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

A Research Paper

Submitted in partial requirements

for HUEC 3012

of

The University of the West Indies

Title: Prevalence of Dietary Supplement use among Gym Users and Nonusers in Trinidad

Student Name: Adanna Tyisha Codrington

Project Supervisor: Dr. Neela Badrie

Year Submitted: 2010

Department of Agricultural Economics & Extension
Faulty of Food and Agricultural

TITLE: Prevalence of Dietary Supplement Use Among Gym Users And Nonusers In Trinidad

A Research Paper

Submitted in Partial Requirements for HUEC 3012

Of

The University of the West Indies

Adanna Tyisha Codrington

Supervised by Dr. Neela Badrie

2010

ACKNOWLEDGEMENTS

Firstly, I give thanks to my Lord Jesus Christ for giving me His strength, guidance and support throughout this project. I would like to express appreciation to my supervisor Dr. Neela Badrie, for her brilliant advice, guidance and wisdom. I also extend gratitude to Dr. George Legall, for his outstanding knowledge, encouragement, understanding and patience. Thank you to the many persons who took time to assist in the study. My greatest appreciation to my husband, Glenn Stephen.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Abstract

Objectives: To identify the prevalence and patterns of dietary supplement use in Trinidad and Tobago.

Method: Survey data was collected from 120 participants from the 27th October -3rd November using a convenience sampling method. The respondents were recruited from various locations throughout Trinidad, including members of two gyms. The data collection instrument used to obtain information was a 29-item self-completed questionnaire. SPSS for Windows version 12.0 was used to produce both descriptive and inferential statistics.

Results: More than three quarters of the respondents' (75.8%) reported using dietary supplements. The most frequently reported supplements used were multivitamins (44.2%), vitamin C (29.3%) and B-complex vitamins (29.2%). Use of herbals was found to be under-reported. Supplement use between gym users and nonusers was not significantly different. Two useful predictors of multivitamin use were perception of health (OR=.015, CI=1.184, 4.673) and body mass index (BMI) (OR=0.029, CI=.311, .939). Physical activity had a positive association with vitamin C and multivitamin use (OR=3.455, CI=1.353, 8.820). The most common reasons for supplement use were for general health (38.5%) and to complement one's lifestyle and diet (33.0%). The majority of participants also believed that dietary supplements provide health benefits.

Conclusion: There is widespread use of dietary supplements in Trinidad and users are quite knowledgeable about their benefits and limitations. More extensive research can provide greater insight on the subject

Introduction

1.1 BACKGROUND

There has been an increase in the interest of dietary supplement and in its use. There is currently a broad variety of supplements available to consumers including single-ingredient preparations, various combinations of vitamins, minerals, botanicals and herbals. Dietary supplements are being marketed to consumers through various forms of media, including advertisements, research articles and studies detailing associations with specific health conditions. Data has shown that since 1997 supplement sales in America showed a significant increase totaling approximately 18.8 billion in 2003 (Nutrition Business Journal 1997-2001). Previous studies have examined the prevalence of dietary supplement use, characteristics of users as well as motives for the use of these supplements.

Literature has shown that dietary supplement use is associated with various demographic and lifestyle factors (Bender et al. 1992, Lyle et al. 1998, and Foote et al. 2002). Research has also revealed greater use among women, older adults, those of a higher educational and socioeconomic status (Lyle et al. 1998, Bender et al. 1992). There have been various reasons given for why consumers choose to use dietary supplements, the most popular purported to be for health promotion and disease prevention (Blendon et al. 2001).

Though little research exists, dietary supplement use has also been examined among commercial gym users (Morrison et al. 2004). Morrison et al (2004) highlighted various types of supplements used by gym users, as well as the differences in supplement choice depending on age, gender and reason for exercise. Survey results also identified the participants' main source of dietary supplement information, being mainly magazines, family/friends, and books. Studies

have shown that persons purchasing supplements do not obtain supplement information from physicians or other healthcare professionals (Eliason et al. 1997; Marinac et al. 2007). Another related trend is being observed whereby persons using dietary supplements do not inform their physicians or see disclosing this information as being unimportant (Eisenberg et al 1993; Marinac et al 2007). While this paper does not examine reasons for these behaviors', it will seek to identify the physicians' knowledge of supplement use among users.

1.2 RATIONALE

While most research pertaining to dietary supplement use has been extensively done in the US and many European countries, little appears to have been done in the Caribbean region. There has been to the researcher's knowledge, no data showing comparisons between gym users and nonusers. It is pertinent that there be adequate information detailing how prevalent supplement use is and basic knowledge regarding supplements themselves. This is needed to prevent inappropriate use which can lead to nutrient overdoses and interactions with other drugs, which can have serious consequences. Additionally, identifying what factors are more likely to be associated with supplement use may also point out which groups may be more susceptible to nutrition overdoses and misinformation. Moreover, it is necessary to know the source from which persons obtain their information pertaining to supplements and how important dietary supplements are perceived within the population. This is needed to protect consumers due to the abundance of misleading and sometimes inaccurate information that is available through the various forms of media.

1.3 RESEARCH OBJECTIVE

The objective of this paper is to examine the prevalence of dietary supplement use between frequent gym users and nonusers. The study is seen as important as it seeks to examine the influence of various demographic, lifestyle and health factors on supplement use in Trinidad. Data from this study will help to highlight which supplements are frequently used, the underlying reasons for their use or nonuse, the various sources through which persons obtain their information and the respondents' perception of dietary supplements.

1.4 Main Research Questions

1. What are the most common supplements used in Trinidad?

2. Does supplement use between gym users and nonusers differ?

2. What are the main reasons for supplement use?

LITERATURE REVIEW

2.1 INTRODUCTION

The use of dietary supplements has increased significantly over the past few years. There has been a proliferation of various types of dietary supplements being marketed to consumers. Previous studies (Marques Vidal et al 2009; Radimer et al 2004; Lyle et al 1998; Foote et al 2003; Balluz et al 2000) have examined the characteristics of supplement users, prevalence of supplement use as well the factors that contribute to supplement use. The literature review therefore seeks to put some perspective on the research topic

The Dietary Supplement Health and Education Act of 1994 (DSHEA) defines a dietary supplement as “a product taken by mouth that contains a ‘dietary ingredient’ intended to supplement the diet. The dietary ingredients in these products may include vitamins, minerals, herbs and other botanicals, amino acids and substances such as enzymes, organ tissues, glandulars and metabolites.” Parnell et al (2006) noted the term “dietary supplement” is no longer comparable only with vitamins and minerals, but now also includes botanical supplements and active compounds from foods and other biological material. The study does make a distinction between vitamin and mineral supplements and other non-vitamin and mineral supplements.

Brownie and Myers (2004) suggested that this definition may vary between countries, specifically the United States (US) and Europe making comparisons between various surveys complicated. This is observed in a study done by Marques-Vidal et.al (2009) where the authors use the term vitamin and mineral supplements to refer to preparations containing single or multi-

vitamins/minerals and dietary supplements including omega-3 and 6 fatty acids, herbal teas, plant and animal extracts and bacterial preparations. Neuhouser (2003) also suggested there are many products not adhering to this definition of a dietary supplement but are nevertheless marketed as one.

