CHAPTER 4

RESEARCH RESULTS

This chapter presents the findings of the survey. It begins with a description of the general characteristics of the respondents. This is followed by a demographic comparison between regular and non-regular users of dietary supplement. Next, the respondent behaviour towards purchase and consumption pattern of dietary supplements is made. Then, the results of the factor analysis performed on 42 AIO statements are presented. Lastly, a comparison between regular and non-regular users of dietary supplement based on the psychographic dimensions will be discussed.

4.1 CHARACTERISTICS OF THE RESPONDENTS

A total of 400 sets of questionnaires were distributed for this study where 230 were in the dual language English/Bahasa Melayu version while the remaining 170 were in the Chinese version. A total of 269 responses were received from the survey. Of these respondents, 247 respondents were users of dietary supplements while 22 were non-users of dietary supplements. As the study attempts to study only users of dietary supplements, the final data were analysed using a sample size of 247 respondents. This sample is comprised of 165 regular users (66.8%) and 82 non-regular users (33.2%) of dietary supplements.

A user of dietary supplement in this study is identified through response to the question "In the past one year, have you taken any dietary supplements

before for at least a week?" This is followed by identifying their frequency of taking supplements to determine whether they belong to the regular or non-regular user group. For the purpose of this study, regular users are defined as those who take dietary supplements either on a daily or on a weekly basis while any other consumption pattern less then weekly are categorized as non-regular users. Table 4.1 shows a summary of the characteristics of the respondents.

Table 4.1

Characteristics of the Respondents

	Characteristics	Frequency	Percentage
1	Gender		
	Male	102	41.3
	Female	145	58.7
2	Race		
	Malay	98	39.7
	Chinese	114	46.2
	Indian	30	12.1
	Others	5	2.0
3	Age		
	Less than 20	12	4.9
	20-29	44	17.8
	30-39	62	25.1
	40-49	69	27.9
	50-59	39	15.8
	60 and above	21	8.5
4	Marital Status		
	Single	70	28.3
	Married without Children	27	10.9
	Married with Children	144	58.3
	Divorced/Widowed/Separated	6	2.4
5	No of Children		
	None	85	34.4
	One	15	6.1
	Two	48	19.4
	Three	58	23.5
	Four & above	41	16.6

6	Education Level		
	Primary school	10	4.0
	SRP/PMR/LCE	18	7.3
	SPM/SPVM/MCE	64	25.9
	STPM/HSC/A-Levels	27	10.9
	College Diploma	51	20.6
	University Degree/Professional	77	31.2
7	Occupation		
	Professional	26	10.5
	Administrative/Managerial	30	12.1
	Sales/Marketing	35	14.2
	Supervisory	8	3.2
	Teacher/Lecturer	32	13.0
	Technical	18	7.3
	Own business	35	14.2
	Not working	36	14.6
	Others	27	10.9
8	Personal Income		
	No Income	38	15.4
	Less than RM1,000	42	17.0
	RM1,000-RM1,999	55	22.3
	RM2,000-RM2,999	48	19.4
	RM3,000-RM3,999	28	11.3
	RM4,000-RM4,999	21	8.5
	RM5,000 and above	15	6.1

More than half or 58.7 percent of the respondents were females. In terms of ethnic group, 46.2 percent of the sample was Chinese followed by 39.7 percent Malays, Indians 12.1 percent and others at 2.0 percent. In terms of age, majority of the respondent population were in their middle age of 30-49 years age group, representing 53.0 percent of the sample.

More than half or 69.2 percent of the respondents were married. Out of that, 58.3 percent are of the married with children category, 10.9 percent are married without children while divorced/widowed/separated at a low 2.4

percent. In terms of number of children, 23.5 percent of the respondents have three children, 19.4 percent have two children and 16.6 percent have four children and above.

More then a third or 37.2 percent of the sample have a moderate level of education possessing the qualification of SPM and below, 31.5 percent have Form Six/ Diploma qualification while 31.2 percent have tertiary qualification.

As for the occupation, the respondents come from various backgrounds and have various occupations. In terms of personal income, 58.7 percent of the respondents earn less then RM3,000 per month, 19.8 percent earn RM3,000-RM4,999 and only 6.1 percent earns more than RM5,000 and above. A significant portion of the respondents or 15.4 percent have no income at all because they are students, housewives, retired persons or the unemployed. As for the household income, it was decided to be removed from the analysis because many of the respondents refused to provide information about their household income or provided inaccurate information on their household income in the questionnaire.

