THE UNIVERSITY OF THE WEST INDIES
AT ST. AUGUSTINE, TRINIDAD AND TOBAGO

A Research Paper

Submitted in partial requirements

for HUEC 3012

of

The University of the West Indies

Title: The Students at the University of the West Indies, St Augustine Campus perception of Dietary Supplements in enhancing their Mental Capacity

Student Name: Remika Santokhie

Project Supervisor: Dr. Neela Badrie

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Department of Agricultural Economics & Extension
Faulty of Food and Agricultural

THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE, TRINIDAD

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ABSTRACT

Objective: Dietary supplements used for enhancing brain capacity has proven to have an alarmingly high success rate in students, however not all students and the general population alike have a favourable opinion about them. The objective of this research was to ascertain student perceptions of dietary supplements in enhancing their mental capacity.

Methods: A convenient sample of one hundred and twenty participants from the University of the West Indies, St Augustine campus partook in the pilot study during November 2009. A questionnaire was administered to participants which included - demographics, attitudes, perception and opinions. Additionally, statically reports based on most purchased dietary supplements for enhancing brain capacity was obtained from two pharmacies located in north Trinidad in the campus environs.

Results: Most participant of the study were unconcerned with the use of dietary supplements, although the majority of the study found them safe to be consumed. The subjects found that no additional benefits were gained from them, and they were unhelpful in enhancing their mental faculties. The subjects were seen to have an indifferent opinion of supplement usage.

Conclusion**:** Although students do purchase and consume dietary supplements to enhance their mental capacities it can be clearly noted that they have no true belief in its ability. Most purchase and consume these supplements due to urges from parents or a psychological need to prove to themselves that they are utilizing every avenue available to aid their memory retention regardless of if they see an improvement or not.

INTRODUCTION

The Food and Drug Administration (FDA) defines both the terms "dietary ingredient" and "new dietary ingredient" as components of dietary supplements[1] In order for an ingredient of a dietary supplement to be a "dietary ingredient," it must be one or any combination of the following substances: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for use by man to supplement the diet by increasing the total dietary intake (e.g., enzymes or tissues from organs or glands), or a concentrate, metabolite, constituent or extract[1].

According to J.D Fernstrom manufacturer's stake large claims and capital in supplements which they claim will enhance cognition, improve memory, and delay age-related decline. Though these supplements include a forewarning on their packaging: "These statements have not been evaluated by the Food and Drug Administration." Supplement production and marketing are significantly unregulated thus there's no certified manner in which to ascertain whether a product really has the power to strengthen your mental faculties.

Students are assumed to be the number one consumers of these products as it aids them in enhancing their mental capacity and aptitude for work, this is a sought after goal of students as numerous students list their chief complaint as being mentally exhaustion. This study seeks to record and assess the views of the student population with regards to dietary supplements in increasing their mental capacity.

A common trend has emerged within recent years where supplements are taken to improve every aspect of one's life. Research shows that consumption of vitamin and mineral supplements is common in the United States. People report a variety of reasons for taking nutrition supplements, including decreasing their susceptibility to health concerns such as heart

attacks, colds, stress, flu and people also take supplements to increase their energy levels. Other reasons for taking supplements are to alleviate the pain from arthritis, to help reduce the symptoms of irritable bowel syndrome, to reduce cholesterol problems, fibromyalgia, chronic fatigue, immune dysfunction, osteoporosis, obesity, and Alzheimer's[3]

This study is seen as important because it assesses the composition of dietary supplements available, their accessibility, the amount taken, their safety to the consumer, their validity in their claims as well as if they really do more harm than good to the body. Most importantly, this study addresses the student's perception of these supplements, their effective advertising into luring them to try it as well as their general perception on their reliability and their willingness to try them.

Several lines of investigation have shown that the chemistry and function of both the developing and the mature brain are influenced by diet [2] hence this current study was done in line to show the relationship between dietary supplements and enhancing brain capacity.

The results of this study will contribute greatly to the suppliers of these supplements as they will be able to ascertain which supplements are extensively used by students, and thus which they should be promoting at a high than the rest.

LITERATURE REVIEW

According to the United States Dietary Supplement Health and Education Act of 1994 a dietary Supplement is defined as: a product (other than tobacco) that is intended to supplement the diet and bears or contains one or more of the following dietary ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for use by man to supplement the dietary by increasing the total daily intake, or a concentrate, metabolite, constituent, extract, or combinations of these ingredients. (A dietary supplement) is intended for ingestion in pill, capsule, tablet, or liquid form. (A dietary supplement) is not represented for use as a conventional food or as the sole item of a meal or dietary. (A dietary supplement) is labelled as a ‘‘dietary supplement.’’ (A dietary supplement) includes products such as an approved new drug, certified antibiotic, or licensed biologic that was marketed as a dietary supplement or food before approval, certification, or license (United States Food and Drug Administration Centre for Food Safety and Applied Nutrition, 1995). Another definition stated a dietary supplement also known as food supplement or nutritional supplement, is a preparation intended to provide nutrients, such as vitamins, minerals, fibre, fatty acids or amino acids, that are missing or are not consumed in sufficient quantity in a person's diet. Some countries define dietary supplements as foods, while in others they are defined as drugs. Supplements containing vitamins or dietary minerals are included in the Codex Alimentarius Commission, a guidebook on food safety sponsored by the United Nations.

The objective of this pilot study is to investigate the student’s perception of dietary supplements in enhancing their mental capacities. There were no previously recorded studies found similar to this study carried out in the Caribbean. However, there were international studies that had some similarities to this study. The international studies did not examine the

students' perception of the effect of the dietary supplement, but rather looked at effect itself of dietary supplement on the mental capacity of individuals[4]. An article entitled "*Can Dietary Supplements Boost Brain Power?***"** by Elisabeth Andrews discussed many studies relating to dietary supplements and mental capacity. The article stated that more recently, a handful of studies have indicated that certain dietary deficiencies may negatively affect brain function[5], and that supplements could be used to correct these deficiencies. A study supporting this was published in the American Journal of Clinical Nutrition. The study found that women of reproductive age (18 - 35 years) who had low levels of iron in their blood performed more poorly on tests of attention, memory, and learning that those who had sufficient levels of iron. The article revealed that when the women were treated with iron supplements, their scores improved[6]. It was stated that although the biological mechanism for the improvement was unclear, one possible explanation was that low levels of iron can negatively interfere with neurotransmission. Another study stated that dietary folic acid may also play a role in Alzheimer's disease and other forms of dementia[7]. A study published 2007 in the Archives of Neurology found that "higher folic acid intake was related to lower risk of developing Alzheimer's"[8], while, conversely, a separate study published in 2008 in the British Medical Journal found that "low levels of folate in the blood corresponded to a tripled risk of dementia." Science suggests that low levels of folate are associated with higher blood levels of the chemical homocysteine, which, because it can degrade the arteries, is a risk factor for stroke and may also play a role in Alzheimer's. It was noted on the article that the studies discussed indicated that "dietary supplements containing iron, DHA, or folic acid may have some potential to promote brain health."[8] It is important to note, however, that the studies focused on correcting deficiencies in order to restore normal brain function and protect against disease. They do not provide any evidence that intake of these nutrients beyond dietary requirements will result in improved mental performance, or that in the absence of mental impairment they would contribute to any positive change.