Research done by the 2002 National Health Interview Survey (NHIS) on complementary and alternative medicine (CAM) revealed approximately more than 38 million Americans use dietary supplements and herbs. Johnston (1997) estimated this number to be as high as 3.2 billion. Literature has shown that multivitamins with or without minerals is the most common type of dietary supplement reportedly being used in studies and surveys. Data from the National Health and Nutrition Examination Survey 1999-2000 (NHANES II) revealed 52 % of adults had used a dietary supplement in the previous month, with 35% of adults using multivitamin/multiminerals most regularly. Parnell et al (2006) found in their study of prevalence use in New Zealand, multivitamins and minerals to be most frequently reported, followed by B-complex supplements and vitamin C. In that same study, garlic, evening primrose oil and bee products were the most frequently used non-vitamin and mineral products. The proportion of participants using these products was however, lower compared to multi-vitamin/multimineral supplements.

Foote et al (2003) studied healthy adults of five ethnicities and multivitamin use was reported among all ethnicities regularly but was significantly lower among one ethnic group. The study also suggests that there may an overlap between those persons using multivitamins as well as single nutrient supplements. When examining the use of specific single nutrients, vitamin C and E appear to be the most commonly used (Subar and Block 1990). Lyle et al (1998) explained this may be due to their extremely important roles as anti-oxidants in the prevention of certain diseases. A similar pattern was also observed in NHANES 1999-2000 (Radimer et al

2003) with usage of vitamin E and vitamin C at 12 and 13% respectively after use of multivitamin/multiminerals. Foote et al (2003) found vitamin C supplementation to be most frequent among males after use of multivitamins. For females, this was also similar but only among three ethnic groups (White, Native Hawaiian and African-American women). Nevertheless, patterns of use appeared to be similar across all ethnicities. While it seems that little research has been done to compare supplement use among different ethnic groups, ethnicity appears to be an interesting factor relating to supplement use.

2.2 GENDER AND SUPPLEMENT USE

Dietary supplement use has consistently been associated with certain characteristics, such as gender. Most studies agree that females (particularly non-Hispanic Whites) are most likely to use any type of supplement (Lyle et al 1998; Foote et al, 2003; Radimer et al 2004; Marques-Vidal et al 2009) more than males. Harrison et al (2004) postulates the reason for this may be that women have a higher incidence of reported musculoskeletal diseases, cancer and anxiety, which would encourage them to seek alternative methods of treatment. Neuhouser 2003 has even stated that women may use supplements to treat benign breast disease and premenopausal syndrome. Data supporting this theory are inconclusive however. Smith et al (2005) also suggested women have a higher requirement for certain nutrients.

It would seem as though use of supplements by women increases with age but only for certain nutrients (Marques-Vidal et al 2007; Balluz et al 2005). Marques-Vidal et al (2007) found that while use increased with age among women, only calcium use increased while iron use decreased. A similar pattern was also observed in men in that study. This is contrary to data reported by Smith et al (2005), where prevalence of supplement use decreased with increasing

age for both males and females. Lyle et al (1998) reported that older men are more likely to take supplements than young men. However, calcium supplement intake for men aged 65 and over was significantly lower (< 5%) as compared to women more than 55 years old (40%) (Marques Vidal et al 2007). This would suggest that women are particularly concerned about osteoporosis in their later years (Foote et al 2002).

2.3 EDUCATION AND SUPPLEMENT USE

Consistent with many other studies, supplement use has been shown to be associated with a higher educational level (Smith, Wilson and Parnell, 2005; Radimer et al 2003; Marques Vidal et al 2007; Marinac et al 2007). Foote et al (2002) in their study found that a higher educational level was associated with an increased likelihood of supplement use and suggests that this may be due to a greater knowledge of nutrition and health. Similarly, Greger (2001) also found a similar association, however Barr (1986) did not find any positive correlation between supplement use and nutrition education.

2.4 LIFESTYLE FACTORS AND SUPPLEMENT USE

Positive lifestyle-related behaviors have been studied with respect to supplement use. Research has shown that smokers are less likely to take supplements as compared to current smokers (Smith et al 2005; Lyle et al 1998; Foote et al 2003; NHANES 1999-2000; Rock, 2007). Supplementation for smokers may be important because this population group has an increased need for antioxidants. Individuals who drink more alcohol have been shown to use more supplements than those who consume less alcohol (Lyle et al). This is consistent with a study

done by Smith et al (2005) where non-drinkers were less likely to consume supplements compared with those who drank more. However, Radimer et al (2004) in the NHANES 1999-200 study found a positive association between frequent wine intake and the use of multivitamin/multiminerals, vitamin C and vitamin E. There have also been some inconsistencies in studies with some female supplement users having high alcohol intakes (Kirk et al 1999; Wallstrom et al 1996) while others have reported female users consuming less alcohol (Lyle et al 1998). Smith et al (2005) has pointed out that this difference may be attributed to the various methods used to assess alcohol intake. Additionally, Wallstrom et al (1996) pointed out individuals who are knowledgeable of their high alcohol intake may take supplements to reduce the possibility of a threat to their health from drinking.

Yet another lifestyle factor studied in relation to supplement usage has been physical activity/ exercise. Finding from the NHANES II (1999-2000) study, conducted by Radimer et al (2004) found use of multivitamins/multiminerals to be greater with persons who reportedly engaged in rigorous physical activity compared to those who engaged in no physical activity. Lyle et al (1998) has noted that certain studies may show differences in classifying levels of physical activity. It would seem for that reason that study found no association with physical activity which is also consistent with similar findings by Smith et al (2005) and Willet et al (1981). Nevertheless, a few studies show physical activity to be positively associated with higher levels of supplement use (Foote et al 2002). Persons who are overweight may seem less likely to use a dietary supplement (NHANES 1999-2000). Lyle et al (1998) observed that participants with lower body mass indices were more likely to use supplements. In contrast, Willet et al (1981) reported prevalence of supplement consumption was not influenced by both body and physical activity.

There has been little information examining the prevalence of dietary supplement use among gym users or comparisons between gym users and nonusers. Morrison et al (2004) surveyed two-hundred and twenty two (222) commercial gym users to evaluate their use of dietary supplements and the source from which they obtained this information. The majority of subjects in that study reported taking at least one supplement. Additionally, the most frequent type of supplement taken by gym users were multivitamin/minerals, protein shakes, vitamin C and vitamin E. The use of vitamin C and E is consistent with other studies being the most popular choice of single vitamins (Foote et al 2003; Radimer et al 2003; Lyle et al 1998).

