

**PREVALENCE OF NUTRITIONAL SUPPLEMENT INTAKE
AMONG YOUTH**



ST. TERESA'S COLLEGE
(AUTONOMOUS)

PROJECT SUBMITTED

In Partial Fulfilment of the Requirement for the Award of the degree of

B.Sc NUTRITION AND DIETETICS

BY

SALIMAH

Register No: SB20ND023

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

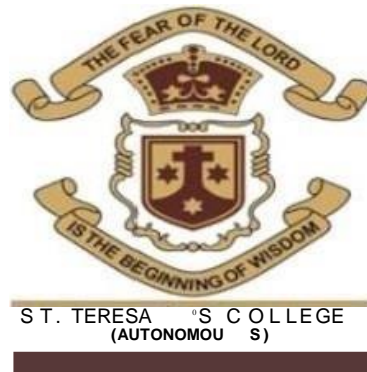
ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

APRIL 2023

CERTIFIED AS BONAFIDE RESEARCH WORK

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Signature of Internal Examiner

Signature of External Examiner

DECLARATION

I hereby declare that the project entitled **PREVALENCE OF NUTRIOTIONAL SUPPLEMENT INTAKE AMONG THE YOUTH** submitted in partial fulfilment of the requirement for the award of the degree of B.Sc. Nutrition and Dietetics is a record of original research work done by me under the supervision and guidance of **Ms. Samja Sabu**, Assistant Professor, Department of Clinical Nutrition and Dietetics, Women's Study Centre, St. Teresa's College (Autonomous), Ernakulam and has not been submitted in part or full of any other degree/diploma/fellowship or the similar titles to any candidate of any other university.

Place: Ernakulam

Salimah

Date: 18/04/2023

CERTIFICATE

I here certify that the project entitled **PREVALENCE OF NUTRITIONAL SUPPLEMENT INTAKE AMONG THE YOUTH** submitted in partial fulfilment of the requirement for the award of the degree of B.Sc. Nutrition and Dietetics is a record of original work done by Ms. **Salimah** during the period of the study under my guidance and supervision.



Signature of the HOD

Ms Suraya M. Kottaram

Head of the Department

Department of Clinical Nutrition and
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Signature of the Research Guide

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First and foremost, I thank God Almighty, for providing me with all the strength and courage to complete this project.

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I also wish to place on record my deep sense of appreciation and humble thanks to my beloved parents for their encouragement to withstand the stress and kind motivation in completing my project. Their unconditional love and support provided me with all the courage to finish my study.

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SALIMAH

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1. INTRODUCTION

A dietary supplement is 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 humans to supplement the diet by increasing its total daily intake, or a concentrate, metabolite, constituent, extract or combination of these products (Castell *et al.*, 2015).

The type of nutritional supplements in use was best described by the following modalities: performance supplements (aggregating creatine, amino acid pills, arginine, glutamine, and branched-chain amino acids), vitamins/minerals (including multivitamins, multimineral, vitamin and mineral supplements, as well as vitamin C and vitamin E), weight/fat loss supplements (including carnitine, protein bars, and protein shakes), alertness/energy supplements (comprising caffeine and sports energy drinks), natural supplements (with herbal supplements, iron, calcium tablets, and fish oil pills), and the last cluster included soy and sports bar. Reasons for supplement use are: disease prevention (prevention of nutritional deficiencies, treatment of medical problems, and prevention of diseases in the future), immunity/energy boosting (immunity boosting, increased alertness and mental activity, and decreased stress), muscle building (muscle gain or weight gain, muscle repair or recovery, strength enhancement, and performance improvement), and weight/fat loss (meal replacement, weight loss, and decreased body fat) (Khoury, 2012).

The most popular supplements used were multivitamins and high-energy drinks. The use of supplements to increase body mass and strength, and to reduce body fat or mass, increased across grade and was more prevalent in males than females (Hoffman, 2008). The Study shows that use of nutritional supplements increases as adolescents mature. Patterns of supplement intake were different among different gender and age groups. Men and younger exercisers were focused on performance enhancing and muscle building supplements while women and older exercisers were more focused on health promoting products like vitamins, minerals etc. (Khoury, 2012). The male athletes reported a higher use of dietary supplements than women athletes.

Hoffman (2008), conducted a self-report survey on 3248 students representing grades 8–12 in a multistate, cross-regional study. It was revealed that 71.2% of the adolescents surveyed consumed at least one supplement. The studies regarding prevalence of nutritional supplement consumption among youth of Kerala is very limited. Also, Ernakulam is a very literate district and a

center part of Kerala, where people can get more access to different kinds of supplements. The healthcare and wellness facilities are also well established in the city. Besides the knowledge from social media, those kinds of facilities may also contribute to the use of such supplement consumption among young people. Hence the present study is significant and conducted.

Objectives

Primary objective

- To assess the prevalence and knowledge regarding consumption of nutritional supplement by youth

Secondary objectives

- To assess the socio - economic status of the youth
- To assess the general health status, physical activity levels and dietary pattern

2. REVIEW OF LITERATURE

“A dietary supplement is 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, a herb or other botanical, an amino acid, a dietary substance for use by humans to supplement the diet by increasing its total daily intake, or a concentrate, metabolite, constituent, extract or combination of these products” (Castell *et al.*, 2015). Here, the study “Prevalence of Nutritional Supplements among Youth” has been reviewed under the following headings:

2.1 Prevalence of nutritional supplements

2.2 Factors influencing intake of nutritional supplements

2.3 Benefits of nutritional supplements

2.4 Types of nutritional supplements

2.1 Prevalence of nutritional supplements

In a study by Baltazar-Martins *et al.*, 2019, 64% high-performance athletes who participated in individual and team sports reported habitual use of at least one dietary supplement in the last year while the remaining 36% did not. Also, the male athletes reported a higher use of dietary supplements than women athletes. Within the sample of supplement users, on average each athlete consumed 3 supplements with a range from 1 to 12 supplements. From the subsample of supplement users, 47% reported consumption during the whole season, 43% reported consumption only during competitive periods, and 10% reported consumption only during the pre-season.

Hoffman *et al.*, 2008, conducted a self-report survey on students to examine nutritional supplementation and anabolic steroid (AS) use in adolescent males and females, which revealed that 71.2% of the adolescents consumed at least one supplement. The most popular supplements used were multivitamins and high-energy drinks. The use of supplements to increase body mass and strength, and to reduce body fat or mass, increased across grade and was more prevalent in males than females. The Study shows that use of nutritional supplements increases as adolescents mature.