A study published in 2008 in the Archives of Internal Medicine entitled "*A randomized trial of beta carotene supplementation and cognitive function in men: the physician's health study II,"* suggested that Beta Carotene supplementation has a positive effect on mental health[9]. Another study entitled *"A randomized placebo-controlled trial of Gingko Biloba for the prevention of cognitive decline,"* revealed that the participants that took the extract showed a lower rate of dementia and reduced decline in memory over the course of three and a half years[10]. It is thought that both beta carotene and Gingko help to counter oxidative damage, and Gingko may have the potential to improve blood flow.

The purpose of my study was to examine the student's perspective of dietary supplements with respect to how it affects mental capacity, rather than the actual effect of dietary supplements on mental capacity.

THEORECTICAL FRAMEWORK

As mentioned in the Literature Review, there were limited studies carried out that studied the use of dietary supplements from a student's perspective and whether they thought the supplements they were taking had any effect on their mental capacity. The theoretical framework for this study was based on the experiences of myself and my colleagues as undergraduate students in the University of the West Indies. From communication with my colleagues, it was noted that students have mixed reviews concerning the use of dietary supplements. Some of my colleagues religiously used a supplement and claimed that the supplement had positive effects on their bodies whilst others stated otherwise. The questionnaire that was distributed was designed to collect information on the different theoretical views about dietary supplements.

A theory of mine was that the students of the University of the West Indies do not rely greatly on the use of supplements to enhance their mental capacity. This theory leads to the view that students are not well educated about the effects of dietary supplements both positive and negative. It was also thought that although some students use the supplements, it was not taken with the intention to enhance mental performance but rather that it was a practice of good health. Another theory that helped to influence the study was that students took supplements due to reason that it was suggested by their parents and was not solely a personal choice made by themselves. It was also thought that the students who made the decision to use dietary supplements were financially able to purchase the supplements as it is thought that supplements are expensive.

The study was based to test these theories. The data collected was recorded in the results and analyzed and discussed in the discussion.

METHOD

The use of dietary supplements by university educated students is of immense importance in enhancing their mental capacities to absorb and retain the vast volumes of material being taught. The objective of this pilot study is to investigate the student's perception of dietary supplements in enhancing their mental capacities. Visitations to the three most prominently visited pharamacies by university students were made. These were the University of the West Indies, St Augustine campus pharmacy located, on campus, the Cumberdale Pharmacy located at the south entrance of the University.

Hypothesis: Students at the University of the West Indies, St Augustine campus do not rely heavily upon the use of dietary supplements in enhancing their mental capacity.

Independent Variable: Dietary supplements used to enhance mental capacity.

Dependent Variable: Student's perception of dietary supplements in enhancing their mental capacity.

STUDY SAMPLE

A convenient sample of one hundred and twenty persons between the ages 19-25 years old, participated voluntarily in the study. All subjects were students of the University of the West Indies, St Augustine campus. The subjects were approached about answering the questionnaire simply by asking them if they would be willing to participate in a project currently be under taken by a final year student completing her final year project, for the BSc. Human Nutrition and Dietetics. Once the student's affirmed that they would be willing to participate in the study , they were then first visually presented with a questionnaire consisting of thirty (30) questions. Subjects were informed to answer all questions honestly and without bias. After this they were left to complete the questionnaire, each person took approximately ten minutes to complete each questionnaire. The sample group consisted of both men and women to note any relationship between gender and dietary supplement usage.

Sampling Error was present in the study. The sample size cannot be representative of population size, but only represents a small section of a massive picture. The limitation of time factor was the main reason for the sampling error.

1.1 Subjects

The population selected for the study was students of the University of the West Indies (U.W.I), St. Augustine Campus. The population size was one hundred and twenty (120) students. The subjects were selected on both stratified and randomized basis. The sample included both male and female students of the various age ranges, (*n*=47 male (39.2%) and *n*=73 female (60.8%) who were between the ages of seventeen (17) to over twenty-seven (27) years, (17-20 yrs; *n*= 45 (37.5%); 21-23 yrs; *n*= 65 (54.2%); 24-26 yrs *n*= 3 (2.5%) and 27yrs+; *n* =7 (5.8%). The students were from four faculties on campus: Engineering (*n=27, 22.5%)*; Humanities and Education (*n= 13, 17.5%*); Science and Agriculture (*n= 43, 35.82%*) and Social Sciences (*n=29,*

24.2%). Both undergraduates and post-graduates full-time and part-time students were included in the study. The students were asked to state their ethnicity: East Indian (*n= 61, 50.8%)*; Afro-Trinidadian (*n= 30, 25.0%)*; Chinese (*n= 4, 3.3%)*; Mixed (*n=24, 20.0%)* and other (*n= 1, 0.8%*). The students were also asked to indicate their financial status. Students allowance/earning in the ranges of: $100-$300 (*n= 25, 20.8%*); $300- $500 (*n= 37, 30.8%*) and above $500 (*n= 54, 45.0%*) per month***. (Refer to Table 1)***

1.2 Questionnaire design and procedure

The study was conducted via a census using a questionnaire as the research instrument to collect data from the respondents. See appendix (A) for questionnaire. The data collection by questionnaire was carried out on the 6th October, 2009 by my colleagues and myself. The questionnaires were distributed using the random stratified sampling method to students on campus grounds using the proportions of students per faculty to ensure that a target population from each faculty was captured ***(Refer to table 2 in Appendix B)*** There were no personal interviews in the study and the questionnaires were given to each student and left in privacy for them to complete. This distribution and recollection of the questionnaires was completed within the same period. The questionnaire focused on the students' demographic information as stated above, their knowledge of dietary supplements, their use of dietary supplements and their reason for using the products, their belief on whether the products have a positive effect on their body, the side effects they encountered due to use of the supplements and whether they would recommend any supplement to a friend naming the supplement.