2.5 HEALTH STATUS AND SUPPLEMENT USE

Some studies have examined perceived health with supplement usage (Bender et al 1992; Radimer et al 2004). Bender et al (1992) who conducted research on prevalence of vitamin and mineral supplement use, found a high correlation between individuals perceiving their current health status to be very good or excellent and supplement use. While a similar trait was observed by Radimer et al (2004), Lyle et al (1998) found no such association. Lyle et al (1998) has also pointed out that certain diseases were more related to supplement use than others. The researchers of that study found that persons with hypertension, cancer or heart disease were less likely to take supplements than those without these diseases. Bender et al (1992) has speculated that persons most likely to use supplements were those with one or more health diseases. That study brought forth the theory that having more health problems is associated with a poorer perception of one's health (Marinac et al 2007). Greger (2001) notes that these differences show the importance of age and as well as the severity of the condition with respect to diseases and supplement use. Certain conditions have also been noted to increase

prevalence of supplement use in some subjects, and others have shown no association (Marques-Vidal et al (2009). While scientific evidence has supported supplementation for some vitamins, such as folic acid for women of childbearing age, an association between health status and supplement use remains unclear for most dietary supplements (Balluz et al 2000).

2.6 REASONS FOR SUPPLEMENT USE

Literature has shown there may be varying reasons for the significant increase in supplement purchasing and use. As stated earlier, older women were more likely to use supplements for fear of some disease such as osteoporosis. Marinac et al (2007) has examined use, attitudes and knowledge of herbal products and dietary supplements among older adults. That study found that the most frequent reason for taking a supplement or herbal product by the respondents were “to improve general wellness, to help manage arthritis, to help prevent or manage colds, to give extra energy and to improve their memory.” Gym users participating in the study done by Morrison et al. (2004) listed various reasons for taking supplements including building muscle, preventing future illness, providing energy, improving sport performance and for help in recuperation.

Another factor that appeared to be predictive of supplement usage was the belief that it would help the individual if they themselves believed it would. This is consistent with findings by Conner et al (2003), where female supplement users studied perceived supplements as helping to protecting them from bad health. Marinac et al (2007) highlighted that consumers may also share the belief that dietary and herbal supplements are natural and therefore safe. Consumers seem to share this view, even though there have been documented reports of adverse side effects from the use of certain herbal products (Marinac et al 2007).

2.7 SOURCE OF DIETARY SUPPLEMENT INFORMATION

Sources from which users got their information on supplements have also assessed. These sources included magazines, family and friends, personnel at health stores and books. The media and personal trainers were also identified. Few participants reported consulting any healthcare professionals for supplement information. This is also consistent with previous studies done by Barr (1986) and Marinac et al (2007) in which health professionals were less frequently consulted. In addition, research has shown many supplement users while not informing their physicians that they use supplements, also view it as being unnecessary (Eisenberg et al 1993; Marinac et al 2007).

The purpose of the present study was to examine the prevalence of dietary supplement use between gym users and nonusers as well as, identify the various demographic and lifestyle factors associated with the use of specific dietary supplements. The findings will also aim to identify the reasons for the use of supplements and participants' perception of dietary supplements.

3.1 POPULATION

A sample size of 200 persons was approached to participate in the current study. Participants were asked to take part in the survey at random locations throughout Trinidad, including one fitness gym in Arima (The Fitness Centre) and the other in San Fernando. Other locations included the University of the West Indies, St. Augustine, Trincity Mall, Piarco International Airport, and San Fernando. Exclusion criteria: Non-Trinidadians

3.2 QUESTIONNAIRE DESIGN AND PROCEDURE

The survey item used for this study was a twenty-nine (29) item questionnaire, containing closed-ended questions. Questionnaires were self-administered after first asking participants if they wished to participate in the study pertaining to dietary supplement use amongst Trinidadians. Distribution and recollection of all questionnaires occurred within a one-week period from 27th of October 2010 to the 3rd November 2010 by the researcher. Some respondents needed to be interviewed due to difficulty in comprehension or time constraints. Some other problems encountered included actually recruiting persons willing to participate in the study and respondents not taking adequate time to read some questions, resulting in various respondents answering questions not applicable to them. Therefore, the researcher attempted to be present while each participant completed their questionnaire. The participants' location at the time the questionnaires were administered was recorded as either being at a gym or in the public.

3.3 QUESTIONNAIRE DATA

The questionnaire recorded information on demographics, socio-economic and several lifestyle factors including, tobacco and alcohol use, physical activity and personal history of any medical conditions. Other parts of questionnaire focused on dietary supplement knowledge and use. Participants' were asked about their knowledge of dietary supplements, source of supplement information and whether they had in the past or currently use any type of supplement. In addition, users of supplements were asked to indicate their reasons for using the supplements, whether their physician had prescribed its use and their physicians' knowledge of their supplement use. Supplement intake was analyzed by asking the participants to indicate which supplement they had taken currently or within the past 1-2 months. If the answer was affirmative, participants were asked to indicate from a list of twenty-nine (29) selected dietary supplements and herbals. Respondents' were also asked about their beliefs relating to the potential benefits of dietary supplements, Recommended Dietary Allowances (RDA's) for vitamin and mineral supplements and potential for toxicity from high levels of dietary supplements.

3.4 OTHER DATA

Body mass index (BMI) was calculated using perceived weight and height (kilograms/meters squared), because it was not feasible to obtain measured weight and height. BMI was classified into three groups: <25.0 (normal or underweight), 25-29.9 (overweight) and >30.0 (obese). Respondents were also asked to report whether they engaged in any physical activity. The options included, vigorous activity causing heavy sweating or a large increase in breathing or heart rate, moderate activity causing light sweating or a slight to moderate increase in breathing or heart rate. A self-report of sedentary was classified as little physical activity.

3.5 DATA ANALYSIS

Data analysis was conducted using SPSS for Windows (v. 12.0 SPSS Inc., Chicago, IL, 2003) to produce both descriptive and inferential statistics. Logistic regression was performed to identify useful indicators of supplement use among the various demographic and lifestyle factors. Chi-square was used to assess significant associations. A p-value <0.05 was seen as significant.

Results

4.1 DEMOGRAPHIC DATA

There was a 60% response rate with 120 persons participating in the survey. There were equal proportions of males (50%) and females (50%) as well as gym users (50%) and non-gym users (50%). The majority of the subjects were young, between the ages 20-30 (n=64, 53.3%) and there was a greater percentage of Afro-Trinidadians (37.5%). Only one respondent represented the >60 age group (n=1, .8%). More than half of the participants' also reported having tertiary education (n=78, 65%). **Table 4.1** summarizes the socio-demographic data of participants.

Table 4.1- Demographics of study population

Demographics	**N**	**%**
Sex		
Male	60	50.0
Female	60	50.0
Location		
Gym users	60	50.0
Non-gym users	60	50.0
Age		
20-30	64	53.3
31-40	30	25.0
41-50	21	17.5
51-60	4	3.3
>60	1	.8

Ethnicity		
African	45	37.5
East Indian	34	28.3
Mixed	41	34.2
Education		
High school	30	25.0
Tertiary	78	65.0
Technical/Vocational	12	10.0
Professional status		
Employed	89	74.2
Student	28	23.3
Retired	2	1.7

4.2 KNOWLEDGE AND SUPPLEMENT USE

The majority of the subjects (95%) reported having prior basic knowledge of what dietary supplements are with 5% indicating having none. (75.8%; n=91) reported using some type of dietary supplement. 75.8% (n=69) of persons also indicated that they use supplements currently or have within the last 1-2 months, while 20% were not using any currently. **Figure 4.1** shows the percentage persons who use supplements. Almost equal numbers of persons from both

gym and the public reported using supplements. **Table 4.2** shows the characteristics of supplement users.