Khoury and Antoine-Jonville 2012, conducted a cross-sectional study, where exercisers were randomly selected from gyms, to assess the prevalence of nutritional supplements intake and the potential influencing factors among people exercising in gyms in Beirut city. It was reported that 36.3% of the participants took nutritional supplements. Patterns of supplement intake were different among

different gender and age groups. Men and younger exercisers were focused on performance enhancing and muscle building supplements while women and older exercisers were more focused on health promoting products like vitamins, minerals etc.

2.2 Factors influencing intake of nutritional supplements

In a study by Baltazar-Martins *et al.*, 2019, 64% of high-performance athletes who participated in individual and team sports completed a validated questionnaire about their use and purchase patterns of dietary supplements, which were categorized in accordance with the International Olympic Committee (IOC) consensus. Age, sex, sport type, level of competition, and professionalism were found to influence the prevalence of supplement use. Endurance athletes appear to consume more supplements than athletes engaged in sprint-based activities. Thus, the sport discipline was a variable that greatly influenced the proportion of dietary supplements used.

Gaston and Correia (2010) conducted a cross-sectional study on exercisers from gyms throughout the city, all subjects were at least 18 years old. The intake of nutritional supplements was reported by 36.8% of participants with the highest intake being seen in men. Most people (55%) reported using nutritional supplements without any specialized professional guidance and based primarily on self-prescription. The younger participants, mainly men, took supplements rich in proteins while the older participants took supplements rich in multivitamin/minerals and natural/phytotherapeutic agents. The results show that supplement intake in people exercising in gyms is high and is usually self-prescribed.

The study by Oyama, 2018 aims at assessing the effect of jelly-type oral nutritional supplement on metabolism and redox balance by various surrogate markers and to evaluate its excretion from stomach. There are limitations to surrogate markers as compared to direct measurement of proteolysis, lipolysis and redox balance regulation. Jelly-type ONS suppresses the catabolism of adipose tissue and muscle protein, decreases oxidative stress and improves patient satisfaction in healthy participants, without any increased risk of aspiration.

2.3 Benefits of nutritional supplements

Stratton and Elia 2010 conducted Systematic reviews and meta-analyses, which consistently suggest that ready-made, multi-nutrient liquids which may be prescribed can improve energy and nutritional intake, body weight and have a variety of clinical and functional benefits in a

number of patient groups. It also shows that oral nutritional supplements produce significant reductions in complications (e.g. infections) and mortality, and a recent meta-analysis shows a reduction in hospital admissions. Thus, the appropriate use of oral nutritional supplements should form an integral part of the management of malnutrition.

Elia *et al.*, 2016 performed a systematic review according to recommended procedures to assess whether oral nutritional supplements (ONS) can produce cost savings and cost-effective outcomes. Meta-analysis indicated that ONS reduced hospitalisation significantly and mortality non-significantly. ONS were reported to have improved quality of life, reduced infections, reduced minor postoperative complications, reduced falls, and functional limitations. The review indicates that ONS use in the community produces an overall cost advantage or near neutral balance, suggesting cost effectiveness. There is a need for prospective studies designed to examine primary economic outcomes.

Attard (2019), came to the conclusion that supplements provide beneficial metabolites which may be effective in disease prevention or may be useful as add-on to clinical medication. Therefore, the public should be advised on the potential benefits but also of any potential hazards that these supplements may incite to their health.

2.4 Types of nutritional supplements

Musaiger (2012), conducted a study on Intake of Nutritional Supplements among People Exercising in Gyms in Beirut City, from the study he concluded that, patterns of supplement use are different for males and females and according to their ages. The nutritional supplements here described are performance supplements (aggregating creatine, amino acid pills, arginine, glutamine, and branched-chain amino acids), vitamins/minerals (including multivitamins, multiminerals, vitamin and mineral supplements, as well as vitamin C and vitamin E), weight/fat loss supplements (including carnitine, protein bars, and protein shakes), alertness/energy supplements (comprising caffeine and sports energy drinks), natural supplements (with herbal supplements, iron, calcium tablets, and fish oil pills), and the last cluster included soy and sports bar. And these supplements are used for disease prevention (prevention of nutritional deficiencies, treatment of medical problems, and prevention of diseases in the future), immunity/energy boosting (immunity boosting, increased alertness and mental activity, and decreased stress), muscle building (muscle gain or weight gain, muscle repair or recovery, strength enhancement, and performance improvement), and weight/fat loss (meal replacement, weight loss, and decreased body fat).

The study conducted by Hess (2014), analysed the nutrient deficiencies in children and made some dietary modifications. Deficiencies in vitamin D, calcium, and potassium and excess energy, carbohydrates, and sodium are seen. In dietary modifications, it includes a variety of fruits and vegetables, whole grains, low fat milk and milk products, seafood and other lean protein options, and oils. Vegetables, fruits, dairy products, and whole grains are good sources of nutrients. There are some foods to be reduced, they are sodium, saturated fat, trans fat, cholesterol, added sugar, solid fat, and refined grains.

According to the study, Leary *et al.*, 2021, oral nutritionals are something which are used to meet their nutritional requirements in the form of liquids, semi-solids or powders and provide macro- and micronutrients. Oral Nutritional Supplements shows benefits in individuals who are having difficulty in maintaining their nutritional intake. It also helps in reducing healthcare use and reduce the number of hospital admissions and duration of hospital stays of people who are malnourished.

3. METHODOLOGY

The present study entitled “**Prevalence of Nutritional Supplement Intake among Youth**” consists of the following steps:

- 3.1 Selection of area**
- 3.2 Selection of samples**
- 3.3 Development of tools**
- 3.4 Conducting the study**
- 3.5 Analysis of data**

3.1 Selection of Area

The study was conducted in Kochi city of Ernakulam district. Kochi city is governed by Municipal Corporation which comes under Kochi Metropolitan Region. As per provisional reports of Census India, population of Kochi in 2011 is 602,046. Average literacy rate of Kochi city is 97.36 percent of which male and female literacy was 98.25 and 96.51 percent. The sex ratio of Kochi city is 1027 per 1000 males. According to 2011 Census of India, Ernakulam district included among the highest literate districts in India. Hence, the district was selected for the present study.

