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Supplementary Products Intake and Body Mass Index of Regional Science High School for Region VI STEM Students

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ABSTRACT: The main purpose of this study was to assess the pattern of supplement intake, both food and dietary, and the level of Body Mass Index among the 167 STEM students of Regional Science High School for Region VI. A survey questionnaire consisting of questions about the supplementary product intake and the level of body mass index was published through an online platform and was used to gather necessary information on the supplementary product intake and body mass index level of the respondents. Analysis of the collected data about the supplementary products intake and the level of body mass index of STEM students was done with the use of frequency count and mean. The results showed that the level of supplementary products intake of Regional Science High School for Region VI, STEM students in terms of food supplements and dietary supplements was "moderate". The study also showed that Food Supplements has the highest mean followed by dietary supplements. Results on the level of body mass index of the respondents was under the classification "normal weight" with the highest mean for the male students and followed by the mean for female STEM students of the Regional Science High School for Region VI.

KEYWORDS: Food supplements, Dietary supplements, Body Mass Index (BMI), STEM, Supplementary products intake.

Introduction

A remarkable percentage of the population take dietary supplements nowadays (Gumaru, 2014). The reasons why an individual resort to taking supplementary products is for them to improve their performance. Also, to promote their overall health and fitness in order to prolong vitality and delay the appearance of both age-related and health-related problems (Devla et al., 2011).

The positive effect of taking supplementary products to an individual is that it improves the diet quality of consumers. It affects the health indicators of a person particularly their Body Mass Index (BMI) and arrives to a conclusion that taking supplementary products can be linked with the BMI of an individual (Anders & Schroeter, 2017). The use of dietary supplements is also associated with lower Body Mass Index (Bailey et al., 2013).

Moreover, the researchers have also personally observed that children who consume supplements tend to gain weight and experience an increase in height. The possible link between taking supplements and increase in the Body Mass Index sparked the interest of the researchers to investigate about the level of supplements intake and Body Mass Index.

According to a study conducted by Mandal (2019), healthcare professionals use the Body Mass Index of a person to find out if they are underweight, normal, overweight, or obese. The BMI status is used in order to determine the health risk of a person. According to the World Health Organization (2020), BMI or also known as the Quetelet index, is a statistical measure that uses the height and weight of a person to determine if they have a healthy body weight in accordance to a person's height. It is an essential diagnostic instrument in evaluating weight complications because of its accessibility.

Based on an international study entitled, "The association between weight perception and BMI among high school students" it showed that the perception of weight is not similar to the calculated BMI. Knowledge and awareness about the proper calculation of the BMI will be beneficial in order to have an accurate weight perception which will lead to a healthier eating habit and lifestyle (Brener et al., 2004).

Additionally, in a local study conducted by Daclan (2013), which aims to determine the presence of weight problems through a survey about their nutritional intake and eating habits and which also uses the knowledge about BMI, the result showed that the weight problems of students are a result of their poor eating habits and deficiency in nutritional intake. Furthermore, a study that was conducted in the Philippines which evaluates the relationship between childhood obesity and snacking through measuring their body mass index and getting information about their snack habits showed that the obese group is more inclined to an extra serving of low-quality snacks and sweetened beverages compared to other weight groups (Suarez et al., 2013).

Moreover, food supplements are another type of supplementary product. A food supplement, as stated in European Union Law, is any food, which intends to supplement the normal diet (Food Standards Agency, 2018). According to a

journal article entitled "Dietary Supplement Use in Children and Adolescents Aged ≤19 Years — United States, 2017–2018," released by the Centers for Disease Control and Prevention, which is also based on the 2017-2018 National Health and Nutrition Examination Survey (NHANES), the dietary supplement use remained constant and rampant among U.S. children and adolescents aged 19 and below, which is 34.0%. Also, the intake of two or more dietary supplements varied by demographic physiognomies had increased from 4.3% in 2009-2010 to 7.1% in 2017-2018 (Stierman et al., 2020).

Furthermore, the results of the 2018 survey conducted by the Council for Responsible Nutrition (CRN) showed an increase in dietary supplement intake of U.S. individuals from 65 percent in 2009 to 75 percent. In this international study, it was also found that the main reason U.S. individuals take dietary supplements is for overall health and wellness.

