



CHAPTER IV

RESULTS OF THE STUDY

The study is aimed to investigate the association between socio-demographic factors that may influence the preference of vitamin or mineral consumption in members of the supporting staff at Chulalongkorn University, Bangkok, Thailand. A total of 324 supporting staff members had completed the structured questionnaire. The data collection period was for during January 2008 to March 2008.

This chapter represents the findings of the data analysis and is divided into one major section: quantitative data analysis. The quantitative data analysis section of this chapter is then sub-divided into two sections, which are presented below:

1. Descriptive finding of

a) The independent factors related to the socio-demographic variables of age, alcohol level, education level, exercise routine, ethnicity, gender marital status, and smoking status. The results are expressed as numbers, and percentages.

b) The independent factors related to the knowledge level regarding vitamins and mineral supplements, the benefit of vitamins or minerals and the source of vitamins and minerals that can be found in common everyday food.

c) The independent factors of the attitude of the consumers and non-consumers of vitamin or mineral supplements. Results are expressed as means, standard deviations, and percentages.

d) The independent factors of the practice of the consumers of vitamins or mineral supplements. This section will display the results of the type of vitamins consumed and the usage of vitamins that the consumers of vitamins or mineral supplements

2 Associations between

a) That the knowledge of consumers of vitamins/mineral supplements will be higher than non-consumers of vitamin/mineral supplements. The results will display the mean score for both two groups using t-test to calculate the association.

b) The attitude of vitamin/mineral supplement between consumers and non consumers will be the same. The results are displayed using the mean score for the attitude, standard deviation and t-score to display the association.

c) Consumption of vitamin/mineral supplement is influenced by the media and friends/relatives more than the professional advice. Results will be displayed using the frequency and percentage.

d) There is an association between income and education with the consumption of vitamins/mineral supplements. This has been performed by using chi-square test

4.1 Quantitative Data Analysis factors

4.1.1 Socio-demographic factors

Target subjects who did not complete structured questionnaires at the interview site or did not return the filled questionnaires were excluded from this study. There was a response rate of 98.7 % (324 respondents) was obtained from the 328 target population size of supporting staff at Chulalongkorn University. Of the 14 socio-demographic questions characteristics that were administrated to 324

respondents, are all interpreted in and summarized in the first part of this results section.

Table 4.1: Total number questionnaires distributed and collected from each faculty

Faculty	Number of Questionnaires Distributed	Number of Questionnaires Collected
Allied Health Science	6.56	7
Architecture	9.84	10
Arts	3.28	4
Commerce and Accountancy	16.4	14
Communication Arts	6.56	5
Dentistry	45.92	44
Economics	9.84	10
Education	42.64	41
Engineering	29.52	30
Fine and Applied Arts	13.12	13
Law	6.56	6
Medicine	49.2	49
Nursing	3.28	1
Pharmaceutical Science	9.84	10
Political Science	9.84	10
Psychology	3.28	6
Science	36.08	38
Veterinary Science	26.24	22
Total	328	324

Table 4.1 displays information regarding the amount of questionnaires that were initially distributed in order to perform the data analysis and also shows the actual amount of questionnaires that were collected. In some of the faculties sometimes more questionnaires were collected than the needed, although there were

some faculties were there was some missing data so not all of the 328 questionnaires were able to be used. Only a total of 324 were able to be used to analyze data since, 3 were incomplete and 1 was not returned.

Table 4.2: Study population

Position	Frequency (people)	Percentage
Staff	324	100
Total	324	100.0

Table 4.3: Distribution of gender in the study population

Gender	Frequency (people)	Percentage
Male	108	33.3
Females	216	66.7
Total	324	100.0

From table 4.3 the majority of the data collected and questionnaires distributed came from females. Females constituted 66.7 percent of the data, whereas males constituted only 33.3 percent of the total study population. Possible reasons why the majority of the questionnaires collected were from females, is that maybe females were easier to approach, and the majority of supporting staff at Chulalongkorn University are females who work in the administrative, libraries, and student affairs department.

Table 4.4: Age distribution in the study population

Age (Year)	Frequency (people)	Percentage
21-30 years	147	45.4
31-40 years	90	27.8
41-50 years	60	18.5
51-60 years	27	8.3
Total	324	100.0

Those with an age range 21-30 years constituted 45.5 percent, while 31-40 years constituted 27.8 percent, 41-50 years constituted 18.5 percent and the smallest percentage of age in the study was 51-60 years old which constituted only 8.3 percent to the study population.

Table 4.5: Nationality of the study population

Nationality	Frequency (people)	Percentage
Thai	316	97.5
Others	8	2.5
Total	324	100.0

Table 4.5 show that the nationality of the study population. From table 1.5 we can see that 97.5 percent of our study population is Thai. The nationality of the study population is almost homogenous, where only 2.5 percent or 8 out of 324 are of other nationality.

Table 4.6: Marital status of the study population

Marital Status	Frequency (people)	Percentage
Single	172	53.1
Married	117	36.1
Widowed	7	2.2
Divorced	20	6.2
Separated	8	2.5
Total	324	100.0

The majority of the recipients interviewed were single. Single recipients constituted 53.1 percent of study population, Married recipients constitute 36.1 percent, and the numbers of widowed people in the supporting staff population constitute only 2.2 percent, which is the smallest percentage. The number of divorced people in the supporting staff sampled, and the separated was very small at 6.2 percent and 2.5 percent.

Table 4.7: Education level of Study population

Marital Status	Frequency (people)	Percentage
High school	24	7.4
Lower vocational School	19	5.9
Vocational school	16	4.9
Bachelor degree	207	63.9
Master Degree	44	13.6
Doctor Degree	7	2.2
Total	324	100.0

The majority of the supporting staff that was sampled for this study had at least a bachelor degree in any related field. Sixty three point nine percent of the study population has a bachelor degree, it can be said that the sampled study population of

supporting staff has a good education level. The second most common highest education level obtained for the sampled study size of 324 supporting staff was Master degree level, where 44 of the 324 interviewed or 13.6 percent. Only 7.4 percent of the interviewed supporting staff has only a high school degree, 5.9 percent have a lower vocational school degree and 4.9 percent.

