required significance criterion ($p > 0.05$), resulting in a final set of 33 valid items. The preventive behavior questionnaire originally contained 36 items, of which one item (item 36) was removed because its correlation coefficient was below the required threshold (r-calculated = 0.188 < r-table = 0.221). Consequently, 35 items were retained as valid measures of preventive behavior.

The finalized questionnaires demonstrated satisfactory internal consistency, with Cronbach's Alpha coefficients exceeding 0.70, indicating that the instruments were reliable and appropriate for data collection. Statistical analysis included both univariate and bivariate procedures. The association between knowledge level and preventive behavior was examined using Spearman's rank correlation test with a 95% confidence level.

RESULTS & DISCUSSION

Results

The findings of this study, which examined the relationship between knowledge and preventive behaviors toward type 2 diabetes mellitus (T2DM) among students at MAN 2 Banyumas, are presented below. Data were collected between 20 September and 4 October 2025 from a total of 322 respondents. The results of the statistical analyses are summarized in the following sections.

Table 1. Sociodemographic Characteristics of Respondents, Knowledge Level, and Type 2 Diabetes Mellitus (T2DM) Preventive Behavior

Variabel	Kategori	Frekuensi (n)	Persentase (%)
Usia	14 tahun	16	5,0
	15 tahun	137	42,5
	16 tahun	129	40,1
	17 tahun	35	10,9
	18 tahun	4	1,2
	19 tahun	1	0,3
	Total	322	100
Jenis Kelamin	Perempuan	130	40,4
	Laki-laki	192	59,6
	Total	322	100
Riwayat Keluarga DMT2	Ada	42	13,0
	Tidak ada	280	87,0
	Total	322	100
Sumber informassi	Belum	161	50,0
	Sudah	161	50,0
	Total	322	100

Variabel	Kategori	Frekuensi (n)	Persentase (%)
Jika sudah pernah mengetahui	Orang tua	25	7,8
	Guru	46	14,3
	Pegutas kesehatan	36	11,2
	Media sosial	54	16
	Surat kabar	0	8
	Total	161	0,0
Pekerjaan orang tua	Tidak bekerja	7	2,2
	Wirausaha/dagang	90	28,0
	uruh	51	15,8
	Karyawan	50	15,5
	Petani	12	3,7
	PNS	39	12,1
	Dosen	2	6,0
	Pensiunan	8	2,5
	Perawat	2	6,0
	Guru	5	1,6
	TNI/Polri	5	1,6
	Lainnya	51	15,8
	Total	322	100
Pengetahuan	Baik	260	80,75
	Sedang	59	18,35
	Rendah	3	0,90
	Total	322	100
Perilaku Pencegahan	Sangat baik	31	7,45
	Baik	212	65,84
	Rendah	78	26,40
	Sangat rendah	1	0,31
	Total	322	100

Table 1 summarizes the characteristics of the 322 respondents according to age, sex, family history of type 2 diabetes mellitus (T2DM), sources of information, parents' occupation, level of knowledge, and preventive behavior. Most participants were between 15 and 16 years old, accounting for 42.5% and 40.1% of the sample, respectively. Male students represented the larger proportion of respondents (59.6%).

The majority of participants reported no family history of T2DM (87.0%). An equal proportion of respondents had and had not previously received information about

T2DM (50.0% each). Among those who had obtained information, the most common sources were social media (16.0%), teachers (14.3%), and healthcare professionals (11.2%).

Regarding parental occupation, entrepreneurship or trading was the most frequently reported category (28.0%), followed by laborers (15.8%) and private-sector employees (15.5%). Most respondents demonstrated a good level of knowledge regarding T2DM (80.75%) and good preventive behavior (65.84%). However, only 7.45% achieved a very good level of preventive behavior. These findings suggest that although knowledge about T2DM was generally high, the implementation of optimal preventive practices among students remains limited and requires further improvement.

