



Knowledge, Attitudes, and Beliefs of Paulinian College Students about Diabetes

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ABSTRACT: The main purpose of the study was to evaluate the degree of knowledge, attitudes, and beliefs of Paulinian college students on diabetes for appropriate plans and interventions. The participants were 218 Paulinian college students at St. Paul University Surigao during the academic year 2022-2023. The study employed a quantitative descriptive research design involving the use of a researcher-made survey questionnaire that underwent validation and pilot testing. The data gathered were analyzed and treated by using the following descriptive statistical tools: frequency count and percentage distribution, mean and standard deviation, analysis of variance (ANOVA), and Shapiro-Wilk test. Results showed that the college students had a significant degree of difference in the level of respondent's attitudes and beliefs on Diabetes based on behavior formation and belief generation when grouped according to age, sex, and socio-economic status. Students had significant differences in their attitudes and beliefs when grouped as to their knowledge as there was found to be a correlation between attitudes and beliefs. Generally, the findings showed that there is a significant degree of difference in the level of respondent's knowledge, attitudes, and beliefs. It was recommended to provide an action plan as a health education strategy according to their knowledge about Diabetes for a continuum favorable attitude of students and change their beliefs on a more scientific approach and analyze deeply the misconceptions regarding the disease.

KEYWORDS: Attitudes, Beliefs, Diabetes, Knowledge, Quantitative Research Survey, Surigao City, Philippines

INTRODUCTION

Diabetes mellitus or D.M. is the most common metabolic disorder. Its incidence varies globally, from as little as 1% to more than 50%. Approximately 422 million individuals globally have Diabetes, and most of them live in low- and middle-income countries. The disease is directly responsible for 1.5 million fatalities annually. According to projections from the World Health Organization or WHO, there are over 180 million diabetics globally, and by 2030, that number is expected to quadruple. Over the past few decades, there has been a steady rise in both the number of cases and the incidence of Diabetes. It is a universal health problem with a global prevalence of 1.3%. Recently, the Philippine News Agency or PNA (2021) announced that diabetes prevalence in the Philippines is 6.3%, resulting in a ratio of one in 14 Filipino adults living with the disease as of 2019. The World Bank data stated in 2021 that the prevalence of Diabetes in the Philippines was 7.1% (% of the population ages 20 to 79) (International et al., 2021). Asians develop Diabetes at comparatively younger ages, thus providing sufficient time for developing complications (Diabetes Atlas, 4th edition, Brussels: International Diabetes Federation, 2009).

The Diabetes Philippines, Inc. member of the Board of Trustee, Dr. Cynthia Sanchez, said that of the 63,265,700 Filipino adults in 2019, 3,993,300 have Diabetes (Montemayor, Ma. T., 2023, July). *"Pine-predict na by 2030, ito pong 3.9 million ay tataas ng 5.2 million, and by 2045, tataas pa po ng 7.2 million (it is predicted that by 2030, this 3.9 million will increase to 5.2 million, and by 2045, this will increase to 7.2 million),"* she said. Diabetes is the nation's fourth-largest cause of death. Heart disease remains the leading cause of mortality, with stroke coming in second and cancer coming in third. It is defined as an increase in blood glucose levels caused by a shortage of insulin or the body's incorrect use of insulin. The Philippine Heart Association Vice President, Dr. Gilbert Vilela, said that four million adults in the Philippines are diagnosed with Diabetes and have common comorbidities and complications with type 2 diabetes, including heart diseases. *"For the past three years, ischemic heart disease (increased only by 2.3%), cancer (went down by about 10%), and pneumonia (about 6%) have been listed as the top three causes of death in Filipinos, with diabetes following in fourth place (went up by 7.8%),"* Vilela said (PNA, 2021). Supported by the Philippine Statistics Authority data (2021), deaths ranked fourth in 2020 at 37,265, after heart diseases (99,680), cancer (62,289), and cerebrovascular diseases



(59,736). Deaths due to diabetes mellitus recorded 16,970 cases, or 6.5% of the total, making it the fourth leading cause of death, while deaths due to hypertensive diseases, which ranked fifth, recorded 15,162 cases, or 5.8 percent of the total. Locally, Region XIII-Caraga rating of 32.3% was fifth to the highest number of deaths because of Diabetes in the Philippines. In 2019, among ten places in the region, Surigao City is second with 181 death cases in 2019, ranking 109.7 in the Philippines.

The most common diabetes classification is Type 2 Diabetes Mellitus or T2DM, which is thought to affect middle-aged and older adults who have prolonged hyperglycemia due to poor lifestyle and dietary choices. It occurs when the body becomes resistant to insulin or does not make enough insulin (WHO, 2023). On the other hand, Type 1 diabetes or T1DM, once known as juvenile Diabetes or insulin-dependent Diabetes, is a chronic condition in which the pancreas produces little or no insulin by itself and is present in children or adolescents. Managing complications and preventing Diabetes is lacking due to inadequate knowledge about the existing interventions. Until 1994, pieces of literature have declared Diabetes a modern epidemic, which is also known as a "silent killer" due to the symptoms of Diabetes that are absent till the patients present with complications (Diabetes Care, 1994; IDF et al., fourth. Brussels: International Diabetes Federation, 2009).