Table 4.8: Household incomes per month

Household income (per/month)	Frequency (people)	Percentage
Less than 10,000 Baht	52	16.0
10,000-29,999 Baht	135	41.7
30,000-49,999 Baht	69	21.3
50,000-69,999 Baht	43	13.3
More than 70,000 Baht	25	7.7
Total	324	100.0

The majority of sampled supporting staff studied had an income with a range between 10,000-29,999 baht. This income range represents 41.7 percent of the sample size studied. The second most common income range for the studied population was the household income range between 30,000-49,999 baht, this range represented 21.3 percent of the total of the 324 supporting staff interviewed. The least amount of income range that was represented from the sampled group study was income of more than 70,000 baht per month. Those with a household income of more than 70,000 baht per month represented only 7.7 percent of the 324 people that were interviewed.

Table 4.9: Smoking habit

Smoking Habit	Frequency (people)	Percentage
Current Smoker	19	5.9
Former Smoker	29	9.0
At least once a week	26	8.0
Never smoked	250	77.2
Total	324	100.0

Out of the 324 people interviewed 250 of them were non-smokers, this number represents that 77.2 percent of the supporting staff did not smoke. The second largest group was represented are former smokers. Former smokers represented 9 percent of the sampled supporting staff, while current smokers represented only 5.9 percent of the sampled supporting staff.

Table 4.10: Alcohol consumption

Alcohol consumption	Frequency	Percentage
Non-consumer	159	49.1
Socially	149	46.0
At least once a week	11	3.4
Daily	5	1.5
Total	324	100.0

Non-consumers of alcohol represent 49.1 percent of the sampled supporting staff at Chulalongkorn University. The second most common group, are those that consume alcohol socially. The group that consumes alcohol only socially represents 46.0 percent of the total study population. From this table we can see that the majority of supporting staff at Chulalongkorn University do not consume alcohol on a regular basis.

Table 4.11: Exercise routine of study population

“ Do you exercise”	Frequency	Percentage
Yes	152	46.9
No	172	53.1
Total	324	100.0

Out of the 324 supporting staff that were interviewed only 152 exercised on a daily basis, while 172 of the supporting staff did not exercise on a regular basis.

Table 4.12: Perception of personal health condition of supporting staff

“How do you perceive your personal health condition ”	Frequency	Percentage
Extremely Healthy	21	6.5
Healthy	137	42.3
Fairly Health	140	43.2
Unhealthy	26	8.0
Total	324	100.0

The health perception was based on their personal judgment, and how they perceived their own health. The majority of the people interviewed from this sample size of supporting staff at Chulalongkorn University showed that, they either thought their health was healthy or fairly healthy. From the table we can see that 140 people out of 342 that they were fairly healthy and had good health. Only a small percentage of 26 people or 8 percent of the total population size though they where unhealthy.

Table 4.13: Average working hours per day

Average working hours /day	Frequency	Percentage
Less than 5 hours	18	5.6
Between 5-8 hours	202	62.3
Between 9-12 hours	97	29.9
More than 12 hours	7	2.2
Total	324	100.0

The 5-8 hours average of work hours per day represents 62.3 percent of the sampled study population. The second most common average working hours per day for the sampled supporting staff was the working hour between 9-12 hours per day. The 9-12 hours working hours per day, represents 29.9 percent of the sampled study population.

Table 4.14: Number of Meals consumed

Number of meals consumed(average)	Frequency	Percentage
One meal	25	7.7
Two meals	76	23.5
Three meals	196	60.5
More than three meals	27	8.3
Total	324	100.0

The majority of the supporting staff at Chulalongkorn University that had participated in the study had a normal consumption of food, of three meals on average. 60.5 percent of the supporting staff had consumed three meals of food on average.

4.1.2 Knowledge about Vitamin/mineral supplements

This part of the questionnaire looks at the knowledge of the supporting staff at Chulalongkorn University regarding the knowledge of vitamins and mineral and vitamins and mineral supplements in general. The questions will evaluate the knowledge about the source that the vitamin or mineral can be found, the benefit that the particular vitamin or mineral has and preventive characteristics of the vitamin or mineral supplement. The purpose of this section was to evaluate whether there is a difference in knowledge of the users and non-users of vitamin and mineral supplement. Out of the 21 questions related to knowledge about vitamins or minerals are summarized and analyzed in table 4.15.

Table 4.15: Results of the knowledge part of the questionnaire

Knowledge questions about vitamins/mineral and supplements	Number of people with correct answers		Number of people with wrong answers	
	Frequency	Percentage	Frequency	Percentage
Vitamin A is beneficial for the body in what way	205	63.3	119	36.7
Vitamin A as a nutrient can be found in what type of food the most.	168	51.9	156	48.1
Vitamin B complex supplement is beneficial towards the human body in what way?	117	36.1	207	63.9
Vitamin B as a nutrient can be found in what type of food the most	149	46.0	175	54
Vitamin C supplements will reduce the lengths of cold	227	70.1	97	29.1
Vitamin C can be found in what type of food the most	269	83.0	55	17
Efficient intake of vitamin D can prevent early onset of what disease	173	53.4	151	46.6
Vitamin D can be found from	169	52.2	155	47.8
Vitamin E is the most beneficial for, which part of the body	88	27.2	236	72.8
Vitamin E can be found in what type of food the most	131	40.4	193	49.6
Calcium supplements is beneficial for the which body part	268	82.7	56	17.3
Calcium can be found in, which food the most	167	51.5	157	48.5
Is zinc a mineral	225	69.4	99	30.6
Zinc is beneficial towards the human body in what way	77	23.8	247	76.2
Folic acid can be obtained from	71	21.9	253	78.1
Folic acid is beneficial for, which age group	172	53.1	152	46.9
Efficient iodine intake can prevent what disease	114	35.2	210	64.8
Iodine can be obtained from which type of food	216	66.7	108	33.3

Table 4.15 Illustrates the results of the knowledge section of the questionnaire, this table consist of a detailed breakdown of each question on the frequency of correct and answers and wrong answers.