3.2 Selection of Samples

Hundred youth from Kochi city of Ernakulam district were selected for the study. Random sampling was used for the selection of samples. A simple random sample is a randomly selected subset of population and it requires little knowledge about the population for selection and each member has equal chance of being selected (Thomas, 2022).

The selection criteria for the sample is based on the age and whether they fit in the definition of youth. Youth can be defined as the time period between leaving school and becoming an adult in socio-economic terms. Thus, the age group selected was between 15 and 25 years (Jones, 2009).

The respondents were youth from colleges or universities and hostel residents which includes married, unmarried and divorced individuals.

3.3 Development of Tools

The tools used for the study was questionnaire. Questionnaire survey research is a research method for gathering information about the characteristics, behavior and/or attitudes of a population by administering a standardized set of questions, or questionnaire to a sample of individuals (McLafferty, 2010).

Standardized questionnaire with necessary modifications was used for the study. The questions comprised were to elicit information regarding socioeconomic and general health status and use of nutritional supplements among the samples. Nutritional supplements are products used to improve the diet and often contain vitamins, minerals, herbs or amino acids (Gagnier, 2012)

3.4 Conduct of Study

A total of 100 samples were interviewed and the data was collected with the help of questionnaire in the form of google form. The following parameters were collected:

- i. **General information:** Information such as gender, age, marital status, education, household income and height and weight were collected.
- ii. **General health status:** The subject were asked to do a self-assessment regarding overall health condition which included eating habits, diet pattern, overall fitness level and exercise pattern.
- iii. **Consumption of nutritional supplements:** This included data regarding consumption of nutritional supplements by the subjects, their awareness about its ingredients, safety concerns to use the supplements, source of information, side effects and information related to caffeine consumption.

3.5 Analysis of Data

The data collected were consolidated and frequencies were analyzed and discussed. The prevalence of nutritional supplement consumption within the youth and their possible side effects were noted.

4. RESULT AND DISCUSSION

The salient features of the study entitled “**Prevalence of Nutritional Supplement Intake among Youth**” was discussed under the following headings:

4.1 Socio - economic status of the youth

4.2 General health status

4.3 Physical activity levels

4.4 Knowledge regarding consumption and side effects of nutritional supplements

4.1 Socio - Economic Status of Youth

Socioeconomic status (SES) is defined as a measure of one's combined economic and social status and tends to be positively associated with better health. This entry focuses on the two common measures of socioeconomic status; education and income (Baker, 2014).

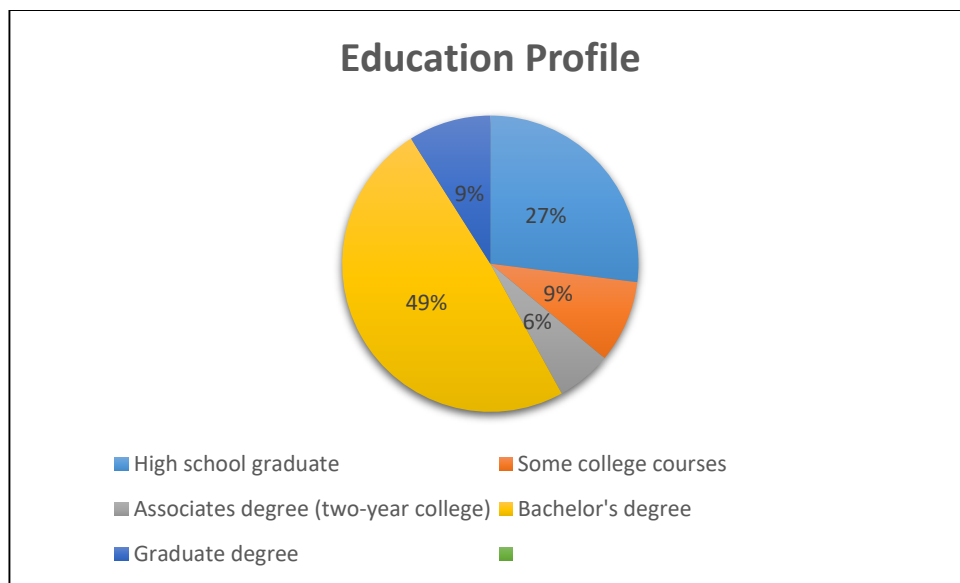


Fig.1 Education Profile

Figure 1 represents the educational profile of the subjects. From Fig1, it is evident that majority (49%) of the respondents were bachelor’s degree holders. Also, 27 per cent respondents had high school education, 9 percent had a graduate degree.

Most school curricula devote limited time to health education. Rather than just factual knowledge, schooling may help form lasting cognitive or emotional skills that foster health promoting

decisions in life. Literacy and numeracy are likely to help make healthy decisions. (Berkman *et al.*, 2014).

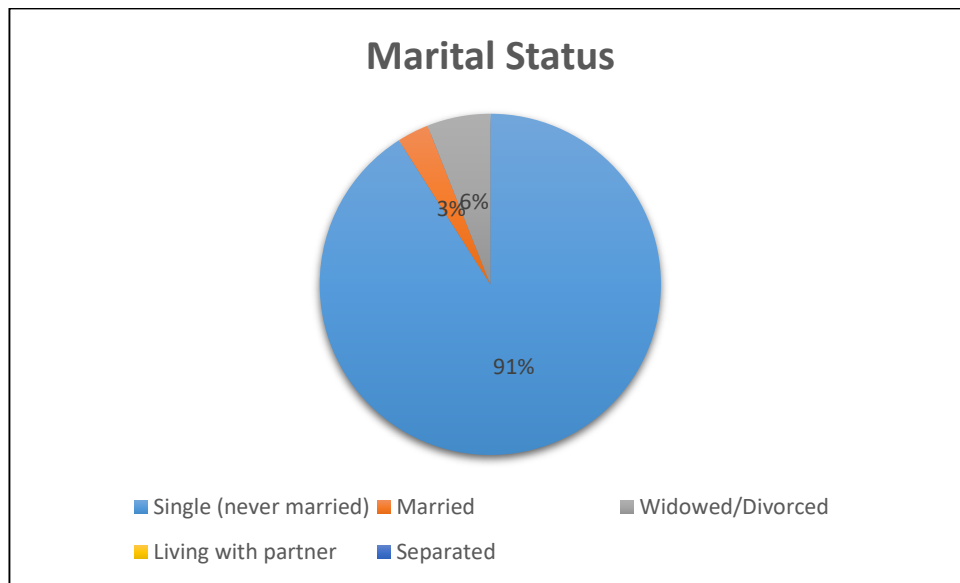


Fig. 2

Marital Status

As per the information from Fig.2, it is evident that majority (91%) respondents were single or never married group