4.2 DEMOGRAPHIC COMPARISON- REGULAR AND NON-REGULAR USERS

To compare and distinguish the two groups along their demographic characteristics, the percentage breakdown of the eight demographic variables studied were computed and analyzed. Chi-square analysis was employed to test the significance of demographic differences between the two groups of users.

For the purpose of analysis, some of the demographic categories were collapsed and reclassified. For the race, "Indians" and "Others" were collapsed and classified as "Indian and others". For the age, "50-59" and "60 and above" were collapsed as classified as "50 and above". For marital status, the "single" and "divorced/widowed/separated" were combined into one category to be classified as "single" whereas "married without children" and married with children" were classified as "married".

In terms of number of children, the original 5 categories were classified into two categories with "1" and "2" children collapsed to form "1-2" and anything above 2 classified as "3 and above". In terms of education, the first three category of "primary school", "SRP/PMR/LCE" and "SPM/SPVM/MCE" was combined into one category called "Low education. "STPM/HSC/A-Levels" and "college diploma" category combined to be called "medium education" and the rest for "university degree/professional" classified as "High education. The personal income "RM4000-RM4999" and "RM5000 and above" was

combined to be classified as RM4000 and above. The summary results of the chi-square tests are presented in Table 4.2.

Table 4.2

Characteristics of Regular and Non-Regular Users of Dietary Supplements: A Demographic Comparison

Characteristics	Regular user %	Non regular user %
1 Gender		
Male	70.6	29.4
Female	66.2	33.8
	X^2 not significant, p =0.467	
2 Race		
Malay	62.2	37.8
Chinese	73.7	26.3
Indian and others	65.7	34.3
	X^2 not significant, p =0.195	
3 Age		
Less than 20	41.7	58.3
20-29	63.6	36.4
30-39	61.3	38.7
40-49	68.1	31.9
50 and above	83.1	16.9
	X^2 marginally significant, P =0.033	
4 Marital Status		
Single	56.6	43.4
Married	73.1	26.9
	X^2 marginally significant, p =0.010	
5 No of Children		
None	57.6	42.4
1 to 2	77.8	22.2
3 and above	70.7	29.3
	X^2 marginally significant, P =0.026	

6 Education		
Low	64.9	35.1
Middle	67.9	32.1
High	70.7	29.3
	X^2 not significant, P =0.730	
7 Occupation		
Professional	72.2	27.8
Administrative/Managerial	64.7	35.3
Sales/Marketing	72.2	28.0
Supervisory	50.0	50.0
Teacher/Lecturer	70.0	30.0
Technical	67.0	33.0
Own business	76.7	23.3
Not working	79.0	21.0
Others	52.4	47.6
	X^2 not significant, P =0.295	
8 Personal Income		
No Income	55.9	44.1
Less than RM1,000	67.7	32.3
RM1,000-RM1,999	65.4	34.6
RM2,000-RM2,999	86.2	13.8
RM3,000 and above	80.6	19.4
	X^2 marginally significant, P =0.034	

The results of the study found that compared to non-regular users, a larger proportion of regular users of dietary supplements are Chinese, older individuals, those married with children and have a higher education level and personal income level. These finding is consistent with previous studies done on dietary supplements or OTC pharmaceutical products in several countries including Malaysia (Nayga 2001; Suber & Block 1990; Chong 1994) where users of dietary supplements has been identified as having some of these profiles.

In terms of gender, this study has found that males and females are also likely to use dietary supplements in contrast to many studies which highlighted females to have a higher usage of dietary supplements than males (Lyle 1998; Greger 2001). This study also found that among all the races, the Chinese are more likely to use dietary supplements regularly. This finding is consistent with previous studies done where Chong (1994) in his study on OTC pharmaceutical products reported that Chinese are more likely to use OTC products and self-medicate compared to Malays and Chinese in Malaysia.

It has also been noted that the older individuals tend to use dietary supplements more regularly compared to the younger individuals; a finding also consistent with previous studies which shows a higher usage of dietary supplements among the older individuals (Subar and Block 1990; Lyle 1998). Moreover, the married with children respondents seem to have a higher proportion of regular buyers of dietary supplements compared to the singles. One possible explanation for this could be due to concern on the family's health that has prompted more regular usage of dietary supplements in the family. For females who are married, this could be due to the increasing demand of their role in the family which has prompted them to consume dietary supplements for well being.