In addition, another local study entitled "Survey on Awareness, Perception, and Extent of Usage of Nutraceuticals and Dietary Supplements in Metro Manila" as cited by Ong et al. (2011), concluded that the level of awareness and usage of nutraceutical products in comparison to dietary supplements in Metro Manila may be considered low. Similarly, a local study conducted by Capanzana et al. (2019) established that nutrient intakes were highly inadequate among Filipino schoolchildren and adolescents, predominantly amongst the poor and those living in rural areas.

Information and explanations indicated above demanded research on the supplementary intake of RSHS VI students. It encouraged the researchers to conduct a comprehensive investigation due to the growing prevalence of supplementary intake and limited locally related studies regarding the effects of supplements on the BMI of consumers.

Furthermore, the researchers observed the information obtained from the participants as the study aimed to gather information about the intake of supplementary products of RSHS VI STEM students and find out if there was a difference between the Body Mass Index (BMI) of the students and their supplementary product intake.

Statement of the Problem

The main purpose of this study was to determine the difference between supplementary product intake and the body mass index of STEM students of Regional Science High School for Region VI for the first-semester academic year 2020-2021.

Specifically, this study sought to answer the following questions:

1. What is the level of supplementary products intake of Regional Science High

School for Region VI (RSHS-VI) STEM students in terms of:

a. Food supplements; and

b. Dietary supplements?

2. What is the level of body mass index of Regional Science High School for Region

VI STEM students?

Methodology

Research Design

Descriptive-survey research method was the research design used for this study. Survey research is defined as a collection of information from a sample of individuals through their responses to questions (Check & Schutt, 2012). This type of research provides investigators various methods to recruit participants, collect data, and use different methods of instrumentation. Survey research can also use quantitative research strategies such as questionnaires with numerically rated items (Singleton & Straits, 2009 as cited by Ponto, 2015). A questionnaire is a set of standardized questions or items, which follow an established scheme to gather individual data about one or more specific topics (Lavrakas, 2008).

Additionally, descriptive research is commonly outlined as a type of quantitative research that aims to recognize characteristics, frequencies, trends, and categories. It also intends to systematically and accurately describe a population, phenomenon or situation. Moreover, a descriptive research design can utilize a wide variety of research methods to evaluate one or more variables. In this type of research design, the researchers do not control or manipulate any of the variables, instead, the researchers only observe and measures them (McCombes, 2020).

The independent variable in this study was the supplementary products intake with sub variables namely food supplements and dietary supplements. Whereas, the dependent variable was the level of body mass index of students.

In addition, frequency distribution, frequency count, percentage, and means were applied in the analysis of data.

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Participants

The respondents of this study were 167 out of 293 STEM students of Regional Science High School for Region VI using stratified proportion sampling and simple random sampling using the Slovin's formula with 0.05 or 5% margin of error.

Table 1. Circulation of STEM student Participants from the Senior High School department

Year Level	N	n
Grade 11		
STEM 1	54	31
STEM 2	53	30
STEM 3	53	30
Total	160	91
Grade 12		
STEM 1	45	26
STEM 2	44	25
STEM 3	44	25
Total	133	76

The respondents were classified according to their age, sex, grade level, and section. In selecting the participants of the study, the fish bowl method was used by the researchers. The participant's names were printed, cut into strips, folded and were put inside a bowl. The researchers randomly picked a paper from the bowl until the target number of respondents as shown in table 2 was reached.

Table 2. Circulation of STEM student participants according to age, sex, grade level, and section.

Variables	f	%
Age		
16-17 years old	85	50.9
18-19 years old	82	49.1
Sex		
Female	103	61.7
Male	64	38.3
Grade Level		
Grade 11	93	55.7
Grade 12	74	44.3
Section		
STEM 1	57	34.2
STEM 2	55	32.9
STEM 3	55	32.9
Total	167	100

Data-Gathering Instrument

The researchers used survey questionnaire as the data-gathering instrument in obtaining information from the participant. According to Martin (2006), questionnaire is used in order to acquire facts and other subjective traits. A survey questionnaire acts as a script that is used by researchers in interacting with their respondents. Therefore, the instrument was utilized as it allowed the researchers to gather necessary information from a large sample group.

The survey questionnaire was divided into three (3) parts. The first part was about the socio-demographic profile of the participants. Part II was about their supplementary products intake which was divided into two categories: food supplements intake and dietary supplements intake. Part III was about the level of body mass index (BMI) of the participants.