1.3 Data Collection from the Pharmacies in an around the Campus.

University of the West Indies Pharmacy (Located on the East side of the campus)

The Cumberdale Pharmacy(Located off campus, directly opposite the south entry gates)

A detailed questionnaire in the form of an open ended table **(See Appendix A.2)** was administered to the pharmacist and their aids at the pharmacy questions included, what were the most sought after supplement for enhancing brain capacity by students, how often did they replenish their sources of supplements. Which supplement they thought was most suited for that specific purpose and when did students purchase the supplements most often. Additionally the prices of the supplements were also noted.

After sampling, the researcher separated the questionnaires into four groups, by the faculty by which each respondent belonged to. Analysis on data was then initiated.

1.4 Statistical Analysis

Data was analyzed using SPSS (SPSS Statistical software: Release 16.0 for windows, Chicago, Illinois, 2003). Both numeric and string coding were used for data entries. Statistics included summary statistics such as means and frequencies .Cross tabbing was also done to show the relationships between questions and their outcome was analyzed.

RESULTS

2.1 Demographic Data.

There was a response rate of 100% of each item on the questionnaire. ***Table 1*** shows the socio-demographic characteristics of participants. The majority of participants were young between 21-23 years (54.2%) and female (60.8%). Most participants had a financial status of above $500 per month. The preponderance of participants were of East Indian descent.

Table 1: Table showing Demographic Data of the study population

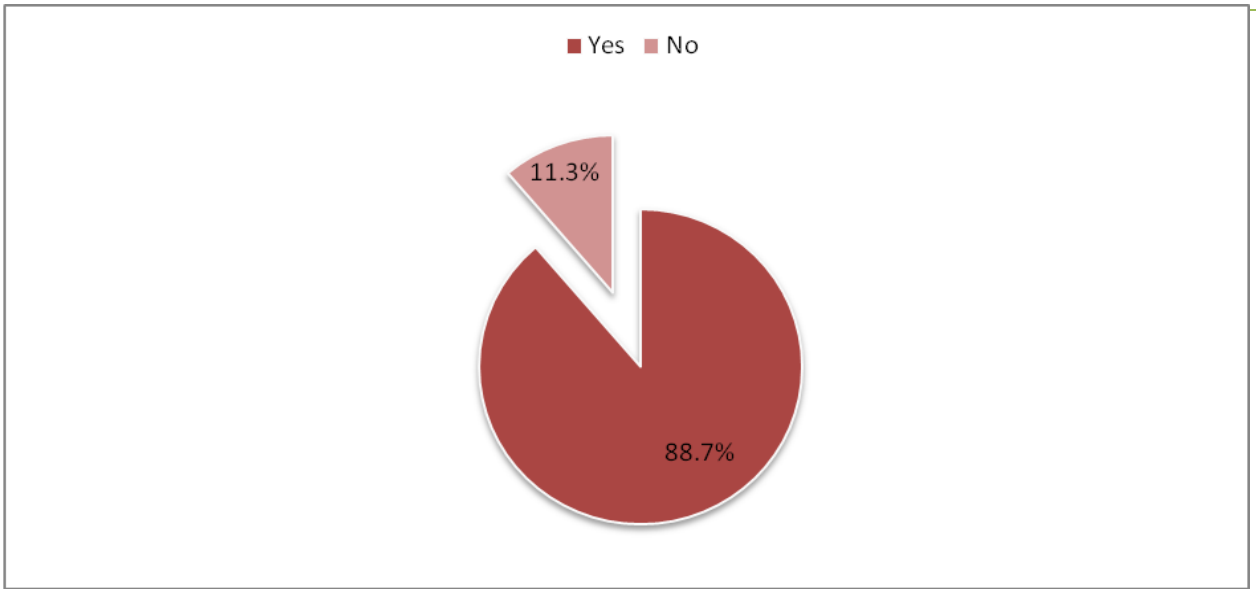
DEMOGRAPHIC	N	%
SEX		
Male	47	39.2
Female	73	60.8
AGE		
17-20 yrs	45	37.5
21-23 yrs	65	54.2
24-26 yrs	3	2.5
Above 27 yrs	7	5.8
FACULTY		
Social Sciences	29	24.2
Science and Agriculture	43	35.8
Engineering	27	22.5
Humanities and Education	21	17.5

ETHNICITY		
East Indian	61	50.8
Afro Trinidadian	30	25.0
Chinese	4	3.3
Mixed	24	20.0
Other	1	.8
FINANCIAL STATUS		
$100-300	25	20.8
$300-500	37	30.8
Above $500	54	45.0

2.2 Subjects' Knowledge of Dietary Supplements

Subjects were asked whether they knew what a dietary supplement was. 88.3% indicated they knew what it was whereas, 11.7% stated they didn't know what a dietary supplement was. ***This is shown in Figure 1.*** However, a definition of a dietary supplement was given and the subjects were asked to indicate whether they have heard of it. 98.3% stated they had heard of a dietary supplement whereas 1.7% stated they had not heard of a dietary supplement. This is shown in ***Figure 2 (see appendix B figure 2)***

Figure 1: Knowledge of what a dietary supplement is.



2.3 Subjects' use of Dietary Supplements

The subjects were asked various questions relating to supplement use. *(See Appendix A.1: Questionnaire numbers 8 to 29).* It was shown that 69.2 % of the population consumes a dietary supplement whereas 30.8% doesn't***(Refer to figure 3).*** The majority of the population, 46.7% stated the reason for consumption was "for general health benefits." 22.5% stated their reason as "to enhance mental capacity." ***(See appendix B figure 4)*** The students were also asked whether they think supplements enhance mental capacity. 48.3% answered "Yes" while 19.2% answered "No" and 30.8% stated they did not know***(See appendix B figure 5).*** The subjects were asked whether they used a specific brand of dietary supplement. 33.3% stated "Yes". A list of supplements was given asking students to indicate whether they consume any of the supplements. The supplements given were 'Brain Vita', 'Akellion', 'Ginkgo Biloba', 'B Complex' or 'other'. 18.3% indicated they use B Complex, 14.2% indicated using Gingko Biloba, 10.8% used Brain Vita, 4.2% used Akellion and 30% indicated using another product. ***(Refer to***

figure 6). The subjects were also questioned on their financial status *(question 5)* 15.5% of the subjects who were in the '$100-300' per month financial bracket consumed dietary supplements. 21.5% of those in the '$300-500' financial bracket consumed dietary supplements and 32.75% of those in the 'Above $500' per month bracket consumed dietary supplements ***(See table 3)***

Figure 3: Do you consume a dietary supplement.