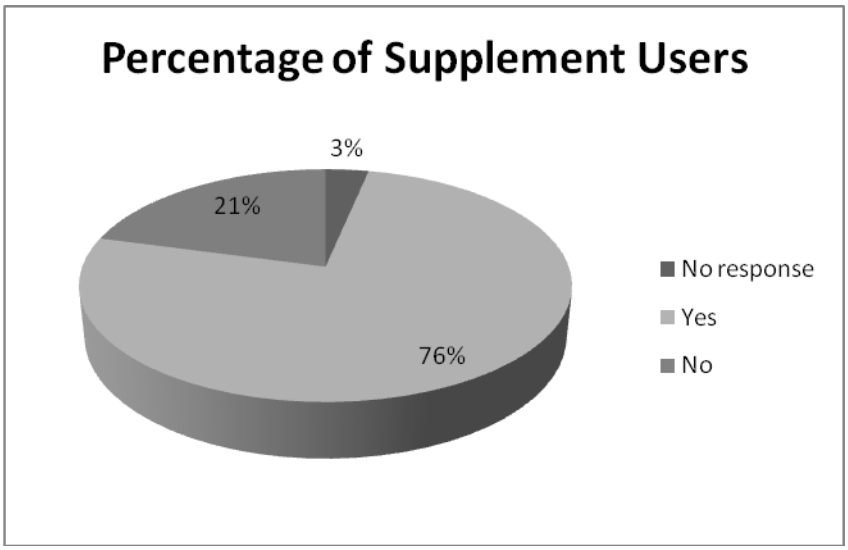

Figure 4.1 - Percentage of Supplement Users

Table 4.2 - Characteristics of supplement users

Characteristics	Frequency	Percent

Gender Male Female	45 46	49.5 50.5
Location Gym Nongym	46 45	50.5 49.5
Ethnicity African East Indian Mixed	33 26 32	36.3 28.6 35.2
Age 20-30 31-40 41-50 51-60 >60	49 25 14 2 1	53.8 27.5 15.4 2.2 1.1
Education High school Tertiary Tech/Vocational	20 62 9	22 68.1 9.9
BMI >18.5 18.5-24.9 25- 29.9 >30	6 49 25 9	6.6 53.8 27.5 9.9
Perceived state of health Excellent Good Fair/poor	19 58 13	20.9 63.7 14.3
Smoking		

Never Current Former	69 12 9	75.8 13.2 9.9
Drinker Yes No	39 51	42.9 56

4.3 PREVALENCE OF SUPPLEMENT USE

Prevalence use of specific supplements by demographic and lifestyle characteristics revealed some consistent and varying patterns (**Table 4.3 See Appendix**). Multivitamins (44.2%), vitamin C (29.3%) and B-complex vitamins (29.2%) were the most commonly reported supplements used. Multivitamins was the most commonly reported supplement being used amongst gym users (70%) and nonusers (72.7%). While use of supplements was not significantly different for each group, there was greater use of some supplements by gym users, namely Vitamin C (67.5%), B-complex (52.5), and Vitamin E (37.5%), Iron (33.3%), Folic acid (22.5%) and B12 (17.5%). Whether one uses the gym or not was shown to be a useful predictor of vitamin C use (OR=3.455 CI=1.353, 8.820). Calcium use (27%) was greater among non-gym users. Zinc supplementation was reported among gym users only (27.5%).

The use of supplemental iron, multivitamins and folic acid was highest among women. Calcium use was higher among men (24.3%), while use of zinc was higher amongst females (11.1%). Zinc use was lower however, amongst all characteristics. Multivitamin and vitamin C use was high amongst all age-groups, although there was greater supplement use in the 20-30 (76.6%) age group. Use of folic acid was highest among those 40 and over (80%). Among frequent drinkers, supplements most frequently consumed were multivitamins, vitamin C and B-

complex vitamins. While the percentage of current smokers was significantly small in this study (14.2%; n=17), of the 12 current smokers, 10 were also using dietary supplements.

Persons reporting their health to be excellent and good were more likely to use multivitamins, vitamin C and B-complex vitamins. Perception of health was shown to be a useful indicator of the use of multivitamins (OR=.015, CI=1.184, 4.673). Persons reporting their health to be fair/poor were more likely to use multivitamins as well as B-complex vitamins. Educational level was not significantly associated with supplement use. BMI was also a useful predictor of supplement use (OR=0.029, CI=.311, .939). History of illness was not significantly associated with the use of any supplements as the number of persons reporting a personal history of illness was too small. Prevalence rates for supplements that were less than 5% were not presented in any table. These included potassium, thiamin, riboflavin, niacin, beta-carotene, magnesium, selenium, vitamin A, vitamin D, antacids, amino-acids and herbals.

Table 4.4 (See Appendix) shows associations for the use of vitamin C, multivitamins and B-complex vitamins between gym users and nonusers based on demographic and lifestyle characteristics. Physical activity was associated with vitamin C use (p=.000), B-complex (p=.015) and multivitamins (p=.026). Other factors showed no significant associations.

4.4 PERCEPTION AND ATTITUDES TOWARD SUPPLEMENTS

Relating to perception, the majority of participants believed there were health benefits to be gained by using dietary supplements, and a small percentage indicated “no” (See **Figure 4.2**). Relating to the potential for toxicity from consuming large amounts of vitamins and minerals, 53.3% of supplement users knew about this possibility while 39.6% did not know. 49.5% of users’ were also not aware of the Recommended Dietary Allowances for vitamins and 47.3% indicated that they knew.

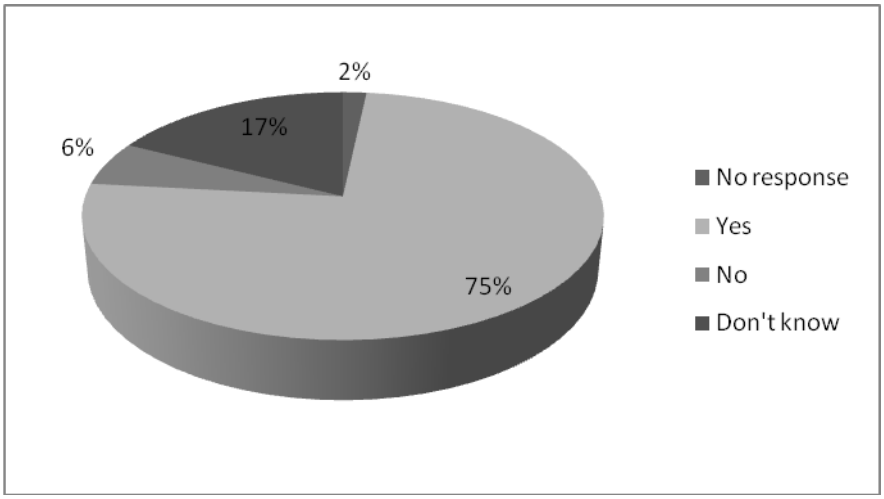

Figure 4.2 - Participants’ belief on health benefits of Supplements

4.5 REASONS FOR SUPPLEMENT USE/NONUSE

Current supplement users were asked to indicate reasons for using dietary supplements. **Table 4.5** shows the main responses given. The less frequent reasons indicated were “recommendation from a sales clerk or pharmacist (2.2%) and “for a medical condition” (5.5%).