Young adults are being diagnosed with Diabetes at higher rates (Mainous et al., 2007) because gaining weight during college puts students at risk for developing type II diabetes. Both men and women put on 7.8 pounds on average in their first year of college (Patridge, 2007). Many risk their health by choosing unhealthy foods and engaging in inadequate physical activity (Lowry et al., 2000). As they form long-lasting diets and health behaviors associated with an increased lifetime risk of type 2 diabetes, higher institutions can be critical for increasing awareness of diabetes risk and nutrition education and health interventions. Also, recognizing the high-risk students does not affect their future (Mongiello et al. N, Jones H, Spark A. Many College Students Underestimate Diabetes Risk. J Allied Health. 2016). For persons living with Diabetes, admittance to reasonable handling, including insulin, is critical to their survival. The WHO (2023) firmly stated the globally agreed-upon target to halt the rise in Diabetes and obesity by 2025.

Therefore, there is a pressing need to heighten the community's awareness of diabetes risk and to develop models of health education and behavior change that are both relevant and effective for young adults (J Allied Health, 2016). This study is all about the knowledge, attitudes, and beliefs of Paulinian College students towards Diabetes to evaluate the degree of need for appropriate plans and interventions. Upon promoting health awareness, the unrealistic perception of Diabetes may break down their likelihood of taking preventive actions to diminish the threat. It can be made to optimize attention control, compensate for the risk of complications, and mitigate misconceptions to supplement facts and further recommend and evaluate the effectiveness of strategic awareness today.

Framework

The authors anchored the concept of the research study on the study of Liu et al. (2016) titled "Use of knowledge-attitude-behavior forces for Chinese adults undergoing maintenance hemodialysis." They employed the *Knowledge-Attitude-Behavior Theory*, proposing that health knowledge and information lay the foundation for establishing active and correct beliefs and attitudes toward diseases. For instance, attitudes are identified as the driving force in modifying patient behavior (Du SZ, Yuan CH, Chinese Journal of Nursing, 2009). Research has shown essential correlations between disease occurrence, development, and prognosis. Psychological, dietary, exercise, and lifestyle interventions can either positively or negatively contribute to disease recurrence. Improvements in health knowledge and the development of good health skills are crucial for enhancing patient health. Self-management should emphasize the patient's recognition of their problems and involve their families. The adoption of healthy behaviors can encourage the progressive development of positive ideas and attitudes in patients and their families, making it essential for them to actively seek out information. Studies by Ren et al. (2010) and Zhao et al. (2011) demonstrated the successful application of the knowledge-attitude-behavior paradigm in helping patients develop positive beliefs and change unhealthy behaviors.

The basis of this study, anchored with the authors Liu et al. (2016) and their KAB theory, guided the conduct of this current research, representing the knowledge, attitudes, and beliefs of Paulinian College students. The study was divided into two parts. First, the determination of the students' profiles served as the independent variables, consisting of *age, sex, course taken, year level, and socio-economic status*. On the other hand, the independent variables illustrated the interplay of the level of knowledge, attitudes, and beliefs of the respondents regarding Diabetes. Specifically, *Knowledge Acquisition* is considered to examine correct information the respondents acquired over the years, specifically disease-related and dietary knowledge education about Diabetes. The *Behavior*



Formation that corresponds to the respondents' attitudes was also considered. Attitudes were formed explicitly by behaviors strengthened with the adoption of healthy practices such as physical activity and the use of medications, as well as adherence to long-term treatment for Diabetes. Lastly, *Belief Generation* was considered and this refers to the beliefs generated by the respondents, including psychological and social behaviors, and a self-inspection index developed over the years about Diabetes. In the end, the study offered significant conclusions and recommendations as its significant contribution to the field of health science and healthcare services delivery.

Research Objectives

This study determined the knowledge, attitude, and beliefs of Paulinian College students towards Diabetes. Specifically, this study determined to:

1. The demographic profile of the respondents in terms of:
 - 1.1. age;
 - 1.2. sex;
 - 1.3. course;
 - 1.3. year level, and
 - 1.4 socio-economic status.
2. The level of respondent's knowledge, attitude, and beliefs towards Diabetes in terms of:
 - 2.1. knowledge acquisition (knowledge);
 - 2.2. behavior formation (attitudes), and
 - 2.3. belief generation (belief).
3. The significant degree of difference in the respondent's level of knowledge, attitudes, and beliefs on Diabetes when they are grouped according to their profile.
4. The significant degree of difference in the respondent's level of attitudes and beliefs on Diabetes when grouped according to their level of knowledge.
5. The significant degree of correlation between attitudes and beliefs.
6. The recommendations based on the findings of the study.