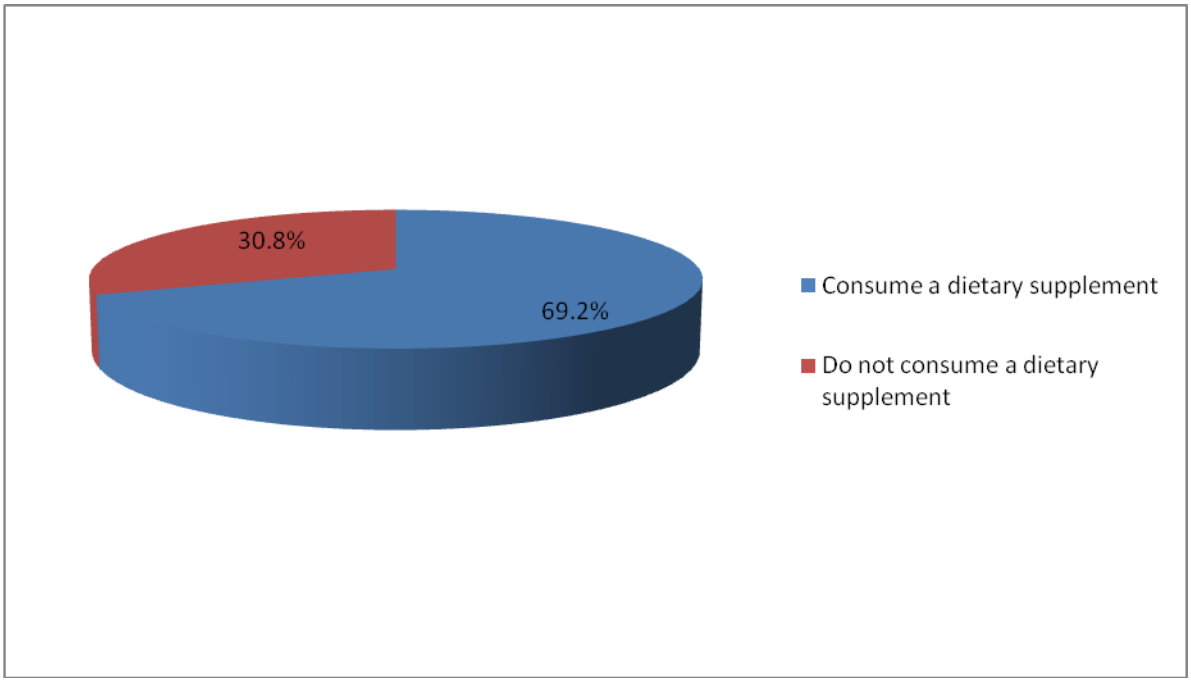


Figure 6 : Supplements consumed from list given

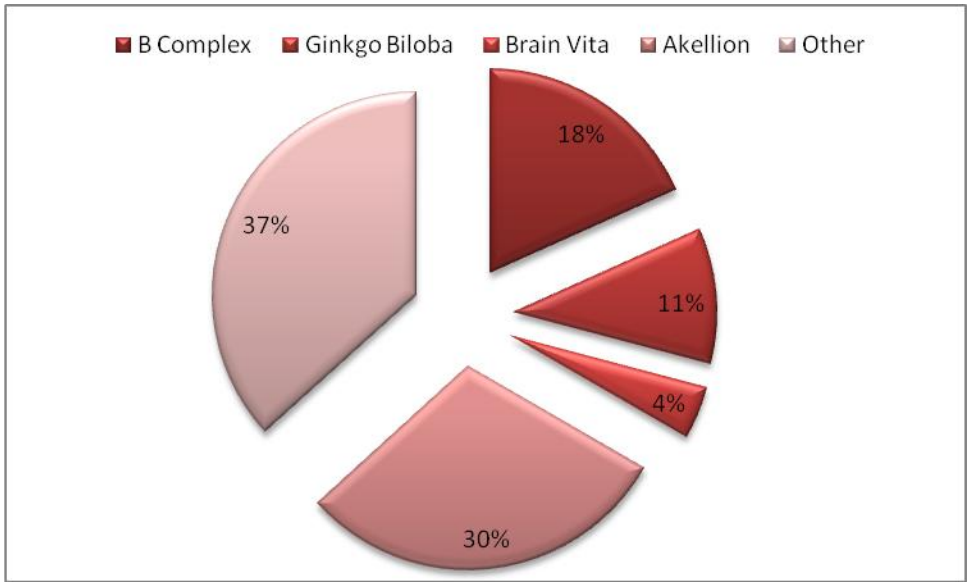


Table 3 : Table showing Monthly allowance v those who consume dietary supplements.

Student allowance per month	% of those who consume a dietary supplement	% of those who do not consume a dietary supplement
$100-300	15.5%	6.03%
$300-500	21.5%	10.34%
Above $500	32.75%	13.79%

2.4 Subjects perception of enhancement and safety of supplements.

Amongst the subjects it was noted that more females than males took dietary supplements to enhance their memory. 25% of the males said they do consume a dietary supplement while 14.7% said they don't. Where as 44.7% of the females said that they consumed a dietary supplement while 15.6% said they did not. ***(See appendix B, figure 7).*** Of those students who consumed dietary supplements 55.42% thought that it enhanced their memory,15.66% saw no difference in their mental capacity and 28.9% were'nt sure if it they saw any improvement.***(See appendix B table 3)*** Of the students who consumed dietary supplements, 86.84% considered them safe to use and 13.15% considered them unsafe (***See appendix B figure 8)***

2.5 Subjects per faculty who use supplements

Amongst the subjects it was noted that with the students belonging to the faculty of Social Sciences 16.6% consumed supplements and 7.5% did not. In the faculty of Science and Agriculture 26.6% consumed dietary supplements and 9.16% did not. In the faculty of Engineering 11.6% consumed supplements while 10.83% did not, and lastly in the faculty of Humanities and Education14.16% consumed supplements while 3.3% did not ***(see table 4).***

Table 4: Table showing the amount of each students from each faculty who consume dietary supplements.

FACULTY	% of students who consume supplements	% of students who do not consume supplements
Social Sciences	16.6%	7.5%
Science and Agriculture	26.6%	9.16%
Engineering	11.6%	10.83%
Humanities and Education	14.16%	3.3%

2.6 Subjects consumption of supplements based on age.

Of the subjects, aged 17-20 years, 26.6% responded that they do consume dietary supplements and 10.8% did not. Of subjects aged 21-23 years 35.83% did and 18.3% did not. Of subjects aged 24-26 years old 2.5% did and 0% did not. And of subjects aged above 27 years 4.16% consumed supplements while 1.66% did not. ***(See appendix B table 5)***

2.7 Data collected from pharmacies

- Cumberdale Pharmacy (located outside the south gate of campus)

Table 6: Showing data collected from Cumberdale Pharmacy

The most common brain enhancing supplements bought by students	How much is stocked /month	Price Range	When is it bought
Brain Vita	3 large bottles containing 120 tablets 6 small bottles containing 60 tablets	$200.00/bottle $115.00/bottle	Throughout the semester
Ginkgo Biloba	3 bottles containing 100 tablets		Closer to exams
Neurozan	10 boxes	$118.00/box	Throughout the semester
Centrum Preformance	Restocked every week		Throughout the semester
B Comlpex	Restocked every week	$1.50/ tablet	Closer to exams
Hemarixin	Every week	$5.00/ tube	Closer to exams

*** All supplements are sold retail

- ***University of the West Indies (UWI) Pharmacy (located on the east side of the campus)***

Table 7: Showing data collected from University of the West Indies (UWI) Pharmacy.