Table 2. Association Between Knowledge Level and Type 2 Diabetes Mellitus (T2DM) Preventive Behavior

Pengetahuan	**Perilaku Pencegahan**										**P value**	**CC**
	Sangat Rendah		**Rendah**		**Cukup**		**Baik**		**Sangat Baik**	**Total**		
	F	%	F	%	F	%	F	%	F	%		
Rendah	0	0,0	2	66,7	1	33,3	0	0,0	3	100		
Sedang	0	0,0	20	33,9	34	567,6	5	8,5	59	100	0,037	0,117
Baik	1	0,4	56	21,5	177	68,1	26	10,0	260	100		
Total	1	0,3	78	24,2	212	65,8	31	9,6	322	100		

As presented in Table 2, Spearman's rank correlation analysis demonstrated a statistically significant positive association between knowledge and preventive behaviors related to type 2 diabetes mellitus (T2DM) among the 322 adolescent participants at MAN 2 Banyumas ($p = 0.037$, $p < 0.05$). The correlation coefficient was 0.117, indicating a very weak positive relationship. These findings suggest that respondents with higher levels of knowledge tended to exhibit better preventive behaviors. However, despite the statistical significance of the association, the strength of the correlation was minimal, implying that factors other than knowledge may also contribute to adolescents' preventive behaviors.

Discussion

Factors Influencing the Association Between Knowledge and Type 2 Diabetes Mellitus (T2DM) Preventive Behavior Among Adolescents at MAN 2 Banyumas

Preventive behaviors related to type 2 diabetes mellitus (T2DM) among students at MAN 2 Banyumas appear to be shaped by a combination of cognitive and environmental influences. The predominance of respondents aged 15 years (42.5%) reflects a developmental stage in which adolescents generally possess the cognitive capacity to evaluate health risks and make reasoned decisions (P. Dan et al., 2023; Ajzen, 2020). Nevertheless, among older adolescents, preventive behaviors may be influenced more strongly by subjective norms and peer expectations than by rational judgment alone (Listiani & Ayubi, 2024). Male

students constituted the majority of the sample (59.6%), and previous research suggests that males are often more vulnerable to unhealthy lifestyle practices because of gender-related socialization that places less emphasis on dietary self-regulation (Nuraini et al., 2022). In addition, having a family history of diabetes (13.0%) may strengthen behavioral beliefs by increasing perceived susceptibility to the disease (Lariwu et al., 2024). Although social media was the most frequently reported information source (16.8%), exposure to health information alone may not translate into preventive actions unless adolescents also possess adequate perceived behavioral control (PBC) (Aldyan et al., 2024). Furthermore, the predominance of parents working in entrepreneurship or trade (28.0%) may reduce opportunities for parental supervision of dietary habits, highlighting the importance of schools in providing structured health promotion and nutritional guidance (Distractions & Study, 2020; Syafruddin & Setyawan, 2025).

Adolescents' Knowledge of Type 2 Diabetes Mellitus Prevention

Most respondents demonstrated a good level of knowledge regarding T2DM prevention (80.75%), with the highest level of understanding observed in relation to the importance of regular physical activity (95.0%). Knowledge is widely recognized as a fundamental determinant of health behavior because it provides the basis for informed decision-making (Fitria et al., 2023). Within the framework of the Theory of Planned Behavior (TPB), knowledge functions as a background factor that shapes behavioral beliefs and strengthens intentions to adopt preventive practices (Ajzen, 2020). The present findings suggest that school-based health education has contributed positively to improving adolescents' health literacy (Dan et al., 2023; Aliyah & Inayah, 2025). This level of understanding is likely influenced by cognitive development, access to health information, and previous exposure to diabetes through family experiences.

These findings differ from those reported in rural populations, where adolescents generally demonstrated only moderate levels of diabetes-related knowledge (L. Dan & Antara, 2024). Such differences may reflect disparities in educational opportunities, demographic characteristics, and access to reliable health information. Consequently, future health promotion programs at MAN 2 Banyumas should move beyond simply increasing awareness and instead focus on translating existing knowledge into practical skills that support sustained preventive behaviors.

Preventive Behaviors Toward Type 2 Diabetes Mellitus Among Adolescents

Approximately two-thirds of the respondents (65.8%) demonstrated good preventive behaviors related to T2DM, particularly by avoiding established risk factors such as smoking and alcohol consumption. Preventive behavior represents proactive efforts to reduce disease risk through healthy dietary practices and regular physical activity (Muflihah & Nisa, 2024). According to the TPB, these behaviors are facilitated by adequate perceived behavioral control, or self-efficacy, which enables individuals to convert behavioral intentions into concrete actions. This interpretation is consistent with the findings of Zulfikar et al. (2024) and Ade et al. (2024).