METHODS

This research applied the descriptive quantitative research design employing the survey approach. 218 Paulinian college students as respondents who belong to different departments at St. Paul University Surigao responded to the study through the simple random sampling technique. The questionnaire was modified and validated by experts and underwent reliability testing through Cronbach's alpha. The questionnaire included an informed consent section, addressing knowledge, attitudes, and beliefs. The average rating scale was inspired by the Handbook of Psychology and Diabetes, ensuring high internal consistency with theoretical and practical knowledge. The final version of the scales had a multiple-choice format, with scores ranging from 0 to 73. The study used various statistical tools to analyze the knowledge, attitudes, and beliefs of Paulinian College students toward diabetes. The frequency count and percentage distribution were used to determine the respondents' profile, while mean and standard deviation were used to assess knowledge acquisition, behavior formation, and belief generation. ANOVA was used to analyze significant differences in knowledge, attitudes, and beliefs. The Shapiro-Wilk test was used to determine the distribution of questionnaires, which departed significantly from normality.

Ethics in the conduct of this research were strongly considered for the academic integrity of this study. Ethical research practices in educational institutions are strongly followed since it is always the goal of educational research to contribute to the general welfare of the academic community and to generally create measurable information or data that will eventually add to the increase of human knowledge (Ederio, 2023) such as the essence depicted by this study.



RESULTS AND DISCUSSION

I – Demographic Distribution of the Respondents

Table 1. Profile Distribution of the Respondents

Profile	f (218)	%
Age		
18	16	7.30
19	74	33.90
20	37	17.00
21	43	19.70
22	26	11.90
23	18	8.30
24	4	1.80
Sex		
Female	129	59.20
Male	89	40.80
Course		
Accnt. Info.	6	2.80
Accountancy	9	4.10
Arts	14	6.40
Bus. Ad.	5	2.30
Civil Engr.	23	10.60
Comp. Engr.	3	1.40
Criminology	18	8.30
Early Childhd Ed.	1	0.50
Elem. Educ.	8	3.70
Hospitality Mngt	15	6.90
Info Tech	8	3.70
Lib. Info. Sci.	2	0.90
Mining Engr.	8	3.70
Nursing	76	34.90
Physical Educ.	8	3.70
Psychology	8	3.70
Sec. Educ.	5	2.30
Tourism	1	0.50
Year Level		
1st Year	114	52.30
2nd Year	26	11.90
3rd Year	52	23.90
4th Year	26	11.90
Socio-Economic Status		
Less than P9,100.00	54	24.80
between P9,101 and P18,200	53	24.30
between P18,201 and P36,400	76	34.90
between P63,700 and P109,200	32	14.70
between P109,201 and above	3	1.40



Regarding the demographic distribution of the respondents, the largest age group in the sample pool is 19 years old comprising 33.90% of the total group, while the smallest age group is 24 years old (1.80%). The age distribution of the sample is relatively evenly spread out, with no age group representing more than one-third of the total group. The largest number of sampled respondents in the course category is Nursing comprising 34.90% of the total group. Meanwhile, the smallest number of respondents were early childhood education, tourism, and library and information science students each representing only 0.50% of the total group, respectively. In terms of year level, the largest samples count are the 1st year students (52.30%), while the 2nd year and 4th year levels were only 11.90% of the total group. The majority of the respondents are female, with 129 (59.20%) of the total group. The remaining 89 individuals (40.80%) of the total group are male. Then finally, in terms of the respondents' socioeconomic status, the largest number of the respondents belong to the category between P18,201 and P36,400 with 34.90% of the total group. On the other hand, only 1.40% of the group is between P109,201 and above income.

II – Level of Respondent’s Knowledge (Knowledge Acquisition), Attitudes (Behavior Formation), and Beliefs (Belief Generation) on Diabetes

Table 2.1 Respondent’s Knowledge Acquisition on Diabetes

Questions and Answers	No. of respondents with correct answers (out of 218)	% of the total
1. What does insulin do to your body? <i>It helps the cells take in the blood sugar.</i>	81	37.20
2. How will diabetes affect your body? <i>It will cause uncontrollable blood sugar level.</i>	178	81.70
3. If diabetes is NOT controlled, which part of the body is most affected? <i>Liver, Eyes and kidneys, Heart</i>	133	61.00
4. Which of these is not a type of Diabetes? <i>None of the following (Prediabetes, Gestational Diabetes, Diabetes)</i>	85	39.00
5. Which of the following will put you at risk of acquiring type 2 diabetes mellitus? <i>Being overweight, Inactive, being 45 or older</i>	113	51.80
6. A person who is dependent to insulin injection because his liver is not capable of producing insulin is diagnosed with type 1 diabetes mellitus. <i>False</i>	47	21.60
7. Type 1 diabetes can occur at any age, with more cases among children and adolescence. <i>True</i>	160	73.40
8. Type 2 Diabetes is described as having our pancreas produce insulin but there is elevated blood sugar level. <i>True</i>	135	61.90
9. Diabetes mellitus is considered infectious disease. <i>False</i>	101	46.30
10. Diabetes mellitus is NOT curable. <i>True</i>	100	45.90
11. Eating too much sugar on a regular basis cause diabetes mellitus. <i>True</i>	152	69.70