Among non-users of supplements (20.8%; n=25), the main reason indicated for not using supplements was “not being interested in their use” (68%). Less frequent responses were “not having information about them” (12.0%), “already having a healthy diet” (16.0%) and “difficulty remembering to take them (4%).”

Table 4.5 - Main reasons for supplement use

Reason	**N**	**%**
To get nutrients due to foods not eaten	14	15.4
To improve general health	35	38.5
Complement current diet and lifestyle	30	33.0
To improve athletic performance	11	12.1
Extra energy	20	22.0

4.6 SOURCES OF INFORMATION

The most frequent sources participants' identified for receiving some knowledge about dietary supplements are summarized in **Table 4.6**. The most commonly reported were television (62.3%), internet (55.3%) and pharmacies (52.6%).

Table 4.6 - Sources of Supplement Information

Source	**N**	**%**
Internet/Email	63	55.3
Television	71	62.3
Friend/Family member	50	43.9
Community Organization	4	3.5
Fitness Club/Gym	52	45.6
Newspapers	48	42.1
Doctor	40	35.1
Radio	31	27.2
Stores/Pharmacy	60	52.6
Magazines	47	41.2

4.7 PHYSICIAN KNOWLEDGE OF SUPPLEMENT USE

13.2% of current supplement users indicated that their supplements were prescribed by their physician, with the majority not being prescribed (61.5%). Among those using non-prescribed supplements, 49.5% indicated their doctor had no knowledge of their supplement use whereas, 16.5% of indicated their physician knew. 34.1% of respondents' gave no response.

Discussion

Previous research has examined the prevalence of dietary supplement use in the US and Europe. To our knowledge, supplement use between gym users and non-users has not been reported in Trinidad. Data from this study provides unique information pertaining to supplement use among Trinidadians. Findings from this study have shown that the majority of Trinidadians have knowledge about dietary supplements. From a list of twenty-nine supplements selected, the three most commonly used supplements in this study were multivitamins, vitamin C and B-complex vitamins, which is consistent with other studies (Eliason et al 1996; Marinac et al 2007; Parnell et al 2006). Supplements that were infrequently used in this study included herbals and the trace minerals. The low use of herbals may be attributed to their cost, whereas multivitamins and B-complex vitamins are more economical and information is readily available concerning their use. Between gym users and nonusers, there was no significant difference in supplement use. However, the use of vitamin C, vitamin E, iron and zinc supplements was higher among gym users.

Multivitamins was the most frequently used supplement between both genders. However, supplement use was not significantly associated with gender in this study. Prior studies have revealed women are more likely to consume dietary supplements than men. (Marinac et al 2007; Parnell et al 2006; Smith et al 2005). The women in those studies were primarily White, which is different to the Trinidad where Whites are a minority group. Women in the current study consumed more multivitamins, folic acid, vitamin B12 and zinc supplements than males. Research has shown that women were more likely to supplement with calcium, iron and multivitamins. In the current study, men consumed more calcium and vitamin C supplements than women. This may be due to the sample having a greater percentage of

younger women who see no need for calcium supplementation. Studies show that older women are more likely to use calcium supplements maybe because they have a greater awareness of the risk for osteoporosis as they become older. While most studies show women using supplements more than men, the almost proportionate number of males using supplements in this study can be regarded as an emerging trend in Trinidad, where men may be becoming more health-conscious and taking better control over their health.

Age was not found to be associated with supplement use, but use of multiminerals, B-complex, vitamin C and iron was greater among younger persons. Some research have suggested supplement use to be most prevalent among older persons (Marques-Vidal et al 2009; Radimer et al 2004; Lyle et al 1998), while studies found greater usage among younger adults (Smith et al 2005). This study was comprised of a younger population. Few studies have examined supplement use by ethnicity (Foote et al 2003). Ethnicity was not associated with the use of any supplements in this study.

Two useful predictors of multivitamin use were perception of health and body mass index (BMI). Bender et al (1992) also identified a positive correlation between supplement use and persons perception of their health status. BMI has also shown to be associated with supplement use in previous research, even though this study does not show significant associations (Foote et al 2003; Radimer et al 2004; Lyle et al 1998). Physical activity had a positive association with vitamin C and multivitamin use in this study. The NHANES (1999-2000) study found associations between physical activity and other types of supplements, but no association was identified with vitamin C. Other factors that showed no associations with supplement use in this study were smoking status, alcohol use, personal history of illness, educational level and professional status. Unlike other studies which have shown associations with these lifestyle factors (Foote et al 2003; Radimer et al 2004; Smith et al 2005).

The common sources of dietary supplement information identified in this study included television, pharmacies, gyms, the internet and word of mouth. Television was most frequently reported source of information (62.3%), which is consistent Marinac et al (2007). This may be due to the heavy media attention promoting dietary supplement use and manufacturers heavily targeting supplement users and potential users. The most common reasons identified supplement use were to improve general health, to complement one's diet and lifestyle and for extra energy. This is consistent with (Kaufman et al 2002) which found that most supplements were used for nonspecific health reasons. Marinac et al (2007) found that most users took supplements to improve their general health and to help prevent/manage colds. Less than 1% of respondents' indicated use for some medical condition.

Results from prior research have shown persons having three or more medical conditions were twice as likely as other respondents to use a supplement (Marinac et al 2007). While this study sought to find associations with health conditions and supplement use, an insignificant percentage of persons reported having any current medical conditions as well as using any form of prescribed medication (16.5%).

69.9% of users in the current study believed supplements were beneficial to their health, with a mere 5.5% saying "no" and 16.4% stating "don't know". These findings are similar to previous studies where only 6% of users stated supplements added little to no value to their health (Bender et al 1992). In one study by Marinac et al (2007), 78% participants believed supplements have health benefits. Almost similarly, 75% respondents in this study agreed; with only 5.8% disagreeing and 17.5% being unsure. This helps to cement the general perception of many that dietary supplement use can have a positive effect on one's health and general well-being. While the percentage of persons reporting not using any form of supplement is relatively small in this study (20.8%), the main reason given by nonusers was "not being interested in their

use." An even smaller percentage indicated "having no information about them" and that their diet was healthy and therefore had no reason to use supplements.

How users perceive the safety of supplements is of importance. Of the 91 participants who reportedly used supplements, 49.5% (n=45), had no knowledge of the Recommended Daily Allowances for vitamins and minerals, while 47.3% indicated that they knew. In addition, 58.2% of users said they were aware of the potential toxicity from high doses of dietary supplements and 39.6% did not know. This seems to suggest a lack of knowledge among some users regarding proper usage and appropriate dosages for some supplements.