The most common brain enhancing supplements bought by students	How much is stocked /month	Price Range	When is it bought
Biostrath	12 bottles	$1.17/tablet	Throughout the semester
Ginkgo Biloba	6 bottles	$265.00 (sold exclusively by the bottle)	Closer to exams
B Complex	2 bottles containing 120 tablets each	$1.35/ tablet $81.40 /bottle	Through out the semester.
Stressease	12 bottles containing 100 tablets	95 cents each	Throughout the year,however a demand is seen closer to exams

*** All supplements are sold retail except the Ginkgo Biloba.

DISCUSSION

The aim of the study was to assess the students' at the University of the West Indies, St Augustine campus perception of dietary supplements in enhancing their mental capacity. The study was designed to answer the questions of the students' perceived knowledge level and their awareness of the safety, as well as their views on dietary supplements. Data for the study was collected using various methods, all of which proved to be very successful. The results found would be discussed in the following paragraphs starting with the information collected from the questionnaires.

Questionnaires were used as a method of data collection from the students. The questionnaires were useful in providing the demographic information about the student along with their views on the subject. From the questionnaires it was seen that the majority of the students who answered the questionnaire were female with a percentage of 60.8%. The male population made up 39.2%. With respect to faculty, 24.2% belonged to the faculty of Social Sciences, 35.8% to Science and Agriculture, 22.5% to Engineering, and 17.5% to Humanities and Education. The majority of the students were between the ages of 21-23 years. The students indicated their knowledge level of a dietary supplement with 88.3%, answering that they did know what a dietary supplement was and after being provided with a definition an increase of ten percent (10%) of the respondents answered that they did know what a dietary supplement was thus making the subjects 98.3% aware of what a dietary supplement was . The ten percent increase can be accounted for the fact that the students had an idea but were not entirely clear on what a dietary supplement was until receiving the definition.

Although not taken to specifically enhance mental capacity it was seen in the study that more students (46.7%) consumed a dietary supplement such as Seven Seas multivitamin, Mutibionta and Centrum for general health benefits rather than to enhance their mental capacity (22.5%), this disparity in results is due to the fact that most students assume that their mental capacities are capable of retention without aid, and thus do not see the need to enhance it, or they had no belief in the products and their claims. Furthermore most students who actually consumed the supplements affirmed that they only did so due to the urging of their parents and not of their own free will. Of the 22.5% of students that actually took the dietary supplement to enhance their mental capacity only 19.2% of them actually thought that it worked. The remaining 3.3% who consumed them, either took them due to parental advice or simply because they were available to them, since they found that the dietary supplements had no affect on their cognitive recollection capacity.

Question 12 (See appendix A) gave a list of commonly used dietary supplements and the subjects were asked to choose which they consumed. Of the supplements listed, Ginkgo biloba accounted for the highest named percentage being 14.2%. According to Mary Ann O'Hara MD, MSt[11], Ginkgo biloba is the most commonly used dietary supplement used by students. This can be due to the wide popularity it gained as being one of the only known 'natural' remedies for memory enhancement [12] . Ginkgo biloba is one of the most prominently known brain enhancers as extensive research has been conducted on it and it's potency. At both pharmacies visited it was well noted that Ginkgo biloba was the most sold and was in constant demand by the patrons of both pharmacies.

It was also noted in the study that students who received an allowance in the highest financial bracket (Above $500/ month) that is 32.75% were the ones who consumed dietary supplements to enhance their mental capacity as opposed to those who received an allowance in the lower financial brackets. This is due to the fact that the students who receive above $500 per month have more disposable income and thus can purchase these supplements for themselves as the dietary supplements carried by both pharmacies in and around the campus mostly sell the supplements by the bottle which can range from $81.90-$265.00 per bottle which can be very expensive to the average student.

According to A Study of Major Findings on Girls and Education [13] it is boys, not girls, who lag behind in verbal skills, who are falling behind in college attendance. This was clearly indicated in the study whereby 44.7% of the females took the initiative to consume a dietary supplement which they thought would enhance their mental capacity as opposed to 25% of the boys who consumed dietary supplements upon their own initiative. Thus it is noted that females had a stronger vested interest in trying new methods to enhance their memory and thus preform more consistently than the males did. Furthermore of the students who consumed dietary supplements 86.6% assumed that it was safe to use as opposed 13.15% who thought that it was unsafe to be consumed. All students indicated that they were able to base their judgement on the wealth of information that was available to them through the internet.

Of all faculties, the one with the highest number of students consume dietary supplements was that of Science and Agriculture with 26.6% of the respondents responding affirmatively. This can be due to the fact that this was also the same faculty from which the most questionnaires were answered from, additionally this is due to the fact that of all faculties this is the most science based of them all. This faculty includes such courses as, analytical chemistry, nutritional sciences, biology and nutrition and dietetics thus, students belonging to this faculty would have the most knowledge of science related fields such as dietary supplements. The

age at which the highest percentage (35.83%) of students consumed dietary supplements was the age bracket of 21-23 years old. This can be accounted for due to the fact that this is usually the age at which students are in their final year of university and thus they require the extra edge to succeed.

LIMITATIONS

- No medical sciences students were attained to answer the questionnaire due to the fact that they are primarily located at the Mt. Hope hospital and the questionnaires were handed out on the university's campus only. Thus the assigned number of students was from every other faculty was obtained and the rest were distributed randomly, this was due initially in the faculty of Science and Agriculture fourteen boys and twenty two girls were to be interviewed, in the faculty of Humanities and Education four boys and sixteen girls were to be interviewed, In the faculty of Social Sciences six males and twenty two females were administered the questionnaire, in the faculty of Engineering twelve males and five females were interviewed and in the faculty of Medical sciences six males and thirteen females were interviewed via the questionnaire. The allotted amount of students for all faculties except medical sciences was met thus the remaining nineteen questionnaires that were allotted to them was given out randomly.

