AWARENESS ON THE PREVENTION OF TYPE 2 DIABETES MELLITUS AMONG MARIAN STUDENTS: TOWARDS A HEALTH EDUCATION INFORMATION MATERIAL

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ABSTRACT

Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder that has become one of the leading causes of morbidity and mortality worldwide. In the Philippines, it remains a major public health concern, especially among the youth. This study aimed to assess the level of awareness of the prevention of T2DM among Marian students of Saint Mary's University. Using a quantitative, descriptive-comparative research design, data were collected from 360 students selected through stratified random sampling. The results revealed that students were aware of T2DM prevention in terms of eating and drinking habits. A significant difference in awareness level was found when grouped by sex, with female students having higher awareness than male students. However, no significant differences were found based on age, year level, or school. Despite their awareness, students may not always practice preventive measures. Based on the results, the researchers developed a health education brochure to enhance awareness of T2DM prevention. The brochure aims to promote healthier lifestyle choices and encourage consistent preventive practices among students.

Keywords: T2dm, eating habits, drinking habits, lifestyle behavior

INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is a metabolic condition brought on by insulin resistance and abnormal beta cells. According to Kayyali *et al*. (2019), the body produces insulin but responds less effectively, leading to uncontrollably high blood sugar levels. It is the most common type of diabetes, accounting for over 90% of global cases and around 85% in the Philippines (Villa, 2021). The global prevalence of T2DM is rapidly increasing, making it one of the fastest-growing health crises of the 21st century. The IDF Diabetes Atlas (10th edition) emphasizes the urgent need to improve diagnosis, as many remain unaware of their condition. Awareness plays a vital role in helping individuals recognize the seriousness of T2DM, its symptoms, risk factors, and preventive actions.

Though T2DM typically affects people aged 45 and above, recent studies (Goyal *et al*., 2023; Hu *et al*., 2021) show a rise in cases among adolescents and young adults due to poor diets, obesity, and lack of physical activity. In the Philippines, diabetes affected 7.1% of those aged 20 to 79 in 2019, and by 2021, 4.3 million Filipinos were diagnosed, with 2.8 million still undiagnosed (Arcellana & Jimeno, 2020; Cando *et al*., 2021). In addition, Lawrence *et al*. (2021) found that T2DM in youth has increased steadily over two decades, once considered rare among younger age groups. According to the World Health Organization (2022), over 390 million children and adolescents are overweight, with 160 million classified as obese—placing them at greater risk for T2DM. Pappachan *et al*. (2024) attribute this to diets high in processed foods and sedentary lifestyles driven by screen time and lack of physical movement.

Unhealthy lifestyle habits—including smoking, poor dietary choices, limited physical activity, and being overweight or obese—significantly increase the risk of developing type 2 diabetes mellitus (T2DM) (New Delhi Television [NDTV], 2018; Irwansyah et al., 2021). Individuals with sedentary occupations, such as office workers and teaching staff, or those who spend extended periods in front of computer screens, are particularly vulnerable. Their lack of

regular physical activity and limited health awareness contribute to elevated blood glucose levels and heightened susceptibility to diabetes.

Students are also considered a high-risk group due to unhealthy behaviors such as frequent consumption of sugary foods and beverages, inadequate physical activity, and poor dietary patterns (Burke et al., 2009; Fajarini & Sartika, 2019; Özpancar et al., 2019). If these habits persist, students may be at increased risk of developing T2DM at a young age. Additional risk factors include smoking, being overweight, and prolonged sedentary behaviors, such as extended computer use (NDTV, 2018; Irwansyah et al., 2021).

Moreover, research suggests that awareness of T2DM is influenced by sociodemographic factors, particularly age and gender. Older individuals often demonstrate higher levels of awareness due to accumulated life experience and greater exposure to health information (Sękowski et al., 2022; Salleh et al., 2019). However, Akter et al. (2022) found no statistically significant association between age and awareness levels. In contrast, women generally report greater awareness compared to men, likely because they engage more frequently with healthcare services—particularly for reproductive health—which increases their exposure to preventive education and health information (Yan et al., 2022; Akter et al., 2022).