Research has shown that supplement users are less likely to rely on their physicians or any healthcare professionals for information pertaining to nutrition and supplement use. It may seem apparent that their usage of supplements is also underreported to their physicians. Consistent with other studies (Eisenberg et al 1993, Marinac et al 2007), a significantly small percentage of users reported use of supplements to their physicians (23.3%) and only 13% indicated their doctor had prescribed supplements for their use. The reason for this may be that at the time of this study, a smaller percentage of persons were under the care of a doctor or supplement users may not see this as being very important. Consumers are may also be choosing not to depend totally on traditional healthcare professionals and are taking a more autonomous approach to their own health. However, more research should be conducted to support this theory.

Limitations

There are certain limitations of the present study. The sample size was small and not extensive enough to cover a large cross-section of the population. Persons living in certain geographical locations in Trinidad were surveyed and as such usage and attitudes may not reflect those of persons living in other parts of the country. Only specific supplements were included in the assessment, thereby narrowing focus on certain supplement types. Therefore, there may be some supplements not included on the list that participants also used regularly.

Conclusion and Recommendations

The main objective of this study was to examine the prevalence of dietary supplement use between gym users and non-gym users in the Trinidad population. The results suggest there is a general of acceptance of dietary supplements by Trinidadians, as evidenced by a large proportion of participants reporting dietary supplement usage. Preference is shown for only three of the many available dietary supplements. These are multivitamins, vitamin C and B-complex vitamins. The use of herbals was not widespread. Persons who belong to gyms are not more likely to use supplements than non-gym members' gym users, neither do males nor females. Use of certain supplements can vary however, due to various demographic and lifestyle factors. Physical activity, perceived health status and being a gym user are useful predictors of dietary supplement use.

Most participants believe dietary supplements are beneficial to health. There is though a lack of communication between supplement users and their physicians with respect to supplement use. It is recommended therefore that more extensive follow-up research be conducted on this subject using a larger sample to capture a more diverse cohort. There is also a need for greater knowledge among consumers and physicians regarding supplement usage.

References

1. Balluz LS, ScD, MPH; Kieszak SM, MA, MPH; Philen RM, MD, MS; Mulinare J, MD. Vitamin and mineral supplement use in the United States. Archives of Family Medicine. (2000) 9: 258-262.

2. Barr, SI. Nutritional knowledge and selected nutritional practices of female recreational athletes. Journal of Nutrition Education. (1986) 18:167-174.

3. Bender MM, PhD; Levy AS, PhD; Schucker RE, PhD; and Yetley EA, PhD. Trends in prevalence and magnitude of vitamin and mineral supplement usage and correlation with health status. The American Dietetic Association. (1992) 92: 1096-1101.

4. Blendon RJ, DesRoches CM, Benson JM, Brodie M, Altman DE. Americans' view on the use and regulation of dietary supplements. Archives of Internal Medicine. (2001) 161: 805-810.

5. Brownie S, and Mayers S. Wading through the quagmire: making sense of dietary supplement utilization. Nutrition Review. (2004) 62: 276-282.

6. Conner M, Kirk SFL, Cade JE and Barrett JH. Environmental Influences: Factors influencing a woman's decision to use dietary supplements. The Journal of Nutrition. (2003) 133: 1978S-1982S.

7. Eisenberg, D.M., Kessler, R.C., Foster, C. Norlock, F.E., Calkins, D.R. and Delbanco, T.L. Unconventional medicine in the United States: Prevalence, costs and patient use. New England Journal of Medicine. (1993) 328:246-252.

8. Eliason BC, J. Myszkowski, A. Marbella and D Ramann. Use of dietary supplement by patients in a family practice. Journal of the American Board of Family Practice. (1996) 9:249-253

9. Foote JA, Murphy SP, Wilkens LR, Hankin JH, Henderson BE and Kolonel LN. Factors associated with dietary supplement use among healthy adults of five ethnicities. American Journal of Epidemiology. (2003) 157: 888-897.

10. Greger JL. Dietary supplement use: Consumer characteristics and interests. The Journal of Nutrition. (2001) 131: 1339S-1343S.

11. Johnston BA. One third of nation's adults use herbal remedies: market estimated at 3.2 billion. HerbalGram. (1997) 40:49. http://www.herbal-gram.org/iherb/herbalgram/articleview.asp?a= 193

12. Kirk SFL, Cade JE and Barrett JH. Diet and lifestyle characteristics associated with dietary supplementation in women. Public Health Nutrition. (1999) 2:69-73

13. Lyle BJ, Mares-Perlman JA, Klein BEK, Klein R and Greger JL. Supplement users differ from nonusers in demographics, lifestyle, dietary and health characteristics. The Journal of Nutrition (1998) 128: 2355-2362.

14. Marinac JS, PharmD, Buchinger CL, M.D., Godfrey LA, DO., Wooten JM, PharmD, Sun C, M.D., and Willsie SK, DO. Herbal products and dietary supplements: A survey of use, attitudes and knowledge among older adults. Journal of the American Osteopathic Association. (2007) 107: 13-23

15. Marques-Vidal P, Pecoud A, Hayoz D, Paccaud F, Mooser V, Waeber G, and Vollenweider P. Prevalence and characteristics of vitamin or dietary supplement users in

Lausanne, Switzerland: the CoLaus study. European Journal of Clinical Nutrition (2009) 63: 273-281.

16. Morrison LJ, Gizis F and Shorter B. Prevalent use of dietary supplements among people who exercise at a commercial gym. International Journal of Sport Nutrition and Exercise Metabolism. (2004) 14:481-492

17. Neuhouser ML. Dietary supplement use by American Women: Challenges in Assessing Patterns of use, motives and costs. The Journal of Nutrition. (2003) 133: 1992S-1996S.

18. Parnell WR, Wilson NC, and Smith C. Dietary supplements: Prevalence of use in the New Zealand population. Nutrition and Dietetics. (2006) 199-205.

19. Radimer K, Bindewald B, Hughes J, Ervin B, Swanson C and Picciano MF. Dietary supplement use by US adult: Data from the National Health and Nutrition Examination Survey (NHANES 1999-2000). American Journal of Epidemiology. (2004) 160: 339-349.

20. Rock CL. Multi-vitamin-multimineral supplements: who uses them? The American Journal of Clinical Nutrition. (2007) 277S-279S.

21. Smith C, Wilson NC and Parnell WR. Dietary supplements: Characteristics of supplement users in New Zealand. Nutrition and Dietetics. (2005) 62: 123-129.

22. Subar AF and Block G. Use of vitamin and mineral supplements: Demographics and amounts of nutrients consumed. The 1987 Health Interview Survey. The American Journal of Epidemiology. (1990) 132: 1091-1101.

23. US Public Law 103-417, 103rd Congress, 25 October 1994. Dietary Supplement Health and Education Act of 1994.

24. Wallstrom P, Elmstahl S and Hanson BS. Demographic and psychological characteristics of middle-aged women and men who use dietary supplements. Results from the Malmo Diet and Cancer Survey. European Journal of Public Health. (1996) 6:188-195

25. Willet W, M.D., Sampson L, R.D., Bain C, M.B., Rosner, B, Ph.D., Hennekens CH, M.D., Witschie J, R.D. and Speizer FE, M.D. Vitamin supplement use among registered nurses. The American Journal of Clinical Nutrition. (1981) 34: 1121-1125.