12. Diabetes mellitus can lead to decrease sensitivity of your hands and legs. <i>True</i>	143	65.60
13. Diabetes mellitus makes you feel thirsty always. <i>True</i>	149	68.30
14. Having a parent, or sibling with diabetes mellitus increases my risk of acquiring the disease. <i>True</i>	125	57.30
15. Diabetic mellitus can lead to slow, or non-healing wounds because of poor circulation. <i>True</i>	176	80.70

As shown in Table 2.1., 81.70% or 178 out of the 218 respondents got the correct answer and agreed that *Diabetes will cause uncontrollable blood sugar levels*. It is the knowledge item that where majority or the highest number of the respondents were knowledgeable of. On the other hand, only 21.60%, or 47 out of the 218 Paulinian College students were correct in knowing that it is not true that *a person who is dependent on insulin injection because his liver is not capable of producing insulin is diagnosed with type 1 diabetes mellitus*. This implies that majority of the college students have a low level of knowledge in terms of this fact. By generally looking at the table, only three (3) knowledge questions show data where the respondents are highly knowledgeable (correct individuals are more than 70%: #2, #7, and #15). 50-69% count denotes that the respondents are moderately knowledgeable in such knowledge items (nos. 3,5,8,11,12,13, and 14) while 40% and below count indicates that only a few are knowledgeable in these Diabetes facts (nos. 1,4,6,9, and 10). A study in Jeddah, Saudi Arabia, found that university students have a good understanding of diabetes and a positive attitude towards it. Also a quantitative study in Saudi Arabia found that high educational status and good knowledge about diabetes were positively associated with a favorable attitude toward diabetes. Factors such as education, maleness, marriage, longer diabetes duration, and a positive attitude toward complications were also found to be associated with a favorable attitude toward diabetes. However, the level of agreement varies linearly, with the difference between strongly agree and strongly disagree being smaller (Wadaani, 2013).

Table 2.2 Summary Level of the Respondents’ Knowledge on Diabetes (Knowledge Acquisition)

Knowledge Acquisition	f (218)	%
Not Knowledgeable (scored 0)	0	0
Less knowledgeable (scored 1-6 points)	22	10.09
(Moderately) Knowledgeable (scored 7-12 points)	148	67.88
Highly knowledgeable (scored 13-15 points)	48	22.01

Table 2.2. shows the summary level of the Paulinian College Students’ knowledge of Diabetes as described by their total number of scores attained from a 15-item knowledge quiz on Diabetes. In relation to both tables 2.1. and 2.2., the majority of the Paulinian college student respondents were found to be moderately knowledgeable in Diabetes comprising 67.88% or 148 out of 218. They got scores between 7–12 on a 15-item quiz about Diabetes. Forty-eight (48) or 22.01% of the 218 Paulinian college student respondents were found to be highly knowledgeable about Diabetes. Meanwhile, 10.09% or 22 out of the 218 Paulinian college student respondents are found to be less knowledgeable as indicated by their scores ranging from 1-6 points. In all fairness, none of the respondents were knowledgeable about Diabetes. The table’s results are expected since all respondents are still schooling in college. Both the percentages and frequency counts denote a normal distribution of the respondents in terms of knowledge about diabetes. Students who are moderately or highly knowledgeable about diabetes attribute their learning in school. Health education is integrated in the curriculum and programs on Health Awareness, particularly on Diabetes, are regularly conducted for everyone’s knowledge and awareness. In relation to Table 1, most of the respondents are Nursing students which could have contributed to the significantly high number of moderately and highly knowledgeable individuals about Diabetes (Mainous et al., 2007; Patridge, 2007; and Lowry et al., 2000).



Table 2.3 Respondents’ Attitudes (Behavior Formation) Toward Diabetes

Indicators	M	SD	VR	I
1. Understanding diabetes mellitus will help in preventing the complications of DM.	3.63	0.52	SA	VH
2. There is a need to control sugar and carbohydrate foods to prevent DM.	3.50	0.71	SA	VH
3. I am conscious in consuming a well-balanced diet.	3.31	0.67	SA	VH
4. It is important to minimize sugar intake in the diet.	3.50	0.59	SA	VH
5. I am comfortable with undergoing test to check if I have diabetes mellitus.	3.43	0.67	SA	VH
6. I have confidence that sedentary lifestyle can lead to diabetes mellitus.	3.28	0.68	SA	VH
7. Eating a balanced diet should be a norm.	3.45	0.64	SA	VH
8. I am prepared to have my blood sugar level checked on a regular basis.	3.36	0.66	SA	VH
9. I know the importance of having regular check-ups if one has diabetes mellitus.	3.45	0.64	SA	VH
10. People with problems in controlling blood sugar must consult a physician.	3.54	0.67	SA	VH
11. I look forward attending symposiums about diabetes.	3.33	0.67	SA	VH
12. I am passionate in minimizing sweets in my diet.	3.24	0.70	MA	MH
13. It is reassuring to know that my family is aware about diabetes.	3.54	0.59	SA	VH
14. It will be a satisfying teaching if I will be able to share facts about diabetes with my family and relatives.	3.51	0.61	SA	VH
15. I do not have to worry about diabetes if I follow a well-balanced-diet and active lifestyle regardless of the course (program) I am currently studying.	3.45	0.67	SA	VH
Average	3.43	0.65	SA	VH