- The faculty proportion table used to generate the numbers of students to be interviewed per faculty did not include the law faculty thus they were left out of the questionnaire.

- The sample size chosen was too small (120 questionnaire) in comparison to the population of the University of the West Indies.

- Another limitation to the study was that the questionnaire was unclear to the persons being interviewed, as they had some trouble understanding some of the questions that

were asked and frequently asked the administrator of the questionnaire to clarify certain terms.

- Question twenty nine on the questionnaire administered to the target population had to be disregarded due to a printing error.

CONCLUSION

The topic of the study chosen was “Students’ Perception of Dietary Supplements in Enhancing Mental Capacity.” The aim of the study was to indicate what are students’ perceptions of dietary supplements in enhancing their mental capacity. The study answered the questions of the whether the students knew what a dietary supplement was and if they use any. The information collected also indicated whether students thought the use of dietary supplements had any effect on their mental capacity or in any other aspect of their lives. The study allowed comparison of the results of how many students use the supplement and indicated that the supplement had a positive effect on their body. The study was carried out on the student population of the U.W.I St. Augustine Campus. A sample size of one hundred and twenty students, both male and female were used. Both full-time and part-time, undergraduate and post-graduate students from four faculties were used. The students’ data collection was by means of a questionnaire which was distributed randomly throughout the campus.

In conclusion, this study may suggest that although it is generally assumed that students at the university level of education may explore every option in terms of enhancing their mental capacity, this is clearly not the case at the University of the West Indies, St. Augustine campus. Dietary supplements are used mostly by students to enhance their cognitive functions. It is clear that participants were not convinced enough, either by the perceived benefits of it or their openness to try something new to continuously consume supplements to enhance their mental capacity. The study may suggest that although there is readily available information on the array of supplements available and in depth knowledge of how each supplement works, students still seem not to be driven to use them since they assume that they are mentally capable of learning and retaining on their own, and without aid. This study suggests that the

students of the University of the West Indies, St Augustine campus have an indifferent perception with regards to dietary supplements in enhancing their mental capacity.

RECOMMENDATIONS

- From the findings of the study it is recommended that the University of the West Indies, St Augustine campus administration should make information about dietary supplements to enhance student learning and memory capacity more readily available as well as understandable to students. Through fliers, seminars etc.

- Additionally, it is recommended that during the first week at the beginning of the new school semester (what is commonly referred to as 'Fresher's Week') when the new batch of students have come in that a tent be set up for students educating the new comers and old students alike about dietary supplements to enhance brain function. It is further suggested that samples of the supplements should also be given.

- Furthermore it is suggested that the university's health clinic also house a dietician, dietician technician or a drug representative as part of its permanent staff. This person should have an in depth knowledge with regards to dietary supplements, and their uses and which would be best suited for the use of individual students.

- Lastly in promoting the use of dietary supplements for memory enhancement the university administration should make these supplements available to the students at a reduced cost to them, since most of these supplements are very expensive to purchase.

APPENDIX A

A.1 Questionnaire administered to the student population

THE UNIVERSITY OF THE WEST INDIES
AT ST. AUGUSTINE, TRINIDAD AND TOBAGO

Faculty of Science and Agriculture

Agricultural Extension and Economics

BSc. Human Nutrition and Dietetics

Final Year Project (HUEC 3012)

Human Ecology

Topic: *Students perception of dietary supplements in enhancing mental capacity.*

1. Faculty: ☐ Social Sciences ☐ Engineering ☐ Humanities and Education ☐ Science and Agriculture ☐ Medical Sciences

2. Sex: ☐ Male ☐ Female

3. Age: ☐ 17-20 yrs ☐ 20-23yrs ☐ 24-26yrs ☐ Above 27yrs

4. Ethnicity: ☐ East Indian ☐ Afro Trinidadian ☐ Chinese ☐ Mixed ☐ Other _____ (please state)

5. What is your monthly allowance ☐ $100-300 ☐ $300-500 ☐ Above $500

6. Do you know what a dietary supplement is? ☐ Yes ☐ No

7. A dietary supplement /food supplement /nutritional supplement is a preparation intended to provide nutrients such as vitamins, minerals, fiber, fatty acids, or amino acids that are missing or are not consumed in sufficient quantities in a person's diet.

   Have you ever heard of it? ☐ Yes ☐ No

8. Do you consume any dietary supplements? ☐ Yes ☐ No

9. Why do you use dietary supplements?
   - ☐ For general health benefits
   - ☐ For the gym
   - ☐ To enhance mental capacity
   - ☐ For a medical condition (please state)_____
   - ☐ Other (please state)_____

10. Do you think dietary supplements enhance mental capacity? E.g. studying capacity
    ☐ Yes ☐ No ☐ I don't know

11. Do you use a specific brand of dietary supplements?
    ☐ Yes ☐ No

    If yes please state_____

12. Do you consume any of the following supplements?
    ☐ Brain Vita ☐ Akellion ☐ Ginkgo Biloba ☐ B Complex ☐ other

13. Are you currently taking any dietary supplements? ☐ Yes ☐ No

14. If 'yes' please state_____

15. Do you take dietary supplements to help you study? ☐ Yes ☐ No

16. If yes please state_____

17. When do you take dietary supplements?

☐ Throughout the year ☐ Just before an exam
Closer to exams (please specify)_____

18. Do you think that these supplements give you an extra edge?
☐ Yes ☐ No ☐ I don't know

19. Why did you start taking these supplements?
☐ Low energy
☐ Unable to focus
☐ Heard about it from a friend
☐ Other (please state)_____

20. Have you noticed a boost in your ability?
☐ Yes ☐ No ☐ I don't know

21. Where did you get your information about these supplements from?
☐ Radio/ Television ☐ Family/Friend
☐ Newspaper/Book ☐ Internet
☐ Other (please state)_____

22. Do you think that these supplements are safe to use? ☐ Yes ☐ No

23. Have you ever experienced any side effects after using these supplements?
☐ Yes ☐ No ☐ I don't know

24. If yes please state_____

25. If side effects are experienced, 'Do you think that the side effects outweigh the benefits?'
☐ Yes ☐ No

26. What is the most effective dietary supplement for enhancing mental capacity that you have heard of?

_____

27. Do you consume it?

☐ Yes ☐ No

28. If no, why?

_____

29. Please rate in your opinion the effectiveness of the following supplements in enhancing your mental capacity (1-5 1 being the most effective, 5 being the least effective)

☐ Nutriforte energy shot
☐
☐
☐
☐

30. What supplement would you recommend to a friend who wants to enhance their mental capacity?

_____

A.2: Table used when interveiwing the pharmacies

The most common brain enhancing supplements bought by students	How much is stocked /month	Price Range	When is it bought

APPENDIX B

Table 2: Shows the Faculty proportion tables of the students currently attending the University of the West Indies St Augustine campus.