Those who have higher education and income level also seem to be more regular users of dietary supplements. This confirms the results of some previous studies (Greger 2001; Johnson 2000) which found that users of

dietary supplement are of higher educational status and higher social class. One possible explanation for this finding may be those who have more disposable income are in a better position to purchase dietary supplements.

The study also found that only age, marital status, number of children and personal income were found to be marginally significant at $p \leq 0.10$ between the regular and non-regular users of dietary supplements. This shows that there are differences among those demographic variables between the two groups of users. However as for the other demographic variables like gender, race, education and occupation, no difference between the two groups of users were noted. This is in contrast to some other studies which show some association between usage of dietary supplements with gender and education. (Greger 2001; Lyle 1998)

4.3 DIETARY SUPPLEMENT USAGE BEHAVIOUR

In addition to that, the questionnaire had also included several other questions to examine the user's attitude towards dietary supplements. Feedback on various aspects were obtained from regular and non-regular users where multiple answers were provided by the respondents to the questions asked. Table 4.3 shows the frequency table of their response towards those questions.

Table 4.3

Frequency Table on the Behaviour of Regular and Non-Regular Users

	Questions Asked	Regular (%)	Non-Regular (%)
1.	Types of dietary supplement taken		
	Vitamins	43.1	47.9
	Multivitamins	23.8	16.9
	Minerals	15.5	16.9
	Others (herbs, botanicals etc)	17.6	18.3
2.	Brands commonly used		
	Kordel	13.9	7.7
	Blackmores	15.5	6.4
	Bio-Life	20.7	11.5
	Nutrilite	8.4	14.1
	VitaHealth	5.5	11.5
	Seven Seas	12.6	17.9
	Pharmaton	10.4	16.7
	Natopherol	2.6	2.6
	Others	10.4	11.5
3.	Source of dietary supplement info		
	Friends	20.3	18.1
	Family/Relatives	12.6	12.9
	Newspaper	15.3	8.6
	Book/magazines	17.1	11.2
	Televisyen/Radio	5.9	9.5
	Internet	3.2	2.6
	Sales Personnel	4.5	6.0
	Doctor	9.5	16.4
	Pharmacist	11.7	14.7
4.	Main objective for taking dietary supplements		
	To stay healthy	75.0	45.7
	To prevent from disease	19.1	31.4
	To cure disease	4.4	17.1
	Because people around me take it	0	3.8
	Others	1.5	1.9
5.	Source of dietary supplement purchase		
	Pharmacy	53.8	56.3
	Clinic/Hospital	4.1	11.7

	Supermarket/Hypermarket	6.2	4.9
	Chinese medical hall	9.7	13.6
	Health food store	5.5	3.9
	Direst selling companies	16.6	4.9
	Internet	2.8	2.9
	Others	1.4	1.9
6.	Purchaser of dietary supplement in family		
	Husband/wife	30.3	6.7
	Own self	53.2	60.0
	Children	4.6	2.2
	Parents	11.0	24.4
	Others	0.9	6.7

The study showed that the most common type of dietary supplement consumed by regular as well as non-regular users are vitamins followed by multivitamins, herbals and minerals. In terms of brands commonly consumed, it has been found that the top brands preferred are imported household brands like Bio-Life, Kordel, Blackmores and Seven Seas. This is not surprising as these brands are popular in the market and has a wide range of products to choose from by consumers catering for various health conditions. One noticeable thing is direct-selling brands such as Nutrilite by Amway was also widely used. This showed that besides using pharmacy as a distribution channel, the direct selling channel could also be an important channel where the marketer can consider using for distribution of their products. Since there are many direct-selling companies in Malaysia pushing all sorts of dietary supplements to consumers, marketers should be vary about their ability to gather a strong number of loyal supporters for their brands.

The study alsc found that mainly friends and book/magazines are the preferred source of dietary supplement information by users. The main objective for taking supplements as mentioned by respondents are mainly to stay healthy followed by prevention of disease. As for the source of purchase, regular and non-regular users prefer to obtain their supply mainly from pharmacy followed by through direct selling companies. This finding is consistent with previous studies (NBJ 2001) where consumers were found to purchase supplements mainly from mass market, natural/health food stores followed by from multilevel marketers. It has also been found that the key decision maker for the purchase of dietary supplements in the family for both groups is usually the user himself/herself.