Despite these encouraging results, the predominance of the "good" category rather than the "very good" category indicates the persistence of a knowledge–action gap. External barriers, including peer influence, easy access to unhealthy foods, and environmental constraints, may prevent adolescents from consistently

practicing optimal preventive behaviors. Therefore, future interventions should not only strengthen adolescents' confidence in their ability to perform healthy behaviors but also establish supportive social and school environments that reduce these barriers.

Association Between Knowledge and Type 2 Diabetes Mellitus Preventive Behavior Among Adolescents at MAN 2 Banyumas

The present study identified a statistically significant positive association between knowledge and preventive behaviors related to T2DM among the 322 adolescents enrolled at MAN 2 Banyumas. This finding supports the Theory of Planned Behavior, which proposes that knowledge provides the cognitive foundation for evaluating the benefits of preventive actions and contributes to the formation of behavioral intentions. Adolescents with greater knowledge are more likely to recognize the value of healthy lifestyle practices and therefore demonstrate stronger intentions to engage in disease prevention. These results are consistent with those reported by Pandelaki et al. (2021), who found a positive relationship between health knowledge and preventive actions, as well as Silalahi (2019), who concluded that higher knowledge levels significantly promote healthy behavioral intentions.

However, the observed correlation was relatively weak, suggesting that knowledge alone is insufficient to explain adolescents' preventive behaviors. In this study, 56 respondents exhibited good knowledge despite reporting relatively poor preventive practices, illustrating that knowledge does not necessarily lead to behavioral change. Within the TPB framework, additional determinants, particularly perceived behavioral control and subjective norms, play important roles in translating intentions into action. Previous evidence indicates that perceived behavioral control may be one of the strongest predictors of health behavior because psychological and environmental barriers cannot be overcome solely through access to information (Environments, 2022; Jawhari & Yusuf, n.d.).

Sociodemographic characteristics may further strengthen or weaken the relationship between knowledge and behavior. Adolescents with a family history of diabetes are likely to perceive themselves as more susceptible to the disease, thereby increasing their motivation to adopt preventive behaviors. Likewise, female adolescents and those in older age groups (15–18 years) generally demonstrate greater consistency in applying health knowledge to daily practice. In contrast, limited socioeconomic resources or certain parental occupations may reduce opportunities to maintain healthy eating patterns and participate in regular physical activity, thereby weakening the translation of knowledge into action (Hagger & Hamilton, 2025).

The present findings differ from those of Juli et al. (2025), who reported that subjective norms, particularly peer influence, were stronger predictors of adolescent health behavior than knowledge alone. Similarly, Candriasih and Hafid (2023) observed that among adolescents at high risk of obesity, the association between knowledge and preventive behavior became nonsignificant because habitual behaviors and emotional factors exerted greater influence. These findings suggest that future interventions should extend beyond health education by

incorporating strategies that enhance perceived behavioral control while simultaneously creating supportive family, school, and community environments capable of sustaining long-term behavioral change.

CONCLUSION

Adolescents with a higher level of knowledge tend to demonstrate better practices in adopting healthy lifestyles as part of type 2 diabetes mellitus prevention efforts. Therefore, improving adolescents' knowledge may contribute to the enhancement of preventive behaviors toward type 2 diabetes mellitus.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the publication of this study. The research was conducted independently, and no financial, personal, or institutional relationships influenced the design, data collection, analysis, interpretation, or reporting of the findings.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to all students of MAN 2 Banyumas who participated as respondents in this study. The authors also gratefully acknowledge the support, permission, and cooperation provided by the school administration, teachers, and all parties involved in the research process.
Special appreciation is extended to the supervisors, Mrs. Suci Khasanah as the first supervisor and Mrs. Indri Heri Susanti as the second supervisor, for their valuable guidance, constructive feedback, and continuous support throughout the completion of this research. The authors also thank everyone who contributed directly or indirectly to the successful implementation of this study.