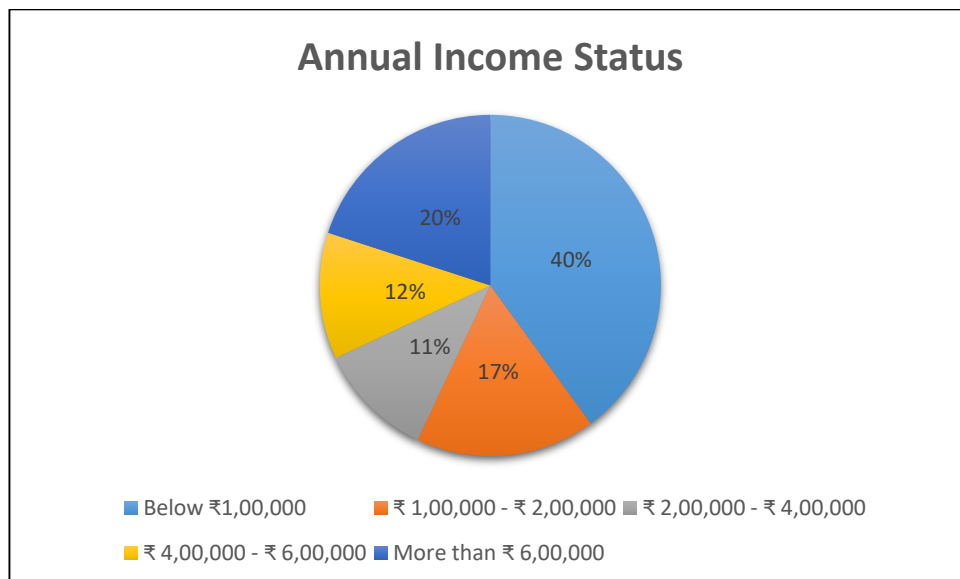


Fig. 3

Annual Income Status

From Fig.3, it is evident that, more than 40 percent of the respondents belongs to families with annual income range of below ₹1,00,000. Also, 20 percent belongs to families which had annual income above ₹6,00,000.

Higher income may enable better access to the means to produce good health, including better access to health care, as well as other forms of "healthy consumption" such as better housing, means of transportation, or clothing (Berkman *et al.*, 2015)

4.2 General health status

To assess the general health status, we analyzed BMI, eating habits and diet.

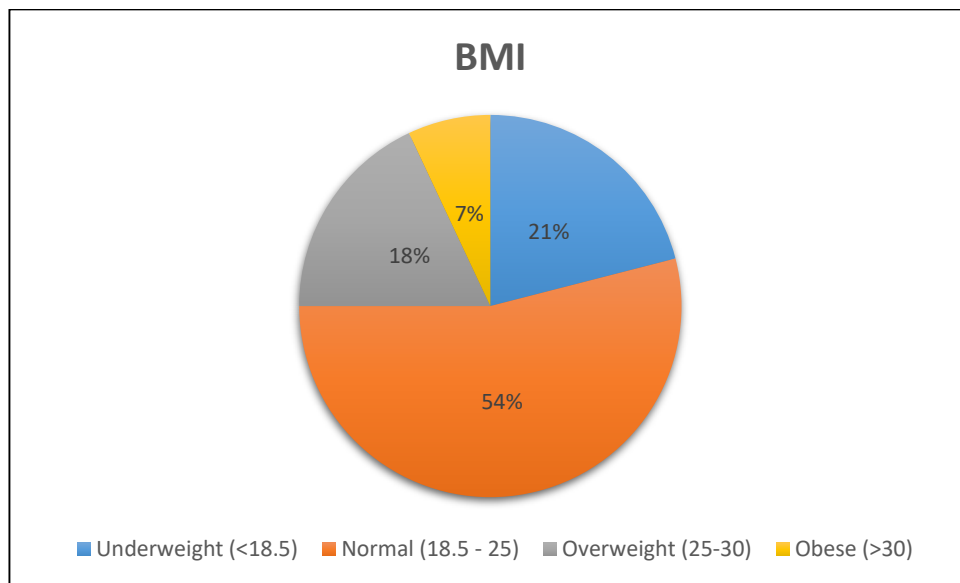


Fig. 4 Body Mass Index (BMI)

From Figure 4, it is able to understand that majority (54%) of the respondents were within the range of normal BMI. Only 7 percent of the respondents belongs to obese category. Also, 21 percent belongs to underweight and 18 percent belongs to overweight range.

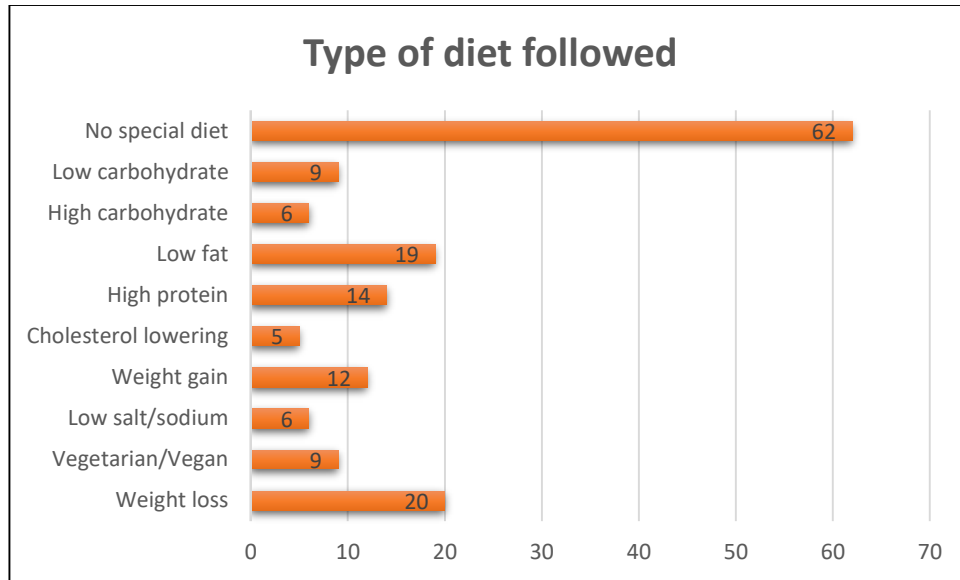


Fig. 5 Type of diet followed

From Fig. 5, it can be observed that majority of the respondents (62 %) were not following any special diet. Even though, 20 percent respondents following weight loss diet, 19 percent followed low fat diet, 14 percent followed high protein diet and 12 percent followed weight gain diet. It has been noted down from the collected data that most of the respondents considered their eating habits to be good.