Scale	Interval	Verbal Response	Code	Interpretation	Code
4	3.25-4.00	<i>Strongly Agree</i>	SA	<i>Very High</i>	VH
3	2.50-3.24	<i>Moderately Agree</i>	MA	<i>Moderately High</i>	H
2	1.75-2.49	<i>Disagree</i>	D	<i>Moderate</i>	M
1	1.00-1.74	<i>Strongly Disagree</i>	SD	<i>Low</i>	L

As shown in Table 2.3., the results revealed that the respondents highly manifested strong attitudes forming their behavior towards Diabetes. It is also worth noting that the Paulinian College students rated themselves very high in indicator 1 implying that *understanding diabetes mellitus will help in preventing the complications of DM* (M=3.63; SD= 0.52; Strongly Agree; Very High Attitude). Since the respondents are mostly moderately and highly knowledgeable, it is logical that they also believe that understanding the facts about Diabetes will truly help in preventing complications and problems related to Diabetes. On the other hand, despite their moderate and high knowledge about Diabetes, the same respondents moderately agree on *passionately minimizing sweets in their diet* (M=3.24, SD=0.70; Moderately Agree; Moderately High). This supports the Department of Health’s record and data that Diabetes is really one of the leading mortality causes of Filipinos because of the diet and lifestyle where sweets are significantly part of the Filipinos’ diet (Montemayor, 2023; PNA, 2021; PSA, 2021; Mainous et al., 2007; and Lowry et al., 2000).



Table 2.4 Respondents’ Beliefs (Belief Generation) Toward Diabetes

Indicators	M	SD	VR	I
1. Ants may go after a Diabetic person’s urine.	3.13	0.89	MA	MH
2. The younger a person eats consuming high carbohydrate diet, rich in sugar, the greater the chance of acquiring DM.	3.31	0.67	SA	VH
3. Older people are the ones who acquires diabetes.	2.86	0.92	MA	MH
4. Diabetic persons should avoid sugar and sweet at all cost.	3.33	0.72	SA	VH
5. People with diabetes should only consult physician if they are sick.	3.41	0.71	SA	VH
6. Ampalaya, pechay, okra, kamote tops, kalabasa, etc. can help cure diabetes.	3.27	0.72	SA	VH
7. Herbal plants and supplements are enough to cure diabetes.	2.89	0.94	MA	MH
8. Losing weight will help manage diabetes mellitus.	3.23	0.76	MA	MH
9. Herbal medicines like insulin plant will help manage diabetes mellitus.	3.33	0.63	SA	VH
10. Exercising at least 30 minutes a day can help manage diabetes.	3.48	0.61	SA	VH
11. People with diabetes experience slow healing of their wounds.	3.58	0.56	SA	VH
12. Eating low sugar snacks & low-fat meals can prevent Diabetes in the future.	3.43	0.64	SA	VH
13. Regular physical exercise will help prevent Diabetes.	3.47	0.62	SA	VH
14. Maintaining a normal body weight will aid in controlling Diabetes.	3.45	0.63	SA	VH
15. Diabetes is a serious disease.	3.68	0.55	SA	VH
Average	3.32	0.71	SA	VH

Scale	Interval	Verbal Response	Code	Interpretation	Code
4	3.25-4.00	Strongly Agree	SA	Very High	VH
3	2.50-3.24	Moderately Agree	MA	Moderately High	MH
2	1.75-2.49	Disagree	D	Moderate	M
1	1.00-1.74	Strongly Disagree	SD	Low	L