REFERENCES

Ade, S., Ismayanti, S. A., Khabibah, S. A., Haq, T. A., Salsabilla, S., & Rahman, R. A. (2024). Perilaku dan pengetahuan remaja Indonesia tentang merokok. 11(1), 79–85.

Ajzen, I. (2020). The *theory of planned behavior*: Frequently asked questions. *Human Behavior and Emerging Technologies*, *2*(4), 314–324. https://doi.org/10.1002/hbe2.195

Aliyah, M., & Inayah, D. (2025). Edukasi pencegahan dini *diabetes melitus* pada remaja. *3*(1), 44–56.

Barrea, L., Vetrani, C., Verde, L., Frias-Toral, E., Ceriani, F., Cernea, S., Docimo, A., Graziadio, C., Tripathy, D., Savastano, S., Colao, A., & Muscogiuri, G. (2023). Comprehensive approach to medical nutrition therapy in patients with *type 2 diabetes mellitus*: From diet to bioactive compounds. *Antioxidants*, *12*(4). https://doi.org/10.3390/antiox12040904

Dan, L., & Antara, P. (2024). Perbedaan pengetahuan *diabetes melitus* remaja di pedesaan dan perkotaan. *14*, 742–752.

Dan, P., Remaja, S., On, M., *Knowledge,* T., Adolescents, A. O., Zein, N., Mintarsih, S. N., Noviardhi, A., Hendriyani, H., Gizi, J., Kesehatan, P., & Kesehatan, K. (2023). Jurnal riset gizi. *11*(1), 72–79.

Fitria, M. S., Yantu, S. R., Ruslan, R., Sholekha, Z., Abdul, Q. N. P., Moontalu, D. A., & Mahesya, S. A. (2023). Edukasi pencegahan penyakit *diabetes melitus* dan pemeriksaan kadar gula darah sewaktu di panti asuhan. *Jurnal Inovasi dan Pengabdian Masyarakat Indonesia*, *2*(3), 45–48. https://doi.org/10.26714/jipmi.v2i3.130

Fitriyani, W., & Kurniasari, R. (2022). Pengaruh media edukasi terhadap peningkatan pengetahuan pencegahan *diabetes mellitus* pada remaja. *Jurnal Untuk Masyarakat Sehat (JUKMAS)*, *6*(2), 190–195. https://doi.org/10.52643/jukmas.v6i2.2141

Isnanda, S. A., & Nurmala, I. (2022). Influence of attitude, subjective norm, perceived behaviour control to perform intention in prevention action of *diabetes*. *Indonesian Journal of Public Health*, *17*(1), 119–131. https://doi.org/10.20473/ijph.v17i1.2022.119- 131

Muflihah, D. I., & Nisa, A. A. (2024). Faktor yang berhubungan dengan perilaku pencegahan *diabetes mellitus* di Kelurahan Mlatiharjo Kecamatan Semarang Timur Kota Semarang. *DIAGNOSA: Jurnal Ilmu Kesehatan Dan Keperawatan*, *2*(3), 13–25. https://doi.org/10.59581/diagnosa-widyakarya.v2i3.3883

Pandelaki, Y. D., Doda, D. V. D., Malonda, N. S. H., Masyarakat, F. K., Sam, U., & Manado, R. (2021). Hubungan antara pengetahuan dan sikap dengan tindakan pencegahan *covid-19*. *10*(7), 67–77.

Silalahi, L. (2019). Hubungan pengetahuan dan tindakan pencegahan *diabetes mellitus tipe 2*. *Jurnal PROMKES*, *7*(2), 223. https://doi.org/10.20473/jpk.v7.i2.2019.223-232

Stanislawski, M. A., Litkowski, E., Raghavan, S., Harrall, K. K., Shaw, J., Glueck, D. H., Lange, E. M., Dabelea, D., & Lange, L. A. (2021). Genetic risk score for *type 2 diabetes* and traits related to *glucose-insulin homeostasis* in youth: The *exploring perinatal outcomes among children* (EPOCH) study. *Diabetes Care*, *44*(9), 2018–2024. https://doi.org/10.2337/DC21-0464