Table 4.4

Comparison of Usage Level and Purchase Behaviour Between Regular and Non-Regular Users of Dietary Supplements

		Regular (%)	Non-Regular (%)
1.	Level of usage (own opinion)		
	Heavy	93.3	6.7
	Moderate	88.7	11.3
	Light	55.3	44.7
	Others	0	100.0
		X^2 significant, P =0.01	
2.	Amount purchased per month (on average)		
	Less than RM50	61.7	38.3
	RM50-RM100	80.5	19.5
	RM100-RM200	83.3	16.7
	Above RM200	85.7	14.3
		X^2 significant,	

		P =0.0	
3.	Number of purchases per month (on average)		
	Once every five months	48.9	51.1
	Every other month	60.0	40.0
	1-2 purchases a month	75.8	24.2
	>2 purchases per month	85.6	14.4
		X^2 significant, P =0.0	

Using chi-square test further, the study found that there are significant difference at p ≤0.05 between the regular and non-regular users of dietary supplements in terms on their usage level and also on the value or volume of purchase of dietary supplements. Regular users consider themselves to have a higher usage level compare to non-regular users. As for the amount of dietary supplement purchased, majority of regular users made quit significant purchases of above RM50 and above per month while non-regular users purchased less mainly less than RM50 per month. This is quite consistent with previous studies where Malaysians had been found to spend on average of US$17.30 per month on dietary supplements. The study also found that regular users purchase at least on a monthly basis or more while non-regular users buys dietary supplements less often at once every five month. This finding is quite consistent to the previous studies done in US on dietary supplement users.

4.4 FACTOR ANALYSIS

Factor analysis was performed on the 42 AIO statements. The technique was used in order to identify the underlying buying behaviour dimensions. The analysis was also to determine if the dimensions could be summarized into

smaller sets of factors or dimensions. The initial principal components analysis model performed extracted 14 factors with eigenvalues of 1.0 and above and a total variance explained of 63.0 percent.

As one of the goals of factor analysis is to represent relationship among sets of variables, the 14 factors initially extracted were too many to provide a good analysis. Based on the criteria that the factors should represent about 50 percent of the total variance explained and that the factor should have at least three significant factor loadings, six factors were derived (Norusis 1985; Hair et al. 1987). A scree plot drawn showed that a break between the steep slope of the large factors and gradually trailing off of the rest of the factors at about the sixth factor. This might indicate that six factors would be acceptable. The total variance of these six factors was 39.8 percent.

On examination of the rotated factor matrix, only items with a factor loading of 0.35 and above were considered as significant in interpreting the factors (Norusis 1985; Hair et al 1987). After a closer examination of the loading on the factors, a name was also assigned to each factor according to the content of the variables making the greatest contribution to each of the dimensions.

The rotated factor matrix showed that several items were loaded on three factors. This indicates that while there are some activities shared commonly across the psychographic dimension, there are also other activities not shared across the psychographic dimension. The items reflecting each of the six factors together with the significant factor loadings are presented in Table 4.5.

Factors I was comprised of six items, Factor II comprised of five items and Factor III was comprised of seven items and explained 14.5 percent, 6.7 percent and 5.5 percent of the variance respectively. Factors IV, V and VI were comprised of three items for each factor and explained 5.0, 4.2, 3.9 percent of the variance respectively.

Table 4.5

Factor Analysis Results of AIO Statements

Statement	I	II	III	IV	V	VI
I exercise regularly.	0.768					
I exercise to keep fit.	0.730					
I do other exercises besides walking/jogging.	0.695					
I walk or jog for exercise.	0.694					
I enjoy outdoor activities.	0.678		0.407			
I am careful about my diet.	0.352					
I do not mind to pay extra for quality.		0.761				
I prefer to buy quality product even though they maybe high priced,		0.755				
I generally try to buy products known for its quality.		0.719				
You get what you pay for.		0.521				
Knowing a salesperson in the store makes my shopping far more enjoyable.		0.420				
I often read books and articles on "health" matters.			0.606			
I usually read the words on the label of the dietary supplements which I buy/take.			0.549			