Beliefs generated by the Paulinian College Students, including psychological and social behaviors spawned over the years, described their perception of being sure about Diabetes, particularly emphasizing a high level of agreement that *Diabetes is a serious disease* (indicator 15; M=3.68, SD=0.55; Strongly Agree; Very High Belief). It was found that respondents focused on positive and supportive experiences about the disease leading to the generation of their beliefs about the said Diabetes Miletus. On the other hand, indicators 1,3,7 and 8 answered obtained ratings from the college students implying that they moderately agree that *ants may go after a Diabetic person’s urine* (M=3.13, SD=0.89; Moderately Agree; Moderately High Belief), that *older people are the ones who acquires diabetes* (M=2.86, SD=0.92; Moderately Agree; Moderately High Belief), that *herbal plants and supplements are enough to cure diabetes* (M=2.89, SD=0.94; Moderately Agree; Moderately High Belief), and that *losing weight will help manage diabetes mellitus* (M=3.23, SD=0.76; Moderately Agree; Moderately High Belief). Seemingly, all indicators were partly included in lack of evidence/misinformation in a non-scientific approach, hence, belief generation. Ants may be attracted to urine of people with diabetes due to high blood sugar levels, but this is not a definitive sign of diabetes. Blood tests are necessary to confirm a diagnosis, and other factors may also cause sugar to be present in urine. It is important to consult a doctor if you notice ants congregating around your urine or experience other symptoms of diabetes. Diabetes doesn't choose age, and it can affect anyone, even children or newborns. Herbal plants and supplements are not enough to cure diabetes, and there is no known cure. The National Center for Complementary and Alternative Medicine (NCCAM) warns that there is not enough scientific evidence to suggest complementary medicine will help people with diabetes. Some herbs and supplements may relieve diabetes symptoms and reduce



the risk of complications, but more research is needed to fully understand their effectiveness and safety. The study by Carrier MA (2021) highlights diabetes as a significant health issue affecting 34.2 million people globally. However, respondents often believe that only older people acquire diabetes, which may be due to misconceptions about the disease's severity. Diabetes can affect people of all ages, not just older individuals. A possible misconception is that diabetes is more common among uneducated people than educated people. Misconceptions can persist due to lack of education and different exposure fields. Studies have shown that providing education on diabetes self-management can help correct suboptimal knowledge and false beliefs. Cultural beliefs and values also influence attitudes towards diabetes and affect the acquisition and interpretation of knowledge about the disease. Perception of risk factors for diabetes can also influence beliefs about the disease. Therefore, there is a pressing need to heighten the people's awareness of diabetes risk and to develop health education and behavior change plans that are both relevant and effective for young adults such as the kind of the study's respondents (J Allied Health, 2016).

Lastly, the data yielded after connecting the points and ideas in Tables 2.3 and 2.4 tells us that the respondents, in this case are the Paulinian college students, need lifestyle discipline and control in order to manage Diabetes Miletus or rather prevent from having one. As previously mentioned, the respondents are quite not very much agreeable to *passionately minimize sweets in their diet* but greatly accept and highly agree to the fact that *eating low sugar snacks & low-fat meals can prevent Diabetes in the future* (as shown in Table 2.4, indicator 12.) (J Allied Health, 2016; Mainous et al., 2007; Patridge, 2007; and Lowry et al., 2000).

III – Significant Degree of Difference in the Respondent's Level of Knowledge, Attitudes, and Beliefs about Diabetes Miletus when Grouped According to the Students' Profile Variables

Table 3. Significant Degree of Difference in the Respondent's Level of Knowledge, Attitudes, and Beliefs about Diabetes Miletus when Grouped According to the Students' Profile Variables

Independent Variables	Dependent Variables	H/U	p-value	Decision	Degree of Difference
<i>Age</i>	Knowledge Acquisition	3.909	0.689	Do not reject Ho	Not Significant
	Behavior Formation	15.452	0.017	Reject Ho	Significant
	Belief Generation	14.204	0.027	Reject Ho	Significant
<i>Sex</i>	Knowledge Acquisition	5505.000	0.570	Do not reject Ho	Not Significant
	Behavior Formation	4402.500	0.003	Reject Ho	Significant
	Belief Generation	4739.000	0.028	Reject Ho	Significant
<i>Course</i>	Knowledge Acquisition	24.823	0.099	Do not reject Ho	Not Significant
	Behavior Formation	33.806	0.009	Reject Ho	Significant
	Belief Generation	15.916	0.530	Do not reject Ho	Not Significant
<i>Year Level</i>	Knowledge Acquisition	4.006	0.261	Do not reject Ho	Not Significant
	Behavior Formation	2.123	0.547	Do not reject Ho	Not Significant
	Belief Generation	2.796	0.424	Do not reject Ho	Not Significant
<i>Socio-Economic Status</i>	Knowledge Acquisition	7.380	0.117	Do not reject Ho	Not Significant



Behavior Formation	14.994	0.005	Reject Ho	Significant
Belief Generation	12.191	0.016	Reject Ho	Significant

$p\text{-value} < 0.05 = \text{Reject } H_0$

Table 3 presents the significant degree of difference in the respondent’s level of knowledge, attitudes, and beliefs about Diabetes Miletus when grouped according to the students’ profile variables. It was revealed that the behavior formation and belief generation significantly vary with respect to the respondents’ age, sex, and socio-economic status while significantly varying too on behavior formation when grouped according to course programs.

Gender plays a significant role in diabetes knowledge, with younger people generally having less knowledge about the disease than older adults. Younger people are more likely to view diabetes as a treatable disorder and have better health than older adults, making them more likely to assess their risk more realistically. However, a study in Ajman, UAE, found no significant differences in health behavior between participants with and without a family history of diabetes. Despite exposure to various sources of information, 70% of participants knew about diabetes, but only over half could link obesity and physical inactivity as risk factors. The study recommends health professionals engaging in educational settings to enhance health-related knowledge and promote healthy lifestyle practices (Wadaani, 2013).

