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KNOWLEDGE, HEALTH BELIEFS AND USE OF VITAMIN AND MINERAL SUPPLEMENTS AMONG ELDERLY CLIENTS IN KLINIK RAWATAN KELUARGA (KRK), HOSPITAL UNIVERSITI SAINS MALAYSIA

by

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the requirements for the degree
of Bachelor of Health Sciences (Nursing)

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CERTIFICATE

This is to certify that the dissertation entitled 'Knowledge, Health Beliefs and Use of Vitamin and Mineral Supplements among Elderly Clients in Klinik Rawatan Keluarga, Hospital Universiti Sains Malaysia' is the bonafide record of research work done by Norfaranieza binti Muhd Ariffin with matric number 87447 during the period of July 2008 to April 2009. This dissertation submitted in partial fulfillment for the degree of Bachelor of Health Science (Nursing). Research work and collection of data belong to Universiti Sains Malaysia.

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LIST OF SYMBOLS, ABBREVIATIONS OR NOMENCLATURE

KRK   Klinik Rawatan Keluarga

HUSM   Hospital Universiti Sains Malaysia

USM   Universiti Sains Malaysia

SD   Standard Deviation

KNOWLEDGE, HEALTH BELIEFS AND USE OF VITAMIN AND MINERAL SUPPLEMENTS AMONG ELDERLY CLIENTS IN KLINIK RAWATAN KELUARGA (KRK), HOSPITAL UNIVERSITI SAINS MALAYSIA

ABSTRACT

With the prevalence of elderly rising in the past decade, research into nutritional intake among elderly has become increasingly important. Indeed, nutrition-related health problems ranging from nutrient deficiencies to over-nutrient, makes the elderly diet is questionable. The use of nutritional supplementation is enhancing among elderly and their decision of consuming vitamin and mineral supplements might be based on personal knowledge and health beliefs.

The objectives of the study is to assess the knowledge, health beliefs of the elderly and correlates them with their use of vitamin and mineral supplements among elderly clients in KRK, HUSM. This study was a cross-sectional design and descriptive study. One hundred and fifty elderly clients who were attending to KRK, HUSM were engaged in this study. From this questionnaire, the knowledge and health beliefs scores were calculated and analyzed using Statistical Package for Social Sciences version 12.0 (SPSS). Association and mean difference of the supplement usage were identified.

The mean of knowledge score was 10.26 (S.D 2.21) out of possible 20. There is no association between nutritional knowledge and usage of vitamin and mineral supplements. There is no significant mean difference of knowledge score between users and non-users of vitamin and mineral supplements.

The mean for health belief score was 24.4 (S.D 2.21) out 45. For the health beliefs score, the result revealed that there were no significance mean difference of health belief score between users and non-users of health belief statements.

From this study, it is know that the usage of vitamin and mineral supplements still did not take place among elderly at KRK, HUSM. Besides, the findings also showed that the level of nutrition knowledge is high among the elderly. Those aspects of nutrition knowledge which are low needs improvement and those beliefs that put the elderly at risk of malnutrition in the expanding population of older adults need to be changed and further investigation of vitamin and mineral supplementation behavior in older adults should be explored.

PENGETAHUAN, KEPERCAYAAN KESIHATAN DAN PENGGUNAAN SUPLEMEN VITAMIN DAN MINERAL DI KALANGAN WARGA TUA DI KLINIK RAWATAN KELUARGA (KRK), HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

ABSTRAK

Dalam tempoh sedekad lalu, global mengalami peningkatan prevalens dalam bilangan warga tua. Ini menunjukkan bahawa kajian mengenai pengambilan nutrisi dalam kalangan warga tua menjadi semakin penting. Tambahan pula, masalah berkaitan nutrisi yang bermula daripada kekurangan nutrisi sehingga terlebih nutrisi menjadikan diet warga tua dipersoalkan. Penggunaan suplemen vitamin dan mineral semakin menular di kalangan warga tua dan keputusan untuk mengambil suplemen tersebut mungkin berdasarkan atas pengetahuan dan kepercayaan kesihatan individu itu sendiri.

Objektif kajian ini adalah untuk asses tahap pengetahuan, kepercayaan kesihatan dan membuat perkaitan dengan penggunaan suplemen vitamin dan mineral di kalangan warga tua di KRK, HUSM. Kajian ini adalah "cross-sectional design" dan deskriptif. Seramai 150 orang warga tua yang hadir ke KRK, HUSM terlibat dalam kajian ini. Skor mengenai tahap pengetahuan dan kepercayaan kesihatan dianalisis menggunakan Statistical Package for Social Sciences versi 12.0 (SPSS). Perkaitan dan perbezaan min antara pengetahuan nutrisi dan kepercayaan kesihatan turut dikenalpasti di dalam kajian.

Min untuk skor pengetahuan adalah 10.26 (S.D 2.21) daripada 20 markah. Didapati tiada perkaitan di antara pengetahuan nutrisi dan penggunaan vitamin dan mineral. Selain itu, tiada perbezaan min yang diperoleh di antara pengetahuan nutrisi dengan pengguna dan bukan pengguna vitamin dan mineral. Min untuk skor kepercayaan kesihatan adalah 24.4 (S.D 2.21) daripada 45 markah. Untuk skor kepercayaan

kesihatan, keputusan membuktikan bahawa tiada perbezaan min skor antara kepercayaan kesihatan dengan pengguna dan bukan pengguna.

Daripada kajian ini, didapati bahawa penggunaan vitamin dan mineral di kalangan warga tua masih tidak mendapat tempat di kalangan warga tua di KRK, HUSM. Selain itu, kajian ini juga menunjukkan tahap pengetahuan nutrisi adalah tinggi di kalangan warga tua. Aspek-aspek berkaitan dengan pengetahuan nutrisi yang masih rendah memerlukan kemajuan dan kepercayaan yang meletakkan warga tua berisiko untuk malnutrisi turut memerlukan perubahan. Kesimpulannya, penggunaan vitamin dan mineral di kalangan warga tua masih memerlukan kajian dengan lebih mendalam.

CHAPTER 1

INTRODUCTION

1.1 Background of The Study

The development and socio-economic growth in Malaysia for