Faculty	# per faculty	# males	% males	# females	% females
Agriculture	553	199	36	354	64
Education	362	74	20	288	80
Engineering	1353	914	69	411	31
Humanities	1073	243	23	830	77
Medical science	1305	439	34	866	66
Science	2073	860	41	1213	59
Social Science	2007	465	23	1542	77
TOTAL	8698	3199	36.78	5504	63.22

Figure 2: Subjects' Knowledge of Dietary Supplements

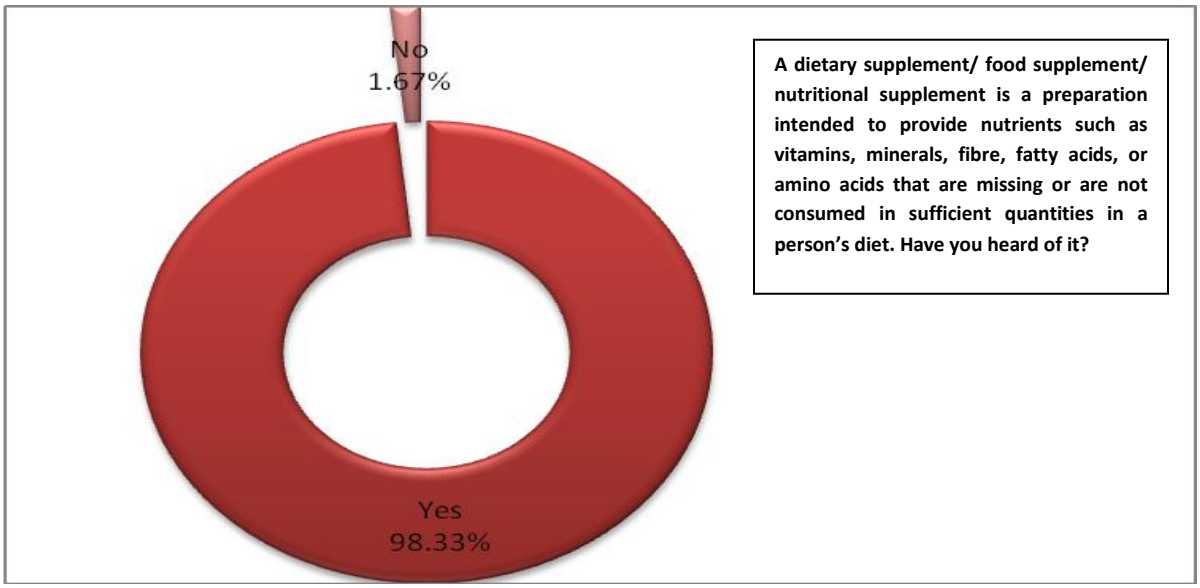


Figure 4: The majority of the population, 46.7% stated the reason for consumption was "for general health benefits." 22.5% stated their reason as "to enhance mental capacity."

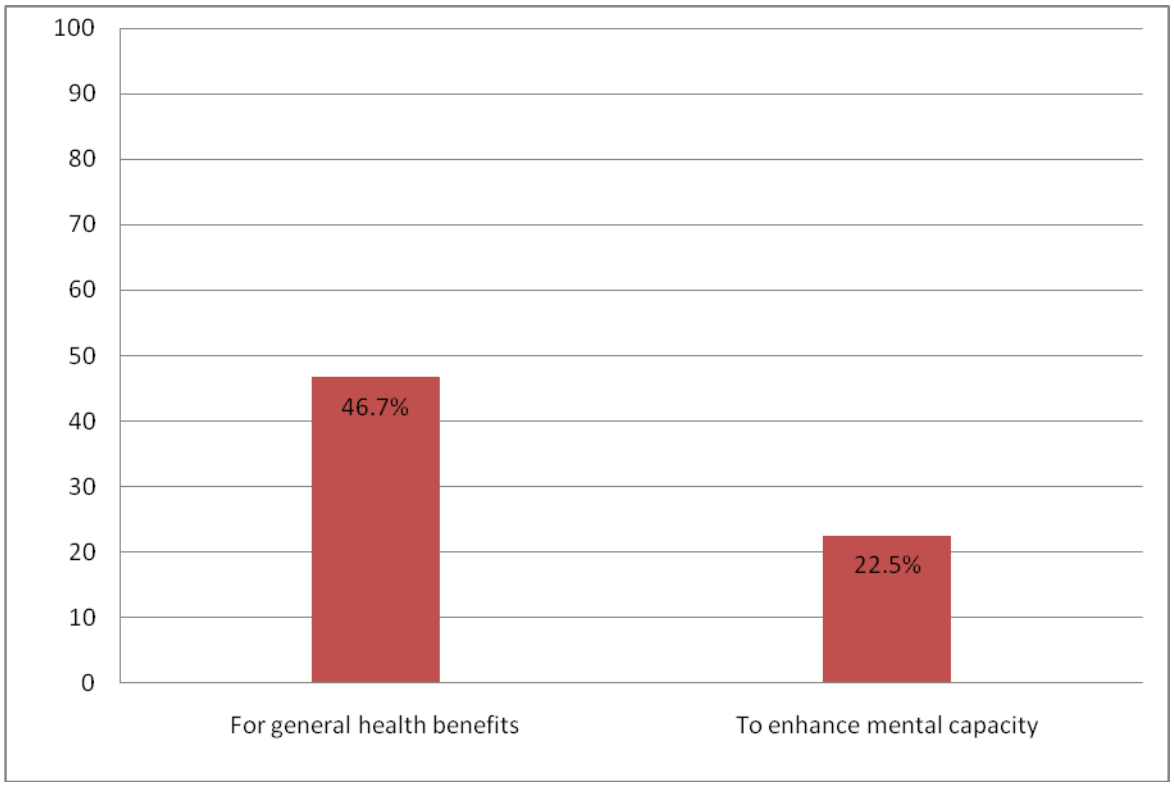


Figure 5: The students were also asked whether they think supplements enhance mental capacity. 48.3% answered "Yes" while 19.2% answered "No" and 30.8% stated they did not know.