Everyone should take vitamins.			0.499			
I believe that a person's most important asset is his/her health.			0.487			
I am more health conscious than most of my friends.			0.486			
I frequently purchase "health food"/"natural food".			0.455			
I find myself checking the prices even for small items.				0.731		
I usually compare prices before buying.				0.669		
I can save a lot of money by shopping around for bargains.				0.659		
When I see a new brand on the shelf, I often buy it just to see what it is like.					0.726	
I often try new brands before my friends and neighbours do.					0.641	
I will try samples of dietary supplements if given.					0.411	
I usually watch the advertisement for sales.						0.733
My choice of brands for many products is influenced by advertisement and commercials.						0.683
Alcoholic drink is undesirable for health.						0.453

Cronbach's coefficient alpha was used to test for the internal consistency reliability of each of the dimension. The alpha scores for each dimension are as shown in Table 4.6. The final alpha scores ranged from 0.482 to 0.792. Nunnally (1978) suggests that in the early stages of research, modest reliability in the range of 0.50 to 0.60 will suffice. In Peter's (1979) study,

reviewing the reliability assessment of marketing measures, the lowest coefficient alpha reported was 0.514 and the highest coefficient alpha was 0.98. Therefore Peter states that Nunnally's guideline should not be accepted as an absolute standard for marketing research. From this study, the alpha score for all factors except Factor V and VI were able to meet Nunnally's (1978) guideline of between 0.5 to 0.6 for exploratory research. However, these two factors were retained as a psychographic dimension in the end after taking into consideration of Peter's suggestion that reliability coefficients of less than 0.5 may be acceptable.

Table 4.6

Psychographic Dimensions and Internal Consistency Reliable Coefficients

Factor	Psychographic Dimension	Number of Items	Alpha Score
I	Exerciser	6	0.792
II	Quality Minded	5	0.678
III	Health & Safety Conscious	7	0.714
IV	Price Conscious	3	0.622
V	Brand Trier	3	0.482
VI	Price/Safety Conscious	3	0.496

Based on the conceptual attributes of items loaded on each dimension, the six dimensions were labeled as shown in Table 4.6. Factor I, labeled the "exerciser" reflects those who lead an active lifestyle and are also health conscious. They tend to do more physical exercise as part of their healthy lifestyle. Factor II, the "quality minded" are those who give priority to quality when purchasing and are willing to pay for using familiar quality branded

products. Factor III, labeled "health and safety conscious" potrays those who are very concerned with their health. As they are also conscious about side effects of the product they buy, they are influenced by the sales people who knows them and their needs. Factor IV, the "price consciousness" are those who considers the price factor when purchasing dietary supplement. They are typically bargain shoppers who are always on a lookout of good package. Factor V, the "brand triers" are those who are inclined to try new products. For this type of consumers, strong messages in advertisements can entice them to try the product. Finally, Factor VI is the price and safety conscious type where they look at these two factors in deciding their purchase.

Psychographic Profile

The mean values of the two groups of users (regular and non-regular users of dietary supplement were compared along the six dimensions identified. A summary of the analysis is provided in Table 4.7.

Table 4.7

Psychographic Dimensions of Regular and Non-Regular User of Dietary Supplements: A Comparison *

Dimension	Regular User	Non-Regular User	Sig. **
Exerciser	12.57	6.96	0.271
Quality Minded	3.80	3.80	0.962
Health & Safety Conscious	3.76	3.74	0.557
Price Conscious	3.27	3.52	0.022
Brand Trier	2.34	2.63	0.007

Price/Safety Conscious	3.25	3.41	0.159

* Higher scores represent greater level of agreement with the dimensions.
** Level of significance, using t-test.

The differences in group means were statistically significant for two out of six psychographic attributes of the dietary supplement users. The group differences for "price conscious" and the "brand trier" dimensions were significant at $p \leq 0.05$. This finding is consistent with those finding by Miller (2003) on dietary supplements users which have found some of these factors important in the purchase of dietary supplement. No significance was found between regular and non-regular users in terms of the health conscious, quality minded and health and safety conscious dimensions.

Based on the group differences in mean values of the lifestyle attributes, a profile of the dietary supplement regular user can be drawn. The psychographic profile of dietary supplement regular users as a group could be considered as price conscious and are brand triers. This profile has important implications with regards to designing advertising themes and copy content directed at regular and non-regular users of dietary supplements.