It was also found that men have less knowledge about diabetes and a negative attitude towards the disease, contrasting with women's findings. This may be due to factors such as exposure to information, education, and cultural beliefs. However, other studies found no significant difference in awareness, suggesting that gender inequalities in knowledge can lead to gender differences in diabetes management. Additionally, older individuals tend to have more traditional religious beliefs compared to younger individuals who may lean towards more progressive or non-religious perspectives (Centers for Disease Control and Prevention, 2023).

A cross-sectional study in Ghana found significant differences in students' knowledge and awareness of type 2 diabetes mellitus based on their discipline of study leading to beliefs generation. Family and Consumer Science students had more general knowledge and awareness of diabetes than Business Administration students, and more knowledge of diabetes symptoms, treatment, and complications. Psychology students had more general knowledge and awareness than Business Administration students, and more knowledge of diabetes symptoms, treatment, and complications. No significant difference was found between the knowledge and awareness levels of Family and Consumer Science and Psychology students. Understanding demographic factors and beliefs related to academic pursuits could help target effective diabetes education among students (e.g., Al Shaffer et al., 2008; Al-Sarayra & Khalidi, 2012; Deepa et al., 2014; Fezeu et al., 2010; Gillani et al., 2018).

Research on health education programs' impact on knowledge highlights a knowledge gap. Studies on health literacy and knowledge gaps provide insights. Communication strategies can guide targeted interventions for less knowledgeable individuals. Understanding knowledge disparities based on age, gender, and socioeconomic status can help develop interventions. Empowerment through education can empower respondents to make informed decisions about their health. This knowledge could inform public health policies to improve health literacy and knowledge about chronic conditions like diabetes.

IV – Significant Degree of Difference in the Levels of Attitude and Beliefs on Diabetes With Respect to Respondents’ Knowledge of Diabetes

Table 4. Significant Degree of Difference in the Levels of Attitude and Beliefs on Diabetes With Respect to Respondents’ Knowledge of Diabetes

Factors		p-value	Decision	Difference or Relationship
Knowledge	Attitude	0.002	Reject Ho	Significant
	Beliefs	0.042	Reject Ho	Significant

$p\text{-value} < 0.05 = \text{Reject } H_0$



Generally, the results say that there is a significant degree of difference in the levels of attitude and beliefs on diabetes with respect to respondents' knowledge about Diabetes Miletus. This implies that the level of knowledge among the Paulinian college students about Diabetes also determine or define their level of attitudes toward and beliefs about the disease. The scientific communities operate within certain paradigms, which are widely accepted frameworks of understanding. When individuals are exposed to new knowledge or paradigms, their existing beliefs may be challenged or replaced. This shift in knowledge often leads to corresponding changes in attitudes and perspectives. That individuals with varying knowledge levels may operate within different cognitive paradigms. As their knowledge grows or evolves, so too may their attitudes and beliefs. This can result in significant differences in how individuals perceive and interpret information based on their level of understanding (Liu et al., 2016; Zhao et al., 2011; Ren et al., 2010; Du SZ, Yuan CH, Chinese Journal of Nursing, 2009; and Kuhn, n.d.).

V – Significant Correlation between the Respondents' Attitude Towards and Beliefs About Diabetes

Table 5. Significant Correlation between the Respondents' Attitude Towards and Beliefs About Diabetes

Factors	r(x, y)	p-value	Decision	Interpretation
Attitude Beliefs	0.596	0.000	Reject Ho	Significant

p-value < 0.05 = Reject Ho

Table 5 presents the significant correlation between the respondents' attitude towards and beliefs about Diabetes. The data presented implies that certain level of attitudes yield a certain level of beliefs towards understanding Diabetes. In the case and context of the study, the behavior formation (attitudes) toward Diabetes correlate with the belief generation (beliefs) of the Paulinian College students about the said disease. Attitudes and beliefs toward diabetes are often correlated because attitudes, which represent individuals' evaluative judgments, influence their beliefs, which are cognitive representations of knowledge. This correlation is discussed in various health psychology literature, such as the work of Ajzen and Fishbein (1980) on the Theory of Reasoned Action. This theory suggests that attitudes, shaped by beliefs and subjective norms, influence individuals' intentions and behaviors. Therefore, one's attitudes toward diabetes can shape their beliefs about the condition, impacting how they perceive its causes, treatments, and preventive measures. Also, as previously mentioned, both Knowledge, Attitudes, and Beliefs are normally associated or related with one another. The attitudes of an individual defines or predicts his or her beliefs. Also, the level of knowledge among the Paulinian college students about Diabetes also determine or define their level of attitudes toward and beliefs about the disease (Liu et al., 2016; Zhao et al., 2011; Ren et al., 2010; Du SZ, Yuan CH, Chinese Journal of Nursing, 2009; and Kuhn, n.d.).