Demographic Profile Questionnaire. This was used in determining the personal information of the respondents such as their name, age, sex, and grade level.

Food Supplements Intake Checklist. This was composed of the different type of food supplements that is consumed on a daily basis as well as the frequency of consumption. The type of food supplements that were classified were obtained from WebMD Medical Reference (2020). The food supplement intake checklist was accomplished using frequency scale.

Dietary Supplements Intake Checklist. This was composed of the different types of dietary supplements as well as the frequency of consumption. The different types of dietary supplements were obtained from the Center for Disease Control and Prevention (2019).

Body Mass Index (BMI) Questionnaire. This was composed of 4-item questions about the BMI of the participants. Questions about their height, weight, and the level of BMI were administered. The level of BMI was determined using the BMI Scaling.

Body Mass Index (BMI) Scaling	
BMI	Classification
Below 18.5	Underweight
18.5 – 24.9	Normal Weight
25.0 – 29.9	Overweight
30.0 and above	Obese

The survey questionnaire was associated with the relationship between body mass index and the use of supplementary products. Information that gathered were kept confidential and the participants may refuse to participate any time. All questionnaires underwent content validation by the panel of expert.

Results and Discussions

Level of Supplementary Products Intake of Regional Science High School for Region VI STEM Students

The results in Table 3 specify that among the supplements, "food supplements" has a higher mean M= 3.01 among the respondents with a level of supplementary products intake labeled as "moderate".

In addition to this, the data also showed the level of supplementary products intake per variable. The variable dietary supplements, with a mean M= 2.87 and level of supplementary products intake defined as "moderate".

Overall results found in table 3 revealed that the respondents of Regional Science High School for Region VI STEM students have a "moderate" level of supplementary products intake with sub-variables, namely, food and dietary supplements. The students consume fruits, vegetables, and vitamins in different forms such as capsules, tablets, powders, or syrup to have a healthy body. Thus, the students are knowledgeable about the supplementary products that their developing body needs as a teen and students.

Furthermore, when broken down, it shows that food supplements have the highest mean in terms of supplement consumption with the description of moderate level. This is because most of the students prefer to obtain the supplements that they need directly from the food that they consume on a daily basis. Aside from that, some of the students are not into the consumption of dietary supplements.

Moreover, the result conforms to the research survey conducted in the Philippines by Rakuten Insights. It was stated in the survey that, Filipino adolescents consume food supplements in order to improve themselves in terms of different aspects such as mental, emotional, and physical. The consumption of food supplements is also driven to promote a stronger and healthier immune system (Sanchez, 2020).

On the contrary, the dietary supplements intake of the students ranks as second highest. The dietary supplements intake was described to be at "Moderate". Likewise, the overall supplementary products intake was also described to be of "Moderate". Comparing the dietary supplements intake mean with the overall supplementary products intake mean, they both fall into one description, "Moderate".

The findings of this study support the research study conducted by Gajda et. al. (2016). The study stresses out the dietary supplements intake among adolescents as a common phenomenon, of which the rate has been globally increasing.

Table 3: Mean Results of the Level of Supplementary Products Intake of RSHS VI STEM Students

Variables	Mean	Description
Over All	2.94	Moderate
Food Supplements	3.01	Moderate
Dietary Supplements	2.87	Moderate

Level of Body Mass Index of Regional Science High School for Region VI STEM Students

The results in table 4 specify that the level of Body Mass Index among STEM students of Regional Science High School for Region VI was in normal weight and has an average M= 2.06 as computed using the overall mean of the male and female respondents from the STEM strand.

Overall results found in table 4 specify that, the Senior High School STEM students, both Grades 11 and 12 respondents of Regional Science High School for Region have a "normal weight". The STEM student respondents are well-educated about the Body Mass Index that is appropriate for their age. Because of this, intake of nutrients that were essential for their developmental stage and maintaining a normal weight was evident.

The results as shown in the table reflects that in terms of body mass index, Male and Female students are both classified under the description "Normal Weight" in average. This shows that STEM students of the Regional Science High School for Region VI mostly have a Body Mass Index that ranges from 18.5 to 24.9. The relationship of the weight and height of the students can be considered proportional or balanced and are at low risk when it comes to different illnesses and health conditions.