APPENDIX

I

Table 4.4 - Characteristics of Supplement users according to gym status

	Vitamin C			Multi Vitamins			B-Complex		
Variable	Gym	Non-Gym	p-value	Gym	Non-Gym	p-value	Gym	Non-Gym	p-value
Gender			0.352			0.064			0.252
Male	50	63.6		34.6	59.3		38.9	56.3	
Female	50	36.4		65.4	40.7		61.1	43.8	
Age			0.187			0.703			0.158
20-30	62.5	54.5		53.8	55.6		72.2	50	
31-40	16.7	45.5		34.6	25.9		11.1	43.8	
41-50	16.7	0		11.5	14.8		11.1	6.3	
51-60	0			0	3.7		5.6	0	
>60	4.2	0							
Education			0.179			0.511			0.213
High school	20.8	36.4		26.9	18.5		22.2	31.3	
Tertiary	45.5	75		69.2	70.4		77.8	56.3	
Tech/Voc	18.2	4.2		3.8	11.1		0	12.5	
BMI			0.364			0.232			0.664
Underweight	4.2	9.1			4		5.6	12.5	
Normal	50	54.5			68		44.4	50	
Overweight	45.8	27.3			28		50	37.5	
Obese	0	9.1			0		0	0	
Physical activity			0.000			0.026			0.015
Vigorous	45.8	0		42.3	11.1		33.3	6.3	
Moderate	54.2	54.5		50	55.6		61.1	50	
Sedentary	0	45.5		7.7	29.6		5.6	43.8	
Perceived state of heath			0.437			0.495			0.419
Excellent	37.5	18.2		7.7	18.5		27.8	31.3	
Good	50	72.7		73.1	66.7		50	62.5	
Fair/poor	12.5	9.1		19.2	14.8		22.2	6.3	
Smoking			0.171			0.038			0.768

Never	79.2	54.5		92.3	63		72.2	68.8	
Current	16.7	45.5		3.8	22.2		16.7	25	
Former	4.2	0		3.8	14.8		11.1	6.3	
Drinker			0.364			0.236			0.459
Yes	41.7	54.5		34.6	48.1		38.9	31.3	
No	58.3	45.5		65.4	51.9		61.1	68.8	

Table 4.3 - Prevalence of Dietary Supplement by demographic and lifestyle characteristics

Characteristics	Multivitamins	Multiminerals	Vitamin C	Vitamin E	B-Complex vitamins
Gender					
Male	64.9	16.2	59.5	21.6	51.4
Female	77.8	13.9	50.0	25.0	50.0
Age					
20-30	71.1	21.1	60.5	23.7	57.9
31-40	75.0	5.0	50.0	10.0	45.0
>40	66.6	13.0	46.0	40.0	40.0
Ethnicity					
African	79.2	20.8	50.0	20.8	45.8
East Indian	65.2	8.7	60.9	21.7	56.5
Mixed	69.2	15.4	53.8	26.9	50.0
Education					
High School	70.6	23.5	64.7	23.5	58.8
Tertiary	72.9	14.6	52.1	25.0	50.0
Technical/Vocation	62.5	0	50.0	12.5	37.5
Professional Status					
Employed	67.3	7.69	57.6	25.0	48.0
Student	80.0	35.0	45.0	15.0	55.0
Reported BMI (kg/m^2)					
<18.5	80.0	40.0	40.0	20.0	60.0
18.5-24.9	84.6	20.5	53.8	25.6	46.2
25-29.9	50.0	4.2	66.7	20.8	66.7
>30	50.0		25.0		
Physical activity					
None	61.5	23.1	53.8	7.7	61.5
Moderate	70.3	18.9	51.4	18.9	51.4
Vigorous	77.3	4.5	63.6	40.9	45.5
Self-reported health					
Excellent	50.0	11.1	61.1	27.8	61.1
Good	78.7	12.8	53.2	21.3	44.7
Fair/poor	75.0	37.5	50.0	25.0	62.5
Cigarette smoking					
Never	73.2	14.3	50.0	21.4	46.4
Current	63.6	18.2	90.9	36.4	72.7
Former	66.7	16.7	33.3	16.7	50.0

Beer consumption					
Never	34.6	20	30.0	20.0	30.0
1-3 drinks/week	77.0	11.1	55.5	11.1	44.4
>3 drinks/week	57.0	0	57.1	0	42.8
Wine consumption					
Never	16.7	16.7	44.4	16.7	44.4
1-3 drinks/week	16.7	33.3	66.6	16.6	33.3
>3 drinks/week	0	0	50.0	0	50.0
Distilled spirits					
Never	11.8	23.5	41.2	11.8	35.3
1-3 drinks/week	37.5	25.0	62.5	37.5	50.0
>3 drinks/week	20		60.0	20.0	20.0
Location					
Gym	70.0	17.5	67.5	37.5	52.5
Non-gym	72.7	12.1	39.4	6.1	48.5

Characteristics	**Folic Acid**	**Vitamin B12**	**Iron**	**Calcium**	**Zinc**
Gender					
Male	17.1	8.1	16.2	24.3	5.4
Female	19.4	19.4	36.1	16.7	11.1
Age					
20-30	18.4	15.8	36.8	21.1	7.9
31-40	5.0	15.0	10.0	15.0	0
>40	80.0	6.67	20.0	26.6	20.0
Ethnicity					
African	8.3	4.2	16.7	20.8	4.2
East Indian	8.7	17.4	30.4	17.4	8.7
Mixed	26.9	19.2	30.8	23.1	11.5
Education					
High School	5.9	11.8	23.5	17.6	11.8
Tertiary	18.7	16.7	25.0	20.8	6.2
Technical/Vocation	12.5	0	37.5	25.0	12.5
Professional Status					
Employed	5.76	7.69	19.2	17.3	5.76
Student	35.0	30.0	45.0	25.0	10.0
Retired	0	0	0	0	0
Reported BMI (kg/m^2)					

<18.5	20.0	40.0	60.0	20.0	20.0
18.5-24.9	15.4	17.9	23.1	25.6	10.3
25-29.9	16.7	4.2	20.8	8.3	4.2
>30	0	0	50.0	25.0	0
Physical activity					
None	15.4	7.7	46.2	7.7	0
Moderate	13.5	18.9	24.3	21.6	5.4
Vigorous	18.9	9.1	18.2	27.3	18.2
Self-reported health					
Excellent	27.8	11.1	33.3	27.8	16.7
Good	10.6	14.9	21.3	19.1	6.4
Fair/poor	12.5	12.5	37.5	12.5	0
Cigarette smoking					
Never	14.3	14.3	25.0	17.9	8.9
Current	18.2	9.1	18.2	27.3	0
Former	16.7	16.7	50.0	33.3	16.7
Beer consumption					
Never	10.0	0	10.0	20.0	10.0
1-3 drinks/week	0	0	11.0	11.1	0
>3 drinks/week	0	14.2	42.8	28.5	0
Wine consumption					
Never	16.7	5.6	27.8	27.8	11.1
1-3 drinks/week	16.6	16.6	33.0	50.0	0
>3 drinks/week	0	0	0	0	0
Distilled spirits					
Never	11.8	0	17.6	29.4	5.9
1-3 drinks/week	12.5	25.0	37.5	25.0	12.5
>3 drinks/week	0	0	50.0	25.0	0
Location					
Gym	22.5	17.5	33.3	12.1	15.0
Non-gym	6.1	9.1	20.0	27.5	0