This study is significant in the broader context of the increasing prevalence of type 2 diabetes mellitus (T2DM), as it seeks to assess Marian students' awareness of its prevention. By identifying knowledge gaps—particularly regarding dietary habits and beverage consumption—this research can support the development of targeted educational materials. Moreover, the findings may help students, teachers, parents, and the academic community strengthen their collective efforts in promoting health awareness. The results can also guide researchers and health educators in designing targeted prevention and education campaigns for T2DM, particularly for younger populations at risk of developing the disease early.

Statement of the Problem

The purpose of this study is to determine the awareness of type 2 diabetes mellitus prevention among Marian students during the school year 2024-2025. It specifically seeks to answer the following questions:

1. What is the profile of the Marian students in terms of:
    a. Age
    b. Sex
    c. School
    d. Year level
2. What is the level of awareness of the Marian students regarding the prevention of type 2 diabetes mellitus in terms of the following:
    a. drinking habits
    b. eating habits
3. Is there a significant difference in the level of awareness about the prevention of T2DM among Marian students when grouped by profile variables?
4. What health education information material on T2DM prevention can be developed?

METHODOLOGY

The researchers used a quantitative research design, particularly a descriptive-comparative design. The study identified the level of awareness of the Marian students regarding the prevention of Type 2 Diabetes Mellitus in terms of drinking and eating habits. It determined the differences in awareness of T2DM prevention among Marian students,

grouped by age, sex, school, and year level. The study was conducted at Saint Mary's University (SMU) in Don Mariano, Bayombong, Nueva Vizcaya. The respondents were 360 students from the School of Accountancy and Business (SAB), the School of Engineering, Architecture, and Information Technology (SEAIT), the School of Health and Natural Sciences (SHANS), the School of Teacher Education and Humanities (STEH), and the Senior High School at SMU. Fifth-year SEAIT students were excluded since other schools had no comparable year level. Stratified random sampling was used to ensure fair representation by school and year level.

A researcher-made questionnaire was used, which included questions about students' profiles and their awareness of T2DM prevention, particularly their eating and drinking habits. Experts validated and pilot-tested the questionnaire to ensure reliability, with acceptable internal consistency: Cronbach's alpha of 0.71 for the eating habits section and 0.72 for the drinking habits section, indicating that the items reliably measured the intended constructs.

For data collection in this research, the researchers first sought approval from the University Research Ethics Board (UREB) before conducting data collection among 360 respondents from the five academic units of Saint Mary's University. After gathering all the necessary data, the researchers proceeded to the analysis and interpretation stage. This study used descriptive statistics, including frequency counts, percentages, means, and standard deviations, to determine the level of awareness of T2DM prevention among high school and college students. Moreover, this study used percentage scoring to determine respondents' level of awareness of T2DM prevention, as described in Table 2. Furthermore, the researchers used an Independent-samples t-test and a One-way ANOVA to determine significant differences in the level of awareness of T2DM prevention.

Table 2
Description of the Level of Awareness of Prevention of T2DM

Percent	Level of Awareness	Description
76 – 100	Fully aware	Understands the prevention of T2DM very well and consistently follows preventive practices without needing the guidance of experts
51 – 75	Aware	Understands the prevention of T2DM but may not always apply preventive practices and may still need occasional guidance from experts
26 – 50	Unaware	Can understand the prevention of T2DM only with the guidance of experts
0 – 25	Not fully aware	Do not understand T2DM prevention and never observe or follow preventive practices.

RESULTS AND DISCUSSION

Section 1. Profile of the Marian Students

Table 3
Respondents' Profile

Profile	Groups	f (n=360)	%
Sex	Male	115	31.9

	Female	245	68.1
Age	18 – 20	243	67.5
	21 - 23	117	32.5
Year Level	SHS	89	24.2
	1st	70	19.4
	2nd	50	13.9
	3rd	97	27.5
	4th	54	15.0
School	SHS	89	24.7
	SAB	23	6.4
	SHANS	111	30.8
	SEAIT	81	22.5
	STEH	56	15.6

The table shows that most respondents were female (68.1%), aged 18–20 years old (67.5%), and third-year college students (27.5%). In terms of course, the majority came from the School of Health and Natural Sciences (30.8%).

Section 2. Awareness of Marian Students on the prevention of type 2 diabetes mellitus

Table 4

Overall level of awareness on the prevention of type 2 diabetes mellitus

	Mean Percent Rating	SD	Interpretation
Eating Habits	70.47	16.63	Aware
Drinking Habits	73.90	16.23	Aware
Overall	72.23	14.82	Aware

The results show that Marian students are aware of T2DM prevention, both in their drinking habits (mean: 73.90%) and in their eating habits (mean: 70.47%). The overall mean score of 72.23% indicates that students have knowledge of preventive measures but may not always apply them, and may still need occasional guidance from experts.