Specifically, overall health is not guaranteed and this is due to the fact that the status of body mass index does not directly measure the body fat of an individual. The relationship of the weight and height of the students can be considered healthy when these are the only areas of concern as it directs that an individual is free from potential weight problems.

Similar to this is the study conducted by Ho et. al (2017), wherein, Body Mass Index was assessed, it showed results of how there was a significant difference in the BMI of men and women. This is due to the strong relationship between the level of BMI and the body fat and other variations for instance, unlike women, the tendency of men having body fat is lower. It also labeled BMI as a vital tool to observe and monitor an individual's health habits and lifestyle.

Consequently, the data shows that female STEM students of Regional Science High School for Region VI have lower level of body mass index, with a mean score of M=1.92, as compared to the level of body mass index of male students, which have a mean score M= 2. 20. It is believed that female STEM students were health conscious and were more aware of their body figure compared to male students.

The result of this study coincides with the research conducted by Kuan et al. (2011), wherein females were generally more concerned about their body weight, body shape, and eating meals compared to males. Additionally, most females diet more frequently, consume laxatives, and perform exercises to lose their weight. This then resulted for females having a lower body mass index than males.

Table 4:Mean Results of the Level of Body Mass Index of the RSHS VI STEM Students

Variables	Mean	Description
Overall	2.06	Normal Weight
Male	2.20	Normal Weight
Female	1.92	Normal Weight

Conclusions

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

1. The level of supplementary products intake was "moderate" among STEM students of Regional Science High School for Region VI (RSHS VI), based on the collected results of the students' food supplements and dietary supplements consumption. It is due to the fact that STEM students did not rely on one supplementary group. They were aware of the appropriate type and amount of dietary supplements that they may consume at their age. However, they were also mindful of the food supplements needed by their bodies from consuming whole foods. This was shown in the collected data results wherein both food supplements intake and dietary supplements intake were described to be at Moderate Level. Therefore, STEM students of RSHS VI have a balanced and healthy lifestyle. This may lead to the students to become physically strong and less prone to diseases.
2. The level of body mass index of Regional Science High school for Region VI STEM students was labeled as "normal weight" as based on the garnered overall mean of male and female STEM students. It is due to the fact that students consumed appropriate amount of nutrients from supplementary products, such as food and dietary supplements. Students were also aware of the importance of correct proportion of their weight and height at their corresponding age. Therefore, students can be considered to have a healthy body. This may lead to students having lower risks of developing chronic diseases and having more energy to be able to perform certain physical activities. It may also lead to students having a healthier and longer life. Additionally, it may increase their self-esteem and self confidence for having a normal body mass index.

Recommendations

Based on the findings and conclusions, the following recommendations were suggested:

1. To the students, it is recommended for them to be familiar with the different supplements needed by their body. It is also recommended that they ensure the proper intake of these supplements, eat healthy foods and live a healthy lifestyle. To the parents, it is highly recommended for them to provide enough supplement that their child needs. They may guarantee the health of their children by providing the appropriate supplementary products that are needed.

To the teachers, it is recommended for them to monitor the health of their students. It is recommended that they educate their students regarding the positive effects of having a proper supplement consumption. To the school, they may conduct health related seminars that will help their students be knowledgeable with the different supplements that their body needs.

To the nutritionists, it is highly recommended for them to include the intake of supplementary product in a person's health plan. They may consider it as a solution in preventing and curing possible health issues. To the community, they may launch programs and projects that will educate their people. It is highly recommended for them to have a community-based health assessment and promote the health benefits of the appropriate supplementary product consumption.

2. It is recommended to the STEM students to maintain their Body Mass Index at normal by consuming foods and supplements that their developing body needs. To the parents, it is recommended to feed and give their children often with foods and supplements that will retain their Body Mass Index in normal.

To the teachers, it is recommended to engage students in physical activities because it will help them to become healthier. In addition to this, teachers can also help in encouraging students to consume nutritious foods and, include in their discussions, the pros and cons of having a normal Body Mass Index. To the school, it is recommended to monitor the food that is sold in their canteens to make sure that the students are eating foods that are helpful and good for obtaining a normal weight.

It is recommended to the nutritionists to conduct talks in schools and community about health tips and the importance of having a normal Body Mass Index. To the community, it is recommended to monitor the Body Mass Index of the children by weighing and getting their height at least twice a year. In this manner, children who need to improve their Body Mass Index can be determined.

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