APPENDIX II

Questionnaire

Prevalence of Dietary Supplement Use among gym users and nonusers in Trinidad

Knowledge and Purchase

1. Have you ever heard the term "dietary supplement"? Yes ☐ No ☐

2. If no, a dietary supplement is a product taken by mouth that contains a dietary ingredient intended to supplement the diet. These dietary ingredients may contain vitamins, minerals, herbs, botanicals or amino acids and may be found in forms such as tablets, capsules, gelcaps, liquids or powders. Have you ever heard the term dietary supplement?

   Yes ☐ No ☐

3. Where have you heard about dietary supplements?

   Internet/Email ☐

   Newspapers ☐ Community organization ☐

   Television ☐ Stores/Pharmacy ☐

   Physician/Doctor ☐ Fitness Club/Gym ☐

   Friend ☐ Magazines ☐

   Radio ☐ Don't know ☐

4. Have you ever used any type of dietary supplement? Yes ☐ ☐ No

5. If you do not, why?

   Cost ☐ Have no information about them ☐

   My diet is healthy so I do not need to ☐ Difficult to remember to take them ☐

   I have never been interested in their use ☐

6. Do you use any dietary supplements currently or have used in the past 1-2 months?

   Yes ☐ No ☐

7. What are you using these supplement/supplements for?

   Medical condition ☐ To complement my current diet and lifestyle ☐

   To get the nutrients because of the foods I don't eat ☐ Improve athletic performance ☐

   Recommendation from sales clerk or pharmacist ☐ For extra energy ☐

   To improve my general health ☐

8. Did your doctor prescribe it for you? Yes ☐ No ☐

9. If not, is your current physician aware of your use of this product/products?

   Yes ☐ No ☐

10. Do you believe it helps you? Yes ☐ No ☐ Don't know ☐

11. Are you taking any other form of prescribed medication to treat any condition you may have? (i.e. prescribed by a doctor)?

    Yes ☐ No ☐

12. In what form do you take your supplements?
    Tablet ☐ Liquid ☐ Powders ☐ liquid and tablet ☐

    I do not take any supplements ☐

13. Do you believe dietary supplements and herbals to be beneficial to health? Yes ☐
No ☐ Don't know ☐

14. Are you aware of the RDA's (Recommended Dietary Allowance) for the vitamins and minerals you use?

Yes ☐ No ☐

15. Are you aware of the potential for toxicity (overdose) from the use of vitamin/mineral supplements and herbals?
Yes ☐ No ☐ don't know ☐

Lifestyle Factors

16. State your weight _____ and height _____

17. Do you engage in regular physical activity/exercise: Vigorous (heavy sweating or a large increase in breathing) ☐ Moderate(light sweating with a slight to moderate increase in breathing or heart rate) ☐ Sedentary (Little/No activity) ☐

18. How many days per week do you exercise? 3 times/week ☐ 5times/week ☐
more than 5 times/week ☐ Never ☐

19. How would you describe your current state of health? Excellent/Very good ☐ Good ☐
Fair/Poor ☐

20. What is your current smoking status? Never ☐ Current ☐ Former ☐

21. Do you currently drink alcoholic beverages? Yes ☐ No ☐

22. If yes, indicate which you regularly consume, how much and on average how many times per week?

Beer (Carib, Stag etc.) -Never ☐ less than one drink per week ☐ one drink per week ☐ 2-3 drinks per week ☐ 4-6 drinks per week ☐ >6 drinks per week ☐

Wine (Red or white, a drink meaning a 4oz or ½ c. of wine) Never ☐ less than one drink per week ☐ one drink per week ☐ 2-3 drinks per week ☐ 4-6 drinks per week ☐ > 6 drinks per week ☐

Distilled Spirits (Puncheon, White Oak, Double Dog, Vodka etc.) Never ☐ less than one drink per week ☐ one drink per week ☐ 2-3drinks per week ☐ 4-6 drinks per week ☐ > 6 drinks per week ☐

23. Do YOU have a personal history of any of the following conditions? Diabetes ☐ Heart Disease ☐ Cancer ☐ Lung Disease ☐ Osteoporosis ☐ Arthritis ☐ Anxiety ☐ Hypertension ☐ Stroke ☐ No ☐

Other, please state _____

24. **Supplement Use**

Choose which supplement/supplements you use currently or have used in the past 1-2 months. Use the letter next to each response to indicate your answer in the space provided.

Length of time of usage

A) 1 year or less
B) 2-4 years
C) 5-10 years
D) 10 years or more

Antacids _____ Multivitamins____ St. John's Wort ____

Vitamin A_____ B-complex____ Saw Palmetto____

Vitamin D_____
Vitamin E_____
Vitamin K_____
Vitamin B1 (thiamin) _____
Vitamin B2(riboflavin)____
Vitamin B3 (niacin) _____
Vitamin B12 (cobalamin) ____
Folic acid_____

Multiminerals ____
Calcium_____
Potassium____
Iron____
Magnesium_____
Zinc _____
Selenium _____
Gingko_____

Chamomile ____
Echinacea _____
Glucosamine ____
Amino-acids ____
Beta-carotene_____
Ginseng _____
Vitamin C_____

Frequency of Use

A) Less than once per month
B) One to three times per month
C) Once per week
D) More than once per week
E) Daily
F) Periodic (regular use for a limited time)

Antacids _____
Vitamin A_____
Vitamin D_____
Vitamin E_____
Vitamin K_____
Vitamin B1 (thiamin) _____
Vitamin B2(riboflavin)____
Vitamin B3 (niacin) _____
Vitamin B12 (cobalamin) ____
Folic acid_____
Beta-carotene_____
Vitamin C_____

Multivitamins____
B-complex____
Multiminerals ____
Calcium_____
Potassium____
Iron____
Magnesium_____
Zinc _____
Selenium _____
Gingko_____
Ginseng _____

St. John's Wort ____
Saw Palmetto____
Chamomile ____
Echinacea _____
Glucosamine ____
Amino-acids ____

Socio-Demographics

25. Gender : Male ☐ Female ☐

26. Age: 20-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ >60 ☐

26. Race/Ethnicity: African ☐ East Indian ☐ Mixed ☐

28. Level of Education currently attained/attaining: Primary school ☐ High/Secondary school ☐ Tertiary ☐ Technical/Vocational ☐

29. Professional status:

Full-time job ☐

Part-time job ☐

Student ☐

Retired ☐