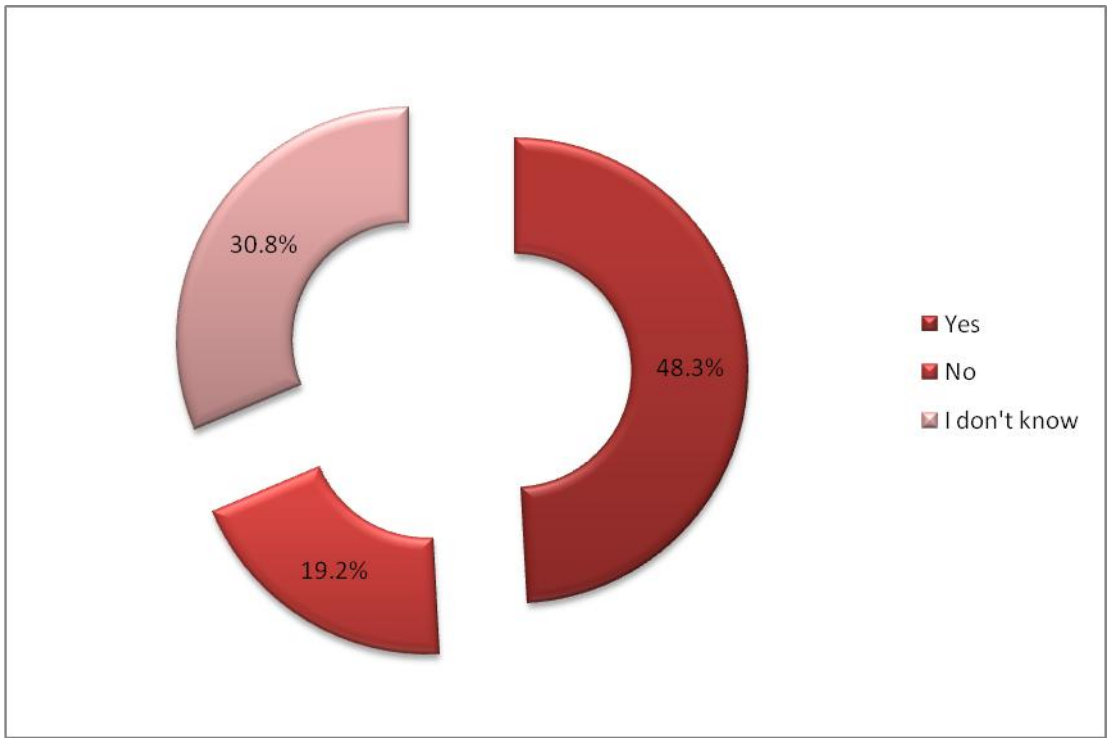


Figure 7: Diagram showing number of males and females that consume a dietary supplement

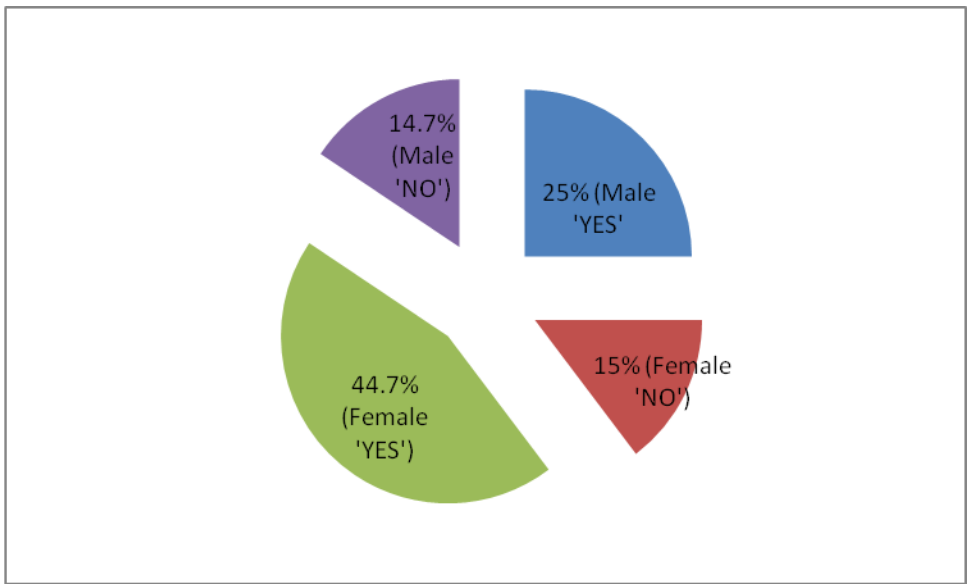


Table 3: Table showing the amount of students who believe that dietary supplements enhance their mental capacity

Do you consume any dietary supplements?	Do you think that dietary supplements enhance your mental capacity		
	Yes	No	I don't know
Yes	46	13	24
No	12	10	13

Figure 8: Bar graph shows the number of students who find supplements safe to be consumed

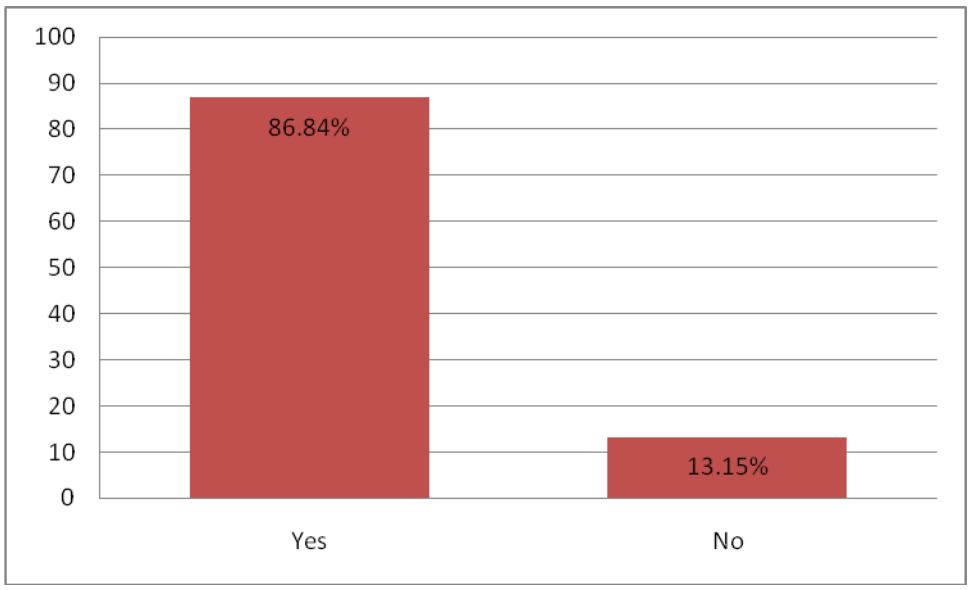


Table 5: Table showing the age and percentage of students who consume supplements.

Age	% of subjects who consume supplements.	% of students who do not consume supplements.
17-20 years	26.6%	10.8%
21-23 years	35.83%	18.3%
24-26 years	2.5%	0%
Above 27 years	4.16%	1.66%

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