There was a high frequency of correct answers for questions that are normally promoted for products that are normally promoted by the media or commercials. For example, questions relating to calcium, vitamin C, vitamin A and iodine had the highest percentage of right answers.

The highest frequency of correct answers were questions relation to vitamin C. Interviewee were asked regarding the source of, which vitamin C could be obtained. The supporting staff were asked “Vitamin C can be obtained from” and given a choice of four answers : the first choice “orange”, the second choice “spinach”, the third choice “salmon” and the last choice was “I do not know”. For this question of knowledge of vitamin C 83 percent of the supporting staff at Chulalongkom University had answered this question correctly. The second question, which was also related to vitamin C was a question related to the benefits of vitamin c. The supporting staff at Chulalongkorn University were asked “Vitamin C supplement will reduce the lengths of colds” the interviewees were given a choice of three answers: the first choice was “right”, the second choice “ wrong” and the third choice was “I do not know”. Out of 100 percent of the people that submitted the questionnaires, 70.1 percent of the supporting staff at Chulalongkorn University had answered the question correctly that vitamin C will reduce the lengths of colds.

The second most common question answered correct according to the knowledge test was the question regarding calcium. According to the results of the knowledge test, 82.7 percent of the study population had answered the question

correctly when asking what the benefit of calcium towards the human body. The supporting staffs were asked the question “calcium supplement is beneficial for”, and four choices were given to choose from. The first choice for this question was “Stress”, the second “Eye sight”, the third “Bone” and the fourth “I do not know”. The correct answer for this question is the third choice which is “bone”. Therefore it can be said that the majority of interviewed of the sampled study population of supporting staff at Chulalongkorn University has a very good knowledge and understanding about the benefits of calcium and source of the nutrient.

The third most common question about knowledge that was answered correctly was regarding whether or not zinc was a mineral. The supporting staff at Chulalongkorn University was asked the question “Zinc is a mineral” the interviewees were given three choices: the first choice was “right”, second choice was “wrong” and the last choice was “not sure”. The correct answer for this question would be “right”, and 69.4 % of the total supporting staff interviewed answered this question right.

The last most common question that was answered correctly was regarding the best source of iodine. The supporting staff at Chulalongkorn University was asked the best source of which iodine could be obtained. The supporting staff was asked “Iodine can be obtained from” there was a choice of four possible answers : the first choice was “ iodine salt”, the second choice was “ pork”, the third choice was “ strawberry” and the last choice was “ I do not know”. A total of 216 of the supporting staff members had answered this question right. A percentage of 66.7 of 100 percent of the people interviewed successfully answered this question.

On the other hand, there were also several questions that the sampled study population of supporting staff at Chulalongkorn University did not answer them

correctly. The majority of the questions that had a very low percentage of people that answered them correctly were questions regarding, folic acid, vitamin E, and zinc.

The question where the minimum amount of people answered the question correct was the question regarding the source of folic acid. The supporting staffs were asked “Folic acid can be found in”, there were four choices to this question : the first answer “ spinach”, the second answer “ pork”, the third answer “ fish” and the last answer was “ I do not know”. The correct answer for this question would be spinach, but only 21.9 percent of the supporting staff at Chulalongkorn University had answered this question correctly.

The second most common question that people answered wrong was regarding zinc. The supporting staffs were asked a question regarding the benefits of zinc as a mineral supplement. The question asked was “ Zinc is beneficial towards the human body in what way”, there were four choices to this question: the first choice was “Prevents insomnia”, the second choice “promotes growth”, the third choice “improves skin complexion”, and the last choice was “I do not know”. The correct answer for this question would be the second choice “promotes growth”, only a mere percent of 23.8 of the study population had answered this question correctly.

The third most common answer that was answered wrong was the question regarding vitamin E. The question regarding vitamin E the benefit of vitamin E has towards the body. The supporting staff was asked “Vitamin E supplement is benefit for”, there were four choices of answers for this question: the first choice “Heart”, the second choice “eye sight”, the third choice “metabolism” and the last choice “I do not know”. The correct answer for this question would be the first choice, which is Heart. A small

percentage of 27.2 of the supporting staff studied had answered this question correctly.

Attitude section of the results: Attitude of supporting staff about vitamins and mineral consumption.

This section of the results will look at the attitude both of users and non users of vitamins and mineral supplements. The attitude section will give a rough idea of the attitude of supporting staff members of Chulalongkorn University towards vitamins or minerals and vitamins or mineral supplement consumption.

Table 4.16: Attitude of the supporting staff at Chulalongkorn University regarding
vitamin or mineral supplements

Attitude	Level of Agreement/Disagreement					X	S.D.	Result
	Strongly Agree	Agree	Somewhat agree	Disagree	Strongly disagree			
Vitamins supplements will prolong my life	18 (5.6%)	72 (22.2%)	104 (32.1%)	109 (33.6%)	21 (6.5%)	3.13	1.01	Somewhat agrees
Vitamin or mineral supplements will make me feel more energetic	8 (2.5%)	37 (11.4%)	113 (34.9%)	146 (45.1%)	20 (6.2%)	3.41	0.86	Agree
Vitamin or mineral supplements will prevent chronic disease	11 (3.4%)	51 (15.7%)	153 (47.2%)	97 (29.9%)	12 (3.7%)	3.15	0.85	Somewhat agree
Consumption of vitamins or mineral supplements will suit my busy lifestyle	15 (4.6%)	45 (13.9%)	97 (29.9%)	132 (40.7%)	35 (10.8%)	3.39	1.01	Agree
Consumption of vitamins or mineral makes me feel in trend	15 (4.6%)	45 (13.9%)	97 (29.9%)	132 (40.7%)	35 (10.8%)	2.66	1.08	Somewhat agree
Consumption of vitamins or minerals makes me healthier	9 (2.8%)	50 (15.4%)	97 (29.9%)	126 (38.9%)	42 (13.0%)	3.44	0.99	Agree
Consumption of vitamins has more negative aspects than positive aspects	11 (3.4%)	90 (27.8%)	150 (46.3%)	56 (17.3%)	17 (5.2%)	2.93	0.89	Somewhat agrees
Some vitamins or minerals supplements are over priced	147 (45.4%)	115 (35.7%)	48 (14.8%)	2 (0.6%)	12 (3.7%)	4.11	0.83	Agree
Consumption of vitamins or mineral supplements are unnecessary with a balanced diet	81 (25.0%)	157 (48.5%)	68 (21.0%)	14 (4.3%)	4 (1.2%)	3.92	0.86	Agree
Even though vitamins or mineral supplements are expensive they are worthwhile.	25 (7.7%)	98 (30.2%)	116 (35.8%)	73 (22.5%)	12 (3.7%)	2.84	0.98	Somewhat agree
Total						3.30	0.49	Somewhat Agree