The results imply that, while students demonstrate some awareness of type 2 diabetes prevention, additional interventions are needed to enhance this awareness further. One practical strategy could involve distributing educational materials, such as brochures, particularly to students enrolled in non-medical courses who may have limited knowledge of the disease. Future research should also aim to identify specific eating and drinking habits that students are well-informed about or are not. This would help guide the development of targeted health education initiatives.

Although respondents are aware of preventive measures, it is equally important to determine whether they are being implemented. Subsequent studies should therefore examine both the level of awareness and the level of actual preventive behaviors related to type 2 diabetes. Additionally, identifying the factors influencing awareness can provide valuable insights for designing more effective interventions.

Given that type 2 diabetes can develop at any age, future research should consider including younger students to promote early prevention. A collaborative approach to prevention within schools is essential, and assessing faculty and staff awareness is crucial to ensure consistent, comprehensive health promotion efforts.

Section 3. Differences in awareness of type 2 diabetes prevention across profile variables

Table 5

Comparison according to sex, age, year level, and school

Variables		Eating Habits					Drinking Habits					Overall				
		f	mean	SD	t/F - value	p-value	f	mean	SD	t/F - value	p-value	f	mean	SD	t/F-value	p-value
Sex	Male	115	67.92	16.90	1.005	0.046	115	70.61	15.59	2.077	0.008	115	69.30	14.44	2.717	0.010
	Female	245	71.66	16.40			245	75.45	16.33			245	73.61	14.83		
Age	18	91	69.64	15.40	1.674	0.140	91	75.77	13.35	0.429	0.828	91	72.78	12.76	0.662	0.653
	19	80	69.01	16.85			80	73.13	18.82			80	71.12	15.58		
	20	72	68.20	17.92			72	72.36	15.52			72	70.33	15.35		
	21	76	72.58	16.49			76	74.08	16.30			76	73.35	15.59		
	22	39	74.49	16.27			39	73.85	18.48			39	74.16	15.68		
Year Level	SHS	89	69.75	17.09	1.137	0.339	89	77.36	13.97	1.807	0.127	89	73.65	13.21	1.168	0.325
	1st	70	68.72	15.80			70	70.93	18.06			70	69.85	15.36		
	2nd	50	69.47	16.16			50	70.50	17.30			50	71.03	15.69		
	3rd	97	70.55	17.55			97	73.08	15.10			97	71.85	15.05		
	4th	54	74.66	15.51			54	75.00	17.59			54	74.83	15.24		
School	SHS	89	68.60	17.30	1.803	0.128	89	76.52	14.41	1.552	0.187	89	72.66	13.66	1.328	0.259
	SAB	23	71.40	15.29			23	73.48	17.54			23	72.46	15.56		
	SHANS	111	71.03	15.48			111	73.38	17.92			111	72.23	15.75		
	SEAIT	81	73.88	15.31			81	74.69	15.92			81	74.30	13.70		
	STEH	56	67.01	19.42			56	69.82	14.98			56	68.45	15.77		

The results revealed that females had higher mean scores in eating habits (M = 71.66), drinking habits (M = 75.45), and overall awareness (M = 73.61) compared to males, who scored lower across all categories (M = 67.92, 70.61, and 69.30, respectively). These differences were supported by the t-test, which yielded statistically significant p-values of 0.046 for eating habits, 0.008 for drinking habits, and 0.010 for overall awareness. The findings indicate a significant difference in the level of awareness on the prevention of Type 2 Diabetes Mellitus (T2DM) among Marian students when grouped according to sex.

The findings suggest the need to identify the factors contributing to lower levels of awareness among male students and to develop appropriate interventions to address these gaps. Implementing targeted communication strategies may help improve awareness among less knowledgeable individuals. It is also essential to assess whether participants' awareness translates into actual preventive practices for type 2 diabetes mellitus. Furthermore, identifying students' primary sources of information about type 2 diabetes is important, as these sources may significantly influence their level of awareness. Although no significant differences in awareness levels were observed across age groups, the computed means indicate that participants aged 22 years demonstrated a higher level of awareness than those in other age groups.