The importance of the diet as a determinant of disease risk, was recognized by WHO. The dietary changes recommended by WHO includes balancing energy intake, limiting saturated and trans fats and shifting toward consumption of unsaturated fats, increasing intake of fruits and vegetables, and limiting the intake of sugar and salt (Cena *et al.*, 2020). A study by Ford *et al.* (2015) demonstrated that the higher diet quality helps to improve higher quality of life and thus the general health of the individual as well.

Hence, from Figures 4 and 5, it can be understood that since, 62 percent of the respondents were not following any special diet pattern, 52 percent of them were belongs to the normal BMI category, which is an indication of normal health for majority of the respondents.

4.3 Physical Activity Level

Exercise Frequency	No. of responses
No exercise	37
Less than 15 minutes	20
15-30 minutes	25
30 min - 1hr	15
More than 1hr	3

Table 1. Frequency of Exercise

From table 1, it can be noted that among the respondents, only 37 percent were not engaged in any exercise. The remaining 63 percent participants were involved in some forms of exercise.

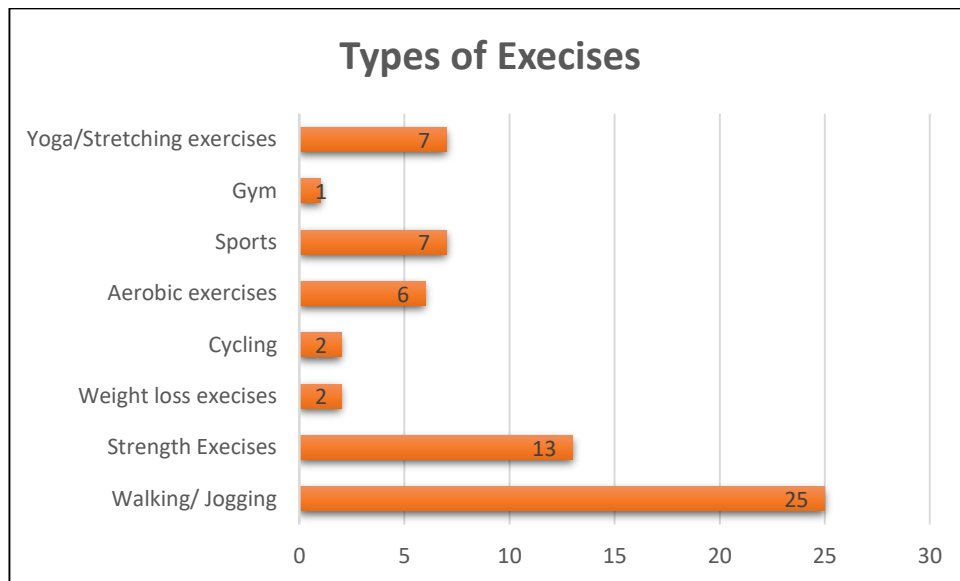


Fig. 6 Types of Exercises

Figure 6 represent the type of different physical activities involved by the respondents. 25 percent done walking or jogging, 13 per cent used to do strength exercises, 7 percent involved in yoga or stretching types exercises, 7 percent involved in sports activities and 6 percent involved in aerobic exercises.

Reason for Exercising	No. of responses
Health reasons	25
Increase muscle mass	17
Preparing for a strength competition	2
Preparing for an aerobic competition	2
Fun	21
Stress relief	39
Physician directed	3
Weight loss	31

Table 2. Reasons for Exercising

From table 2, it can be noted that the main reasons for exercising among the respondents were stress relief (39%), Weight loss (31%), Health reasons (25%) entertainment/fun (21%), and increase muscle mass (17%). The least commonly mentioned reasons include preparation for strength competition (2%), preparing for an aerobic competition (2%) and advice from Physician (3%).

4.4 Knowledge regarding Consumption and Side effects of Nutritional Supplements

Figure 7 represents the consumption and expenditure pattern for nutritional supplements by the respondents. It has been observed that 46 percent of the respondents did not spend any amount for purchasing nutritional supplements for the past 3 months. This also indicating that they were not taking any kind of nutritional supplements on a regular basis. Also, 17 percent spent of the respondents spent Rs. 1000 – 5000, 14 percent spent less than Rs. 1000/- and only 6 percent spent more than Rs. 5000 per month for the purchase of nutritional supplements. But 17 percent respondents were not sure about their expenditure for the purchase of nutritional supplements for the past 3 months.

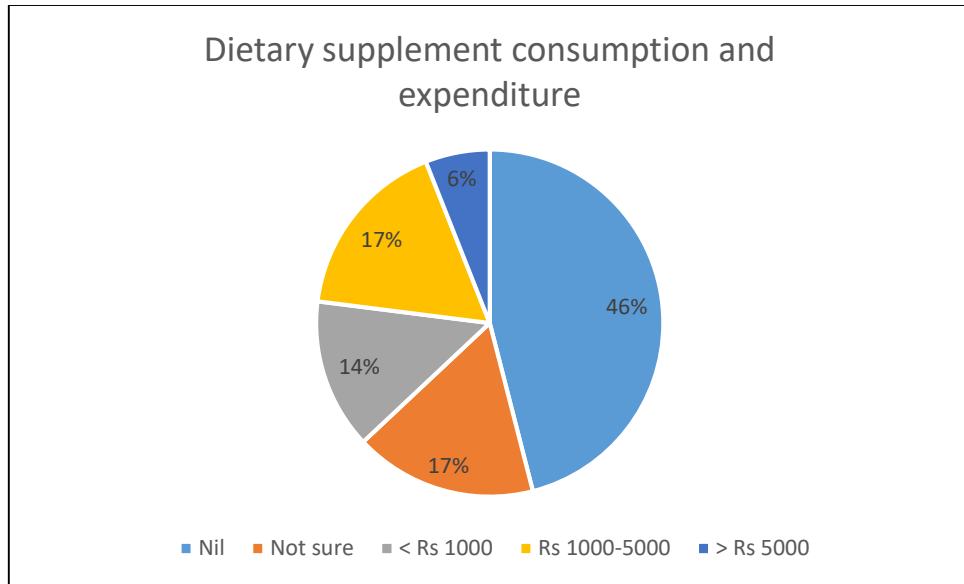


Fig. 7 Dietary supplement consumption and expenditure

A cross-sectional study was conducted on subjects from different bodybuilding clubs and 49% of the respondents declared supplement use. Men were more likely to take supplements than women. Reasons for using supplements were reported to be for health (45%), enhancing the immune system (40%) and improving athletic performance (25%). (Karimian, 2011)