For the attitude questionnaire we used the likert scale in order to perform analysis, as mentioned in Chapter III of the thesis. According to the likert scale, the average score is 3.30 this means that that the study population that was interviewed and studied attitude is more neutral and also has uncertainty. The results of the attitude section of the questionnaire are analyzed statement by statement in order for clarity and understanding of the result of each statement. After analysis of each statement as a part of the questionnaire the overall results of the questionnaires will also be discussed in order to look at the overall results of the questionnaire.

Statement I “Vitamins supplements will prolong my life”, this statement refers to the personal preference that the consumer of vitamins or mineral supplement has towards vitamins or mineral supplements. The results of the attitude test show that the majority of supporting staff answered “disagree or 2”, this answer represented 33.6 percent of all the supporting staff interviewed. The second largest group for this statement were those were not sure whether they agreed or disagreed with this statement. Those that were “Somewhat Agree”; about statement I represented 32.1 percent of the total supporting staff interviewed for the study.

Statement II “Vitamins or mineral supplement consumption will make me feel more energetic”, this statement refers to the overall personal preference that users and non-users have towards vitamin or mineral supplement. The personal preference refers to how the person who is currently using vitamins or mineral supplements feels or would if they would use it. This personal preference refers to the attitude of the study population. According to the results of the study, 45.1 percent of the users of the supporting staff “disagreed” with this statement. The overall results of the statement

was 3.41, according to the likert scale, 3 would be in the category of “Somewhat agree”.

Statement III “Vitamin or mineral supplements consumption will prevent chronic disease”. This question was asked to both the non-users and users attitude about the have the vitamin and mineral supplements and the beneficiary factors. The majority of the supporting staff that was sampled at Chulalongkorn University had answered “somewhat agree” for this question. A total of 47.2 percent of the supporting staff had answered “somewhat agree”, while only 15.2 percent of the supporting staff had agreed with the statement that consumption of vitamins and mineral will prevent chronic disease. The overall result of this statement showed that the majority of the supporting staff was “Somewhat agree”, about this statement they did not and agree or disagree.

Statement IV “Consumption of vitamins or mineral supplements will suit my busy lifestyle”, the fourth statement refers to the convenience preference that the users and non-users will be looking for when consuming vitamins. According to the results of the study, the majority of the supporting staff at Chulalongkorn University studied; almost half of them 40.7 percent of them to be exact had chosen “disagree” that the consumption of vitamins or minerals will suit their busy lifestyle. Only 4.6 percent of the interviewed supporting staff at Chulalongkorn University had agreed that consuming vitamins or mineral supplements will suit their busy lifestyle.

Statement V “Consumption of vitamins or mineral makes me feel in trend”. This statement refers to the attitude about the consumption of vitamins and mineral with the influence from the media. There is a lot of advertisement from the media about the benefits about the consumption of vitamin. This statement will test whether

the users or non-users feel that the consumption is necessary for them to feel like they are a part of the society and are in trend. According to the results of the study 40.7 percent of the supporting staff studied at Chulalongkorn University had “disagreed” with the statement that consumption of vitamins will make them more in trend or trendy. Where only, 4.6 percent of the interviewed supporting staff at Chulalongkorn University, had “strongly agreed” that consumption or consuming vitamins or mineral supplements will make them feel more in trendy or trendy. The mean result of this statement was 2.66, according to the likert scale used in this study to measure the attitude of the supporting staff sampled at Chulalongkorn University shows that the majority of the interviewee had “somewhat agreed” with this statement.

Statement VI “Consumption of vitamins or minerals makes me healthier”, this statement refers to the attitude and personal preference to consume vitamins or mineral supplements that the sampled supporting staff at Chulalongkorn University. This statement also looks at the satisfaction preference that the consumer of vitamin or mineral supplement has. According to the results of the statement, shows that the majority of the sampled supporting staff at Chulalongkorn University, 38.9 percent to be exact had disagreed with the statement and felt that consumption of vitamins or mineral supplements will not make them healthier. Only 15.4 percent of the interviewed supporting staff group had “agreed” and felt satisfaction preference from the consumption of vitamins or mineral supplements. The overall mean result of this statement is 3.44, according to the likert scale this score still lies in the “agreed” area.

Statement VII “Consumption of vitamins has more negative aspects than positive aspects”; this statement refers to the personal preference and also the personal attitude that the users and non-users of vitamin or mineral supplement in study

population has. According to the results, of the statement it showed that the majority of the studied supporting staff at Chulalongkorn University, 46.3 percent to be exact were “somewhat agree” whether or not the consumption of vitamins or minerals would have more negative aspects than positive. Where on the other hand, 27.8 percent of the studied population of supporting staff at Chulalongkorn University “agreed” that consumption of vitamins or mineral supplements would have more negative aspects than positive benefits. From the results of the statement, the overall score of this statement is 2.93, this score still falls in the “somewhat agree” area, according to the likert scale. Therefore it can be said that supporting staff studied at Chulalongkorn University were “somewhat agree” if the consumption of vitamins will have more negative aspects than positive aspects.