At a deeper level, the results revealed that students from SEAIT had a higher mean awareness score than those from SHANS, despite the latter offering medically allied courses. This unexpected finding highlights the need for further research to explore the underlying factors contributing to this discrepancy. Understanding why students enrolled in non-medical courses demonstrate greater awareness of type 2 diabetes mellitus (T2DM) prevention compared to those in medical courses will be crucial for developing targeted interventions and

informing curricular enhancements across academic programs.

Moreover, schools should implement regular assessments of students' awareness of T2DM prevention to guide the refinement of health education strategies. Educational institutions are also encouraged to strengthen health promotion initiatives for all students, regardless of their field of study. This can be achieved by ensuring the availability and accessibility of health education materials—such as brochures, flyers, and infographics—across different departments and offices to promote broader dissemination and engagement.

Section 4. IEC Material

The researcher developed a brochure as health education material to prevent Type 2 Diabetes Mellitus (T2DM). The brochure covers the definition of T2DM, its risk factors (such as age, family history, obesity, poor diet, and smoking), signs and symptoms (such as increased thirst, fatigue, and frequent urination), complications (including hypoglycemia, neuropathy, and cardiovascular disease), and prevention strategies. These preventive measures include regular exercise, healthy eating, avoiding smoking, managing weight and stress, and regular health checkups. The brochure aims to promote healthier lifestyles and raise awareness about T2DM prevention among students and the community.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Most respondents are female, 18 years old, in their third year, and enrolled in the School of Health and Natural Sciences. The study found that Marian students are aware of T2DM prevention, especially regarding their eating and drinking habits, showing they know the importance of avoiding sugary foods and drinks. However, students may not always practice these preventive measures. Female students showed greater awareness than male students, suggesting possible gender differences in health behaviors. To improve awareness, the researchers will create simple, easy-to-understand brochures on T2DM prevention to be distributed across the campus.

Recommendations

Given that a majority of respondents belong to the School of Health and Natural Sciences, future educational interventions and health awareness campaigns for Type 2 Diabetes Mellitus (T2DM) should be targeted not only at students in health-related courses but also at students from other schools. The nursing students should advocate for disease prevention by spearheading information dissemination, such as health education, particularly to students in non-medical courses. Preventing diabetes in the school population requires a collaborative effort, and administrators should be part of these programs.

The finding showed that students should manifest their level of awareness into practice by living a healthier lifestyle. They should also try to access different sources of knowledge on T2DM. Moreover, they should participate in information dissemination activities, such as seminars and symposia.

Based on the study's findings, interventions should be implemented to increase male students' awareness. There should be health programs that are designed for male students. To promote greater participation and interest in T2DM prevention, providing more accessible programs, incorporating peer-to-peer teaching, and integrating health into student activities for

men are essential. Irrespective of year level, age, or school, the uniformity of awareness indicates that a centralized method might be efficient. The institution can implement regular health seminars, interactive campaigns, and even free health screening services accessible to all students to maintain and enhance awareness of T2DM prevention.

The parents should also monitor their children's lifestyle to ensure they have proper drinking habits. Future researchers should include lower grade levels in their study since young individuals are also prone to developing type 2 diabetes mellitus. Future studies should also examine whether there is a relationship between awareness and practice levels regarding the prevention of type 2 diabetes mellitus. There should be a comparison of awareness levels among student boarders and non-boarders, as their residency type may affect their lifestyle. A profile variable that should be included in the study and analyzed for its effect on awareness is the sources of knowledge about type 2 diabetes mellitus. Moreover, there should be comparisons of awareness levels, weekly allowances, religion, and ethnicity, since these may affect drinking and eating habits.

To ensure that respondents become fully aware of the prevention of Type 2 Diabetes Mellitus (T2DM), we recommend implementing a multifaceted approach. This includes organizing informative seminars where participants can gain practical knowledge about meal planning, healthy eating habits, and lifestyle modifications essential for preventing T2DM. In addition, community outreach programs should be conducted to offer free health screenings, encourage early detection, and increase awareness within the community. Furthermore, leveraging various social media platforms and multimedia campaigns can effectively disseminate accurate, engaging, and easy-to-understand information about T2DM prevention to a broader audience. These combined strategies will help educate, motivate, and empower individuals to take proactive steps to maintain their health and prevent the onset of diabetes.

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