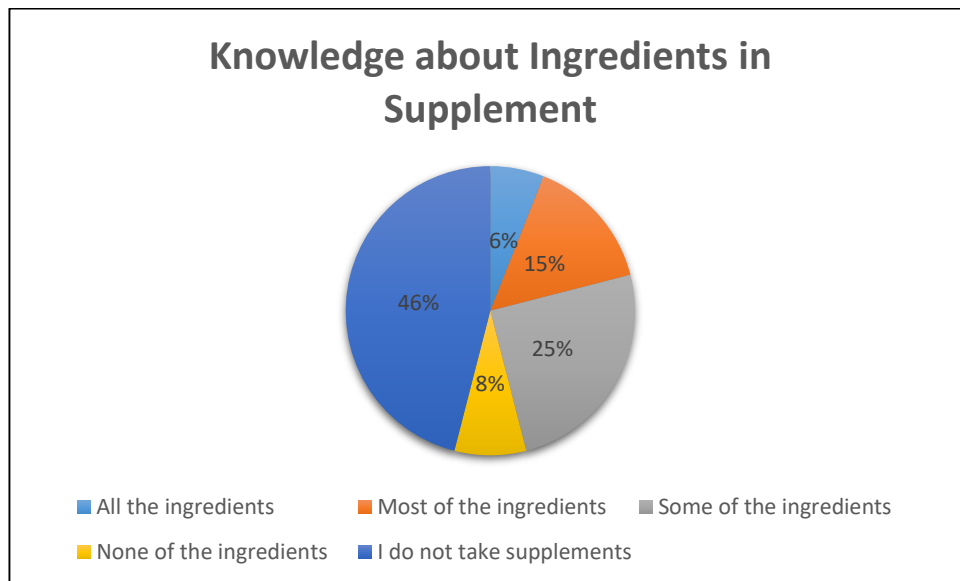


Fig. 8 Knowledge about Ingredients in Supplement

From Fig. 8, it was found that among the respondents who consumed dietary supplements, 46 percent of them were not aware about ingredients contained within the supplements

and only a few knew all the ingredients present. Also, 15 percent know most of the ingredients and 25 percent were aware about some of the ingredients.

Dietary supplements include such ingredients as vitamins, minerals, herbs, amino acids, and enzymes, and are typically marketed in forms such as tablets, capsules, softgels, gelcaps, powders, and liquids. Dietary supplements may also include other ingredients, such as fillers, binders, excipients, preservatives, sweeteners, and flavorings. These “other ingredients” are listed separately from dietary ingredients on the Supplement Facts label. (FDA, 2023)

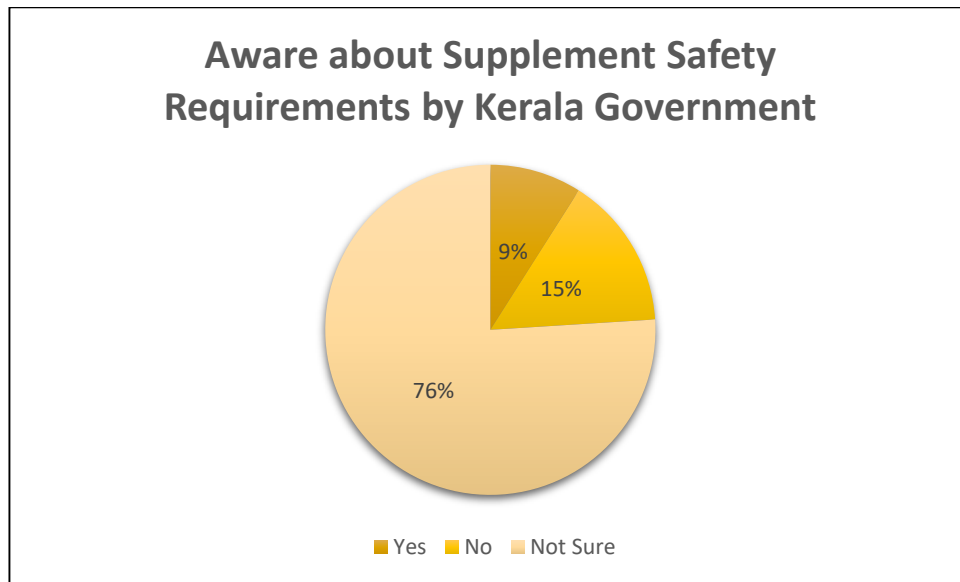


Fig. 9 Awareness about Safety Requirements by Kerala Government

Figure 9 represents awareness about the safety requirements instructed by Government of Kerala for nutritional supplements. An alarming data obtained from the Figure 9 was that, 76 percent of the respondents were not sure or unaware about the policies, regulations and requirements by Government to sell those kind of supplements in market.

FDA regulates both finished dietary supplement products and dietary ingredients. FDA regulates dietary supplements under a different set of regulations than those covering "conventional" foods and drug products. Under the Dietary Supplement Health and Education Act of 1994 (DSHEA): Manufacturers and distributors of dietary supplements and dietary ingredients are prohibited from marketing products that are adulterated or misbranded. That means that these firms are responsible for evaluating the safety and labeling of their products before marketing to ensure that they meet all the requirements of the Federal Food, Drug, and Cosmetic Act as amended by DSHEA and FDA regulations.