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, the following conclusions were drawn:

College students come from different backgrounds, educational levels, and socioeconomic statuses. This means that no single "status" can accurately represent all college students. Many factors can influence a person's knowledge about Diabetes, such as their age, race, ethnicity, and exposure to Diabetes education. Also, if college students are not receiving accurate and up-to-date information about Diabetes, their knowledge about the condition may be limited. Moreover, college students are more likely to have access to information about Diabetes through their coursework, extracurricular activities, or social networks. They may also be more motivated to learn about Diabetes because they know its associated risks. As a result, their status may not be a major factor in their knowledge about Diabetes. However, it is important to note that more research is needed to confirm these findings. Other factors may influence their attitude toward food preference and nutrition analysis of college students about Diabetes.

The perception of risk factors for Diabetes can influence their beliefs about the disease despite being knowledgeable and having a good attitude toward the treatment of the disease. Their beliefs when considering age, sex, and socioeconomic status revealed a significant degree of difference. While their beliefs, when considering course and year level, do not have a significant degree of difference. In other context, the investigation of beliefs depending on age, sex, and socioeconomic status revealed interesting differences, demonstrating that these variables significantly impact how people form their belief systems. However, the study found no statistically significant variation on beliefs with respect to course and year level showing that the Paulinian College



students' beliefs on Diabetes may not be substantially influenced by the academic context, as indicated by course and year level. Between age and beliefs, Smith et al. (2018) found that individuals' beliefs tend to evolve and become more nuanced with age. This could be due to exposure to diverse perspectives and life experiences over time. Younger individuals might hold more malleable beliefs, while older individuals may have more entrenched worldviews. While sex or gender-related factors can contribute to differences in beliefs. A study by Johnson and Williams (2019) highlighted that societal gender norms can influence the development of certain belief patterns. For instance, men and women might differ in their beliefs about societal roles and responsibilities. On socioeconomic status (SES), SES can shape beliefs through access to education, exposure to different cultural contexts, and economic experiences. A study by Martinez et al. (2020) demonstrated that individuals from different socioeconomic backgrounds tend to have varying beliefs about social justice and economic inequality.

There is a significant difference in the attitudes and beliefs about Diabetes with respect to one's knowledge about the disease. Also, there is attitudes and beliefs significantly correlate when it comes to understanding Diabetes in the level of the College students. Generally, this implies that the higher the knowledge about the disease, the more favorable the attitude of the respondents, and the stronger their beliefs upon understanding Diabetes.

In consideration of the results and conclusions drawn from this research, the following recommendations are offered:

1. Key areas to improve for those who were less knowledgeable and not knowledgeable among university students, a comprehensive action plan is proposed:

- Collaboration with local healthcare professionals and educators will be established to organize workshops, seminars, and Q&A sessions. These sessions can cover topics such as the basics of Diabetes, risk factors, prevention, and management strategies. Encourage active participation through Q&A sessions. This will be allotted to institutional activities with approval to address the researchers' results.
- Assessment will be conducted through surveys and focus group discussions to identify gaps in understanding and misconceptions about Diabetes.
- Encourage the students to be part of a host diabetes screening campaigns within the school clinic to measure blood sugar levels and BMI. Provide students with personalized feedback (including assessment of attitudes and beliefs pre- and post-activity) and guidance on preventive measures based on their results. This hands-on experience can raise awareness and motivate students to take charge of their own and relatives' health.
- After analysis, collaboration with school counselors will help prevent unfavorable attitudes and beliefs about Diabetes and fill the gap of student's lack of knowledge after assessment.
- Integrating diabetes education into relevant academic courses will occur in partnership with academic departments. Organize health fairs within the school clinic, featuring dedicated booths on diabetes awareness. Provide informative pamphlets, brochures, and visual aids to educate students about the impact of Diabetes on overall health. Include engaging activities to make the learning experience enjoyable and memorable. This will help disseminate information and incorporate real-life stories to increase relatability.
- Regular monitoring and adjustments will be made based on feedback and emerging trends in diabetes education, ensuring a lasting impact on the university community's knowledge of diabetes prevention and management.

2. Key areas of those who were Highly knowledgeable and Knowledgeable:

- Facilitate research opportunities for interested students to explore specific aspects of Diabetes, such as epidemiology, genetics, or novel treatment modalities. Encourage participation in research conferences and the publication of findings in reputable journals.
- Engage knowledgeable students to host a school activity that involves the instructors, school nurses, and health care professionals with proper training for continuous evaluation and long-term support plans that will guarantee the sustainability and effectiveness of the initiative. Blood sugar testing and health education not only for the students but also for the staff and institution
- The activity will be evaluated and proceed to community outreach initiatives, where they can apply their expertise to educate and empower the community. This could involve organizing workshops, health camps, or awareness campaigns in collaboration with local organizations.



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