Statement VIII “Some vitamins or minerals supplements are overpriced”. This statement looks at the affordability preference or the affordability aspect of the users or non-users have on consumption of vitamins or mineral supplements. The affordability aspect of this statement also looks at the willingness to consume. If the majority of the studied population “agrees” with the statement then it can be said that the reason for not consuming vitamins or mineral supplements can be because of the price. According to the results of the study, it states that 45.4 percent of the interviewed supporting staff at Chulalongkorn University had “strongly agreed” with that “Some vitamins or minerals supplements are overpriced”, where as only 0.6 percent of the sampled supporting staff at Chulalongkorn University studied “disagreed” that the “Some vitamins or minerals supplements are overpriced”. The overall mean score for the statement VIII is 4.66, according to the likert scale, this score will be in the “strongly agree” area. Therefore it can be said that the majority of

the supporting staff at Chulalongkorn University “strongly agree” that some vitamins or minerals are overpriced.

Statement VIII “Consumption of vitamins or mineral supplements are unnecessary with a balanced diet”. This statement refers to the personal preference that consumers or non-consumers will have on the opinion about vitamin or mineral consumption. According to the results of the study, 48.5 percent of the studied supporting staff at Chulalongkorn University said that they “ agreed” that the consumption of vitamins or mineral supplements is not necessary if they consume a balanced diet. The overall result of this statement shows that the supporting staff at Chulalongkorn University, had a mean score of 3.92. According to the likert scale it can be said that the majority of the studied supporting staff population at Chulalongkorn University agreed that the consumption of vitamins is not necessary with a balanced diet.

Statement X “Even though vitamins or mineral supplements are expensive they are worthwhile”. This statement looks at the willingness and the affordability factors of the consumption of vitamin or mineral supplements. According to the table of results, the majority of the supporting staff, 36 percent to be exact were not “somewhat agree” about the statement. Whereas 30.2 percent of the supporting staff interviewed at Chulalongkorn University had “agreed” that even though, vitamin or mineral supplements were expensive they are worthwhile consumption. The overall results of this statement showed that supporting staff at Chulalongkorn University were “not sure” whether they would consume vitamins or not even though it is worthwhile. The exact overall results for statement X is 2.84, according to the likert scale this statement would fall into the category of “ somewhat agree”.

The overall results of the attitude part of the questionnaire showed that supporting staff at Chulalongkorn University were “somewhat agree” about the attitude section of the questionnaire. There were a total of 10 statements that were asked regarding the usage of vitamin or mineral supplements or the willingness to use vitamins or mineral supplements, 8 of the statements mean score was “ somewhat agree”, or fell into that region.

Practice of vitamins or mineral supplements

The last part of the questionnaire will be focused only for those that are currently consuming vitamins or mineral supplements, in the supporting staff at Chulalongkorn University. The fourth part of the questionnaires looks at the practice and actual usage. There are a total 10 questions that look at the different aspects of practice of vitamins or mineral supplements. This section of the questionnaire looks at several aspects of practice for example, the reason of usage, type of vitamins used, and duration of usage, the desire to consume vitamins or mineral supplements for those who are not currently consuming vitamins.

Table 4.17. The number of users and non-users of Vitamin or Mineral supplement in Chulalongkorn University supporting staff

Consumption of vitamins/minerals supplements	Frequency	Percentage
Consumers	106	32.7
Non-consumer	218	67.3
Total	324	100.0

From table 4.17 we can see that out of the 324, of the supporting staff members at Chulalongkorn University that had willingly participated in this study 106 of them or 32.7 percent were current consumers of vitamins or mineral supplements.

Table 4.18: Prevalence of vitamin or mineral supplement consumption by gender

Gender	Frequency	Percentage
Male	35	32.4
Female	71	34.4
Total	324	100.0

Table 4.18 illustrates the prevalence of vitamin or mineral supplement consumption among gender. From this table it can be said that 21.9 females in the study that are currently consuming vitamins or mineral supplements at the time of the study, when compared to males at the time of the study only 10.8 percent were currently consuming vitamins or minerals supplements.

Table 4.19: Willingness to consume vitamins or mineral supplements by gender in non-consumers

Desire to consume vitamins/mineral supplements	Frequency	Percentage
Willing to consume vitamins/mineral supplements	173	79.35
No desire to consume vitamin/mineral supplements	45	20.64
Total	218	100.0

From table 4.19 we can see that willingness that the supporting staff at Chulalongkorn University has to consume vitamins or mineral in the nearby future. A total of 218 of the supporting staff that were studied did not currently consume vitamins or minerals supplements, but 79.35 percent of them were willing to consume or had thought of consuming vitamins or mineral supplements in the nearby future.

Table 4.19.1: Desire to consume vitamins/ mineral supplements by gender

Desire to consume vitamins/mineral supplements by gender	Frequency	Percentage
Females	106	61.27
Male	67	38.72
Total	173	100.0

Table: 4.9.1, shows that there woman were more likely to have the desire to consume vitamins or mineral supplements, when compared to men. According to the

study's results 61.27 percent of the supporting staff that were not currently consuming vitamins or mineral supplements and were willing to consume were females, whereas only 38.72 percent of the males that were not consuming vitamin or mineral supplement were willing to consume.

Table 4.20: Duration of consumption of vitamins or mineral supplements in users

Duration of consumption of vitamins/minerals	Frequency	Percentage
Less than 6 months	52	49.05
6 - 12 months	14	13.2
1 - 2 years	19	17.92
More than 3 years	21	19.8
Total	106	100.0

Table 4.20 shows us that the majority of the Chulalongkorn University supporting staff members that actually consume vitamins or mineral supplements has been consuming them for less than 6 months. From this table we can see that vitamin or mineral supplement consumption is still something that is rather new to Thailand and to Thai people. The exact data shows that 16 percent of consumers have consumed vitamins or mineral supplements for less than 6 months, where only 5.9 percent have been consuming them for 1-2 years and the last category that only 6.5 percent of the supporting staff at Chulalongkorn University studied had been consuming vitamins or mineral supplements for more than 3 years.

Table 4.21: Frequency of consumption of vitamins or minerals supplements

Frequency of vitamins or mineral supplement	Frequency	Percentage
At least once a week	12	11.3
Three times a week	8	7.55
Every other day	30	28.33
Every day	50	47.1
More than two times a day	6	5.66
Total	106	100.0

From table 4.21 the majority of the supporting staff at Chulalongkorn University usually takes vitamins on a daily basis. From table 4.21 we can see that 47.1 percent of the supporting staff at Chulalongkorn University that was interviewed had took at least vitamins or minerals once a day. Only 5.66 percent of the supporting staff at Chulalongkorn University said that they would consume more than two times a day.

Table 4.22: Type of vitamins or mineral consumed and satisfaction level of each vitamins or mineral consumed in the supporting staff at Chulalongkorn University.

Type of vitamins	Frequency	\bar{x}	Satisfaction level
Vitamin A	10	3	Very satisfied
Vitamin B	8	3	Very satisfied
Vitamin B Complex	8	3	Very satisfied
Vitamin C	25	3	Very satisfied
Vitamin E	4	2.1	Satisfied
Multivitamin	13	3	Very satisfied
Calcium	19	3	Very satisfied
Cal tab 100	5	2.6	Satisfied
Multi-mineral	14	2.7	Satisfied
Total	106	2.822	Very satisfied

Table 4.22 displays the types of vitamins and minerals that the supporting staff at Chulalongkorn University consumes on a daily basis. The mean score from this table is the satisfaction level of the consumers of vitamins or mineral supplements that they have for each supplement. Three is the highest level of satisfaction, and one is the lowest score for satisfaction level. From the table we can see that there average score is 2.822 according to the likert scale, it can be said that the majority of the supporting staff at Chulalongkorn University are very satisfied with the results from vitamin or mineral supplement consumption.

Table 4.23: Origin of brand of vitamin or mineral those are consumed

Origin of Brand	Frequency	Percentage
Imported Brand	65	61.3
Local Brand	41	38.6
Total	106	100

Table 4.23 illustrates the origin of brand of the vitamin or mineral supplement that consumers of vitamins or mineral supplement consume. Form this table we can see that the majority of the consumers of vitamins or mineral supplements buy imported brands of vitamins. The imported brands constitute 61.3 percent of the brands bought of vitamins or mineral supplement, whereas the local brands constitute 38.6 percent. A possible reason why more consumers of the studied population buy imported brand may be because at the local pharmacy the majority of the vitamins or mineral supplements sold are imported. This factor can also be considered as a convenience preference and brand preference that can influence the decision to consume vitamins or to purchase.

Table 4.24: Reason for consumption of vitamins in supporting staff at Chulalongkorn

University		
Reasons for consumption	Frequency	Percentage
To preserve and to maintain good health	36	33.33
Doctors recommendation	15	14.15
To prevent fatigue	10	9.433
To prevent cold or becoming ill	20	18.86
To preserve bone and body calcium	15	14.15
To improve eyesight	8	7.54
Wants to try	2	1.88
Total	106	100.0

The main reason why people consume vitamins or minerals in the supporting staff at Chulalongkorn University is because they believe that by consuming vitamins or mineral supplements they will be able to persevere and maintain their good health. Out of the 106 interviewed 36 or 33.33 percent of them had said that they main reason was to preserve and maintain their good health. In addition the same amount of people also felt that they would want to consume vitamins or mineral supplements because they would like to prevent themselves from a catching a cold or becoming ill.

Table 4.25: Factors that may influence the decision of consumers when purchasing vitamins or mineral supplements

When purchasing vitamins/minerals my decision is influenced by	Frequency	Percentage
Price	16	15.09
Brand	14	13.2
Quantity	6	5.66
Characteristic of the Vitamin/Mineral Supplement	70	66.03
Total	106	100.0

From table 4.25 we can see that in the users of vitamins or mineral supplements the majority of supporting staff that consume vitamins are influenced by the characteristic of the vitamin or mineral supplement when purchasing the vitamin more than any other factor.

Table 4.26: Factors influencing the decision to consume vitamins/mineral supplement

When deciding to consume vitamins/mineral supplements my decision is influenced by	Frequency	Percentage
Media	29	27.35
Professional recommendation	21	19.8
Recommendations by friends/relatives	19	17.9
Recommendations by sales representative	8	7.54
Myself	29	27.3
Total	106	100.0

From table 4.26 we can see that the majority of the interviewed people that consume vitamins or mineral supplements decision to consume vitamins had come from the media or their selves. According to the results of the study, it can be said that from the results of the study that the study group of supporting staff at Chulalongkorn University, mainly purchase vitamins or mineral supplements because influence from the media or by their own person decision to consume vitamins or minerals.

Table 4.27: The preference to consume a multivitamin when compared to single vitamin at a time

Preference to consume a multivitamin more than a single vitamin	Frequency	Percentage
Prefers multivitamins	71	21.9
Prefers single vitamin	35	10.8
Total	106	100.0

From table 4.27, we can see that the majority of people that consume the vitamins or mineral supplements prefer to consume vitamin or mineral supplements in a form of a many different types of vitamin in one tablet. The reason for this maybe that if it is in one tablet than it is less time consuming and is more convenient. This maybe one of the reasons why people like to consume multivitamins over single vitamins.

Table 4.28: Tendency to take over the recommended dosage of vitamin or mineral supplements

I tend to take over the recommended dosage of vitamins of mineral supplements	Frequency	Percentage
Consume over recommended dosage	5	1.54
Never consume over dosage	101	31.2
Total	106	100.0

Table 4.28 illustrates the number of people that actually consume vitamins and their tendency to consume over the prescribed dosage. From this table we can see that only 1.54 percent of those that are currently consuming vitamins or mineral supplements tend to take more than the recommended dosage. The majority of the studied population of vitamins or mineral supplements, which constitutes 31.2 percent

of the studied population, takes the recommended dosage of vitamin or mineral supplement.

Table 4.29: The number of vitamin or mineral supplement users that have recommended others to use vitamins or supplements

Recommendation of vitamin or mineral supplement to others	Frequency	Percentage
Recommended	86	81.13
Never recommended	20	18.86
Total	106	100.0

Table 4.29 illustrates the amount of people that have actually recommended other people to take vitamins or mineral supplements also. In this table we can see that 26.54 percent of the studied population size of 324 consumers of vitamins or mineral supplements in Chulalongrkon University supporting staff group studied have recommended other people to take vitamins or mineral supplements. Table 4.29 also illustrates that the majority of the consumer of vitamins or mineral supplements are satisfied with the results from consumption of vitamins or mineral supplement. This is because if they were not satisfied than they would not recommend others to take vitamins or mineral supplements, regardless of the type or brand.

Table 4.30: Different type of people that the current users of vitamins or minerals supplements have recommended others to also consume vitamins or mineral supplements

Recommended to	Frequency	Percentage
Immediate relatives (Children, Parents, Siblings, Spouse, and Uncle &Aunty)	51	48.11
Friends and Co-workers	35	33.01
Never recommended	26	24.5
Total	106	100.0

From table 4.30, it clearly illustrates that the majority of the supporting staff, which constitutes 15.74 percent of the total population of the respondents has recommended their immediate relatives to consume vitamins or mineral supplements. In addition 10.8 percent of the supporting staff at Chulalongkorn University has also recommended their co-workers and friends to consume vitamins or mineral supplements.

Table 4.31: Sources of purchasing vitamins or mineral supplements

Source of purchase	Frequency	Percentage
Pharmacy	63	59.4
Hospital, Clinic	28	26.4
Direct Sale	15	14.1
Total	106	100.0

Table 4.31 shows the source of purchase that consumers of vitamins or mineral supplements buy their vitamins. From this table we can see that the majority of the consumers of vitamins or mineral supplements in the supporting staff at Chulalongkorn usually purchases their vitamins pharmacy. Out of the total number of

106 people that consume vitamins 63 percent of them buy their vitamins or minerals from the pharmacy, where as only 4.6 percent of the consumers of vitamins or mineral supplements in the supporting staff bought their vitamins or mineral supplement from direct sales. In Bangkok there are several direct sales companies such as: Amway.

Table 4.32: Personal preferences on improvement of health from the consumption of vitamins and mineral supplements

Personal preference on improvement of health	Frequency	Percentage
Improved health	84	79.2
No improvement	22	20.7
Total	106	100.0

Table 4.32 displays the personal satisfaction level of the consumers of vitamins or mineral supplements in Chulalongrkon university staff members. This personal preference was based on the interviewee personal judgment on whether or not they were satisfied with their health after consumption of vitamins or mineral supplements. Out of the 324 responedents 25.9 percent of them that are currently consuming vitamins or mineral supplements believe that they their health has improved due to the consumption of vitamins or mineral supplements. On the other hand, 12 percent of 324 studied supporting staff felt that their health did not improve.

Table 4.33: Willingness to continue consumption for the rest of their lif

Willingness to continue consumption for the rest of their life	Frequency	Percentage
Willing to continue consumption of vitamins or mineral supplements	94	88.6
Will discontinue consumption of vitamins or mineral supplements	12	11.32
Total	106	100.0

From table 4.33, we can see that the majority of the people who are currently consuming vitamins or mineral supplements feel that they are willing to consume vitamins or minerals supplements. Approximately 29 percent of consumers of vitamins or mineral supplements are willing to continue their consumption. On the other hand, 3.7 percent of current consumers of vitamins or mineral supplements are not willing to continue their consumption of vitamins and mineral supplements and will discontinue consumption.

Analysis the research hypothesis of the study

The part V is the analysis of the data and answering the questions to the research question and different research hypothesis of this study. For this section of the results, different research hypothesis have been set in order to answer the research objective, which was mentioned in chapter I. In this part we will look at the different aspects of the knowledge, attitude, and practice and association with vitamins or mineral supplements.

- Research Hypothesis 1: There is a difference between the level of knowledge of consumers of vitamins or mineral supplements when compared to the level of knowledge of non-consumers of vitamins or mineral supplements.

- Research Hypothesis II: The attitude of vitamin or mineral supplement consumers between non-consumers will be the same.
- Research hypothesis III There is association between alcohol consumption, exercise and current smoking status.
- Research Hypothesis IV: That there is association between the consumer of vitamins or mineral supplements with the education level in the supporting staff at Chulalongkorn University.
- Research Hypothesis IV: That there is association between the consumer of vitamins or mineral supplements with the education level in the supporting staff at Chulalongkorn University.
- Research Hypothesis V: That there is an association between the level of household income and consumption of vitamins or mineral supplements in the supporting staff members at Chulalongkorn University.

Research Hypothesis 1: There is a difference between the level of knowledge of consumers of vitamins or mineral supplements when compared to the level of knowledge of non-consumers of vitamins or mineral supplements.

Table 4.34: Knowledge score of consumers and non-consumers of vitamin or mineral supplement.

	Knowledge score		t	P-value
	Mean	S.D.		
Consumers	9.47	3.38		
Non-consumers	8.70	3.91	-1.747	0.082

The research hypothesis for this question was set that knowledge level of the consumers of vitamins or mineral supplements, regarding vitamins or minerals would have a higher knowledge score than those who are not currently consuming vitamins or mineral supplements. From table 1.32 illustrates a comparison between the mean score of both of the non-users and users of vitamin or mineral supplement in supporting staff members at Chulalongkrong University. From the table we can see that, the difference in the score between these two groups is not very much different. The average score in the non-users from the knowledge test of vitamin or mineral supplement was 8.70 out of 20, whereas the users of vitamin or mineral supplement the score was not much higher at 9.47 out of 20. By performing the t-test score, the t-test score was -1.747, and has p-value of 0.082. the p-value score for this association is more than 0.05 so it can be said that there is no significance or an association between the level of knowledge between users and non-users of vitamin or mineral supplement.

Research Hypothesis II: The attitude of vitamin or mineral supplement consumers between non-consumers will be different.

Table 4.35: Attitude of vitamin or mineral supplement consumers between non-consumers

Attitude regarding vitamin or mineral supplements	Non-consumer		Consumer		t-value	P
	\bar{x}	S.D.	\bar{x}	S.D.		
Mean score of attitude	3.26	0.51	3.38	0.45	-1.998	0.047*
Vitamins supplements will prolong my life	3.08	1.00	3.25	1.03	-1.397	0.163
Vitamin or mineral supplements will make me feel more energetic	3.36	0.85	3.51	0.88	-1.442	0.150
Vitamin or mineral supplements will prevent chronic disease	3.05	0.84	3.35	0.84	-3.006	0.003*
Consumption of vitamins or mineral supplements will suit my busy lifestyle	3.40	0.98	3.38	1.06	0.182	0.856
Consumption of vitamins or mineral makes me feel in trend	2.57	1.05	2.86	1.10	-2.287	0.023*
Consumption of vitamins or minerals makes me healthier	3.38	1.01	3.57	0.95	-1.621	0.106
Consumption of vitamins has more negative aspects than positive aspects	2.96	0.86	2.88	0.95	0.744	0.458
Some vitamins or minerals supplements are over priced	4.11	0.83	4.11	0.85	0.015	0.988
Consumption of vitamins or mineral supplements are unnecessary with a balanced diet	3.94	0.86	3.87	0.86	0.711	0.478
Even though vitamins or mineral supplements are expensive they are worthwhile.	2.76	0.98	3.01	0.96	-2.146	0.033*

The research hypothesis question was set that the attitude of vitamin or mineral supplement users would be the same when compared to non-consumers of vitamins or mineral supplements. Table 4.35 illustrates the comparison between the attitude of user and non-users of vitamin and mineral supplement in Chulalongkorn University

supporting staff. After performing the t-test we can see that there was a significant difference in the attitude between consumer and non-consumer of vitamins or mineral. For example, statement III “Vitamin or mineral supplements will prevent chronic disease”, the t-value for this statement showed that when comparing these two groups the t-value is -3.006, with a p-value of 0.003. Another example, is statement V “Consumption of vitamins or mineral makes me feel in trend”, for this statement the t-test value showed that the t-value was -2.287 with a p-value of 0.023. The last statement that had significance and difference between the two study groups is the statement X, “Even though vitamins or mineral supplements are expensive they are worthwhile”. For this statement, the t-value was -2.46 and with a p-value of 0.333. Therefore we can say that there is a significant difference between the attitudes of the consumer and non-consumer of vitamins or mineral supplements.

Research hypothesis III There is association between alcohol consumption, exercise and current smoking status.

Table 4.36: Association between vitamins or mineral supplement consumption between alcohol, exercise and smoking status.

Associated factors with Vitamin or mineral consumption	χ^2	df	P-value
Alcohol	.308	3	.959
Exercise	2.977	1	.084
Smoking	3.647	3	.302

The research hypothesis was set that people who smoke or consume alcohol tend to consume vitamins or mineral supplements more than those who do not smoke or consume alcohol on a regular basis. The second part of this hypothesis is that those

who exercise on a regular basis tend to consume vitamins or mineral supplements more than those who do not exercise because they are more health conscious than non-consumers and those who do not exercise on a regular basis. The results of table 4.33 illustrates that there is no association between alcohol consumption, exercise, and smoking status. After performing chi-square to look at the associations with these three factors and vitamin or mineral supplement we can see that the p-value for each factor has a p-value which is more than 0.05.

Research Hypothesis IV: That there is association between the consumer of vitamins or mineral supplements with the education level in the supporting staff at Chulalongkorn University.

Table 4.37: The association between the consumption of vitamins and mineral supplements with education

Education	Consumption of vitamins or mineral supplements		Total
	Non-consumer	Consumer	
High school	12 3.7%	12 3.7%	24 7.4%
Lower vocational school	13 4.0%	6 1.9%	19 5.9%
Higher vocational school	9 2.8%	7 2.2%	16 4.9%
Bachelor Degree	151 46.6%	56 17.3%	207 63.9%
Master Degree	27 8.3%	17 5.2%	44 13.6%
Doctoral Degree	2 .6%	5 1.5%	7 2.2%
Others	4 1.2%	3 .9%	7 2.2%
Total	218 67.3%	106 32.7%	324 100.0%

$$\chi^2 = 12.962, \quad df = 6, P = 0.044$$

The research hypothesis was set that the higher the education level, the more willingness or current consumption of vitamins or mineral supplements compared to those with a lower education level. From the table 4.37 we can see that there is a significant association between education and vitamin or mineral supplement consumption. After performing the chi-square test, the score is 12.96 and the p-value is 0.044.

Research Hypothesis V: That there is an association between the level of household income and consumption of vitamins or mineral supplements in the supporting staff members at Chulalongkorn University.

Table 4.38: Association between income and vitamin and mineral supplements

Household income	Consumption of vitamins and mineral supplements		Total
	Non-consumer	Consumer	
	Less than 10,000 baht	31 9.6%	
10,000-29,999 Baht	96 29.6%	39 12.0%	135 41.7%
30,000-49,999 Baht	47 14.5%	22 6.8%	69 21.3%
50,000-69,999 Baht	30 9.3%	13 4.0%	43 13.3%
More than 70,000 baht	14 4.3%	11 3.4%	25 7.7%
Total	218 67.3%	106 32.7%	324 100.0%

$$\chi^2 = 3.876, \quad df = 4, P = 0.423$$

The research hypothesis was set that there is an association between income and vitamins or mineral supplement consumption. That the higher the households income,

the more likely that there will be surplus income to spend on luxury goods such as vitamins or mineral supplements. From table 4.38 it illustrates the research hypothesis that is rejected. Since after performing the chi-square to look at the association between income and vitamin or mineral supplements the results of the test show that there is no association between these two factors. It can also be said from this table that research hypothesis is rejected since our calculated p-value is more than $p = 0.05$.