FDA has the authority to take action against any adulterated or misbranded dietary supplement product after it reaches the market. (FDA, 2023)



Fig. 10 Source of knowledge about Nutritional Supplements

Figure 10 represents the source of knowledge for the respondents about different types of nutritional supplements. It was noted down 40 percent of the respondents gain knowledge about dietary supplements from their family, 22 percent from friends and 29 percent through internet. Only 14 percent obtained knowledge about the supplements from health professionals. Only 3 percent considered the information from personal trainers. Respondents obtained information from other sources such as books (2%), magazines (6%), journals (3%), television (8%) and store sale person (5%) also. A few respondents reported that they purchase their supplements from the grocery store, health food store and drug store.

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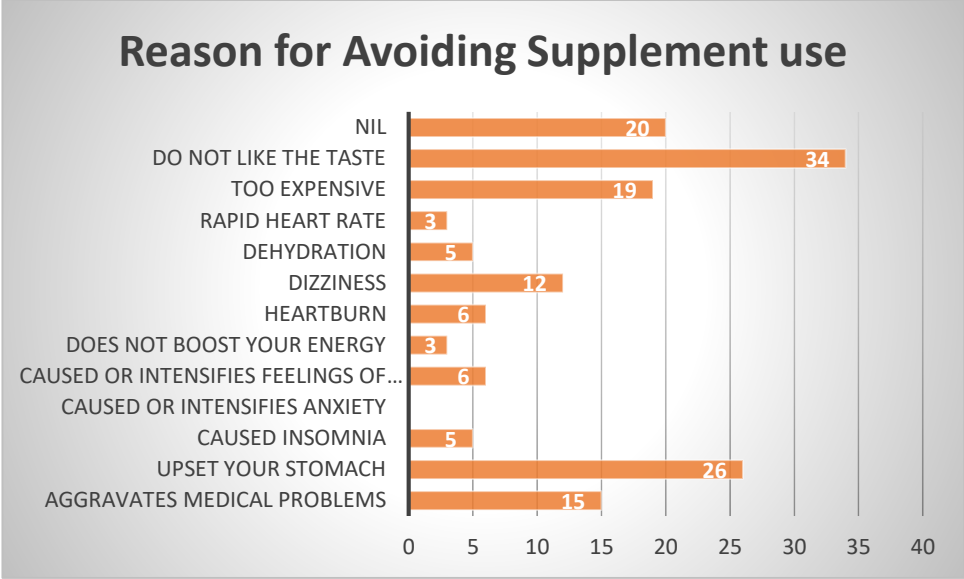


Fig. 11 Reasons to avoiding supplement consumption.

From Fig. 11, it is evident that the most common reasons to avoid nutrient supplements by the respondents was its unpleasant taste. Also, 26 percent avoided it due to stomach upset after consumption, 19 percent avoid due to its expensiveness and 15 per cent avoid due to its effect in aggravation of some medical conditions. Other reasons such as increased heart rate, dehydration, heart burn, nervousness, anxiety and insomnia are some of the other reasons to avoid supplements on a daily basis.

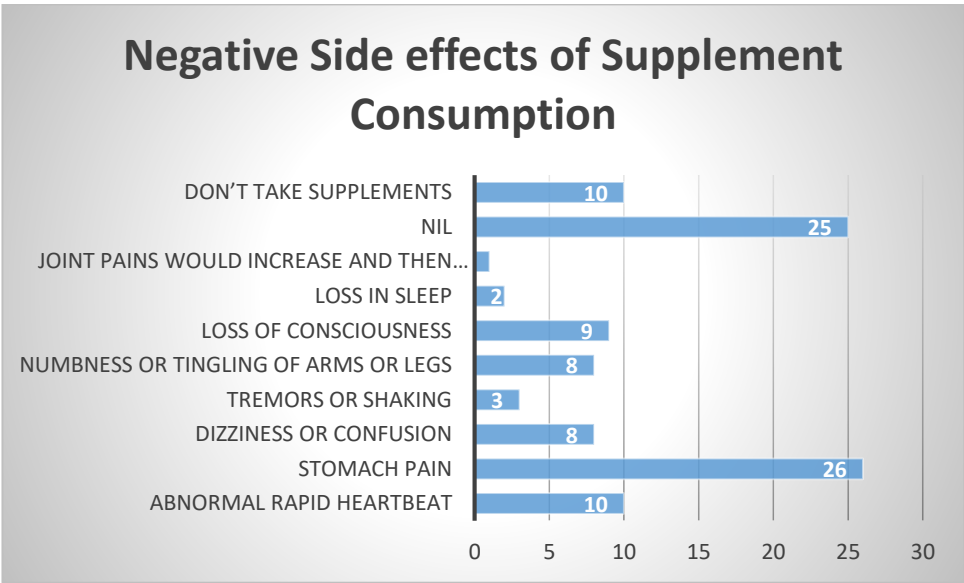


Fig. 12 Negative Side effects of Supplement Consumption

Figure 12 represent negative side effects of supplement consumption. Among the respondents, those who used to take supplements regularly affected with some side effects also. Fig. 12 revealed that 26 percent suffered with stomach pain. Also, other side effects such as loss of sleep, loss of consciousness, numbness in proximities, tremor or shake, dizziness, confusion are also suffered by a few of the subjects upon regular consumption of certain supplements.

A study about the adverse effects of dietary supplements in US military service members conducted by Knapik et al. (2022) pointed out that in its multivariable analysis, reporting adverse effects were independently associated with female gender, younger age, higher body mass index, smoking, higher alcohol intake, service in the Army, Navy, or Marine Corps (compared with Air Force), and consumption of a greater number of dietary supplements.

5. SUMMARY & CONCLUSION

“A dietary supplement is 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 humans to supplement the diet by increasing its total daily intake or a concentrate, metabolite, constituent, extract or combination of these products” (Castell *et al.*, 2015).

The study was focused on socio - economic status of the youth, general health status, physical activity levels and knowledge regarding consumption and side effects of Nutritional Supplements. Data collection was conducted through modified standard questionnaire. The salient findings of the study are:

- Factors such as annual income, educational and marital status were considered for assessing the socio-economic status. It was revealed that among the 100 samples, 40 percent belongs to families with annual income range of below ₹1,00,000. Also 49 percent of the respondents were bachelor's degree holders and majority (91%) were included in single or never married group.
- Evaluated the health status by BMI and dietary pattern. From the results, it was found that majority of them (54%) were within normal BMI range and 62 percent doesn't follow any special diet.
- Among the respondents, 37percent doesn't follow any kinds of exercises while the remaining 63 percent were involved in some forms of exercise for varying durations. The most commonly seen physical activities include walking/jogging (25%), strength exercises (13%) and 7% were involved in yoga/stretching exercises or sports. The main reasons that encourages the respondents to exercise included stress relief (39%), weight loss(31%), fun or entertainment(21%) and health reasons(20%).
- From the data regarding the expenses for dietary supplements, 46 per cent of them were not consuming any dietary supplements. The major reasons to avoid nutritional supplements were the unpleasant taste, expense and the gastric issues and personal preference.
- Among the samples, many individuals were not about the ingredients and whether the supplements are safe for consumption. Their source of information were not reliable as from health professionals or personal trainers rather they got their knowledge from internet, family or friends. Only 6% of the

respondents knew the ingredients in the supplements while 8% knew none of the ingredients and 25% knew only a few ingredients.

- Among the consumers, 25% of them are not having any side effects but there were individuals having negative side effects like stomach pain, abnormal rapid heartbeat, dizziness etc.

From the present study, it can be said that among 100 respondents, 54 per cent were found to consume supplements. But among them, a few respondents who experienced negative effects from dietary supplement consumption. Also, many of the respondents were not aware about the safety of consumption of such over the counter supplementations. Many external factors are also influencing the young generation for the consumption such extra supplementation. Hence, it can be concluded that, a healthy consumption of dietary supplements can be done with the advice from authorized sources such as health professionals according to the requirements of the body.

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APPENDIX
QUESTIONNAIRE

General Information

1. Gender
 - Male
 - Female
2. What is your age today?
3. What is your height in cm? (without footwear)
4. Your weight in kg?
5. Please indicate the highest level of education you have completed.
 - High school graduate
 - Some college courses
 - Associate's degree (two-year college)
 - Bachelor's degree
 - Graduate degree
6. What is your marital status?
 - Single, never married
 - Married
 - Not married (Widowed/Divorced)
 - Living with partner
 - Separated
7. What is your estimated combined household annual income?
 - Below ₹1,00,000
 - ₹ 1,00,000 - ₹ 2,00,000
 - ₹ 2,00,000 - ₹ 4,00,000
 - ₹ 4,00,000 - ₹ 6,00,000
 - More than ₹ 6,00,000

Health Questions

8. How do you consider your general health?

- Excellent
- Good
- Fair
- Poor

9. How do you consider your overall eating habits?

- Excellent
- Good
- Fair
- Poor

10. Which best describes your diet? (Please mark all that apply)

- Weight loss
- Vegetarian/Vegan
- Low salt/sodium
- Weight gain
- Cholesterol lowering
- High Protein
- Low Fat
- High Carbohydrate
- Low Carbohydrate
- No special diet
- Other:

11. How do you consider your overall fitness level?

- Excellent
- Good
- Fair
- Poor

12. How often do you exercise?

- Less than 15 minutes
- 15-30 minutes
- 30 min - 1hr
- More than 1hr

- No exercise
13. What type/kinds of exercises do you perform?
14. Why do you exercise? (Please mark all that apply)

- Health reasons
- Increase muscle mass
- Preparing for a strength competition
- Preparing for an aerobic competition
- Fun
- Stress relief
- Physician directed
- Weight loss
- I don't exercise
- Other:

Data on Nutritional/Dietary supplement

15. Do you know the ingredients contained in your dietary supplements?
- All the ingredients
 - Most of the ingredients
 - Some of the ingredients
 - None of the ingredients
 - I do not take supplements
16. Do any of the supplements you use contain caffeine?
- Yes
 - No
 - Not sure
17. Does the Kerala Government require that all dietary supplements sold are safe for consumption?
- Yes
 - No
 - I don't know
18. How confident are you that your dietary supplements will do as they claim?

- Extremely confident
- Very confident
- Somewhat confident
- Not confident at all

19. How confident are you that your dietary supplements are safe to consume?

- Extremely confident
- Very confident
- Somewhat confident
- Not confident at all

20. Have you experienced any of the following negative side effects while consuming dietary or caffeinated products? (Please mark all that apply under dietary supplements)

- Abnormal rapid heartbeat
- Stomach pain
- Dizziness or confusion
- Tremors or shaking
- Numbness or tingling of arms or legs
- Loss of consciousness
- Other:

21. Have you experienced any of the following negative side effects while consuming dietary or caffeinated products? (Please mark all that apply under caffeinated products)

- Abnormal rapid heartbeat
- Stomach pain
- Dizziness or confusion
- Tremors or shaking
- Numbness or tingling of arms or legs
- Loss of consciousness
- Other:

22. What or who is the source of your dietary supplement information? (Please mark all that apply)

- Family members
- Friends
- A health professional (such as doctor, nurse, dietitian, etc.)

- A personal trainer
- Magazines (such as Men's Health, Muscle and Fitness, Flex, Shape and SELF)
- Books
- Peer review journal (such as Medicine and Science in Sports and Exercise; International Journal of Sports Medicine)
- Internet
- Television
- Other:

23. Where do you purchase your supplements? (Please mark all that apply)

- Other supplement store (such as Vitamin World, Vitamin Cottage)
- Drug store (such as CVS, Walgreens, Eckerd)
- Grocery store
- Health food store (such as Wild Oats or Whole foods)
- Gym/Fitness center
- Not Sure

24. During the past three months, on average, how much money did you spend per month on dietary supplements?

25. During the past three months, on average, how much money did you spend per month on caffeinated products?

26. Why do you consume caffeine? (Please mark all that apply)

- Alleviate stress
- To feel more awake and alert
- To improve concentration
- To improve your mood
- Social aspects of having coffee with friends or family
- To improve creativity
- Increase your physical energy
- To help lose weight
- Enjoy the taste
- Other:

27. If you avoid caffeine, why do you avoid it? (Please mark all that apply)

- Aggravates medical problems
- Upset your stomach
- Caused insomnia
- Caused or intensifies anxiety
- Caused or intensifies feelings of nervousness
- Does not boost your energy
- Heartburn
- Dizziness
- Dehydration
- Rapid heart rate
- Too expensive
- Do not like the taste
- Other:

28. If you avoid supplements, why do you avoid them? (Please mark all that apply)

- Aggravates medical problems
- Upset your stomach
- Caused insomnia
- Caused or intensifies anxiety
- Caused or intensifies feelings of nervousness
- Does not boost your energy
- Heartburn
- Dizziness
- Dehydration
- Rapid heart rate
- Too expensive
- Do not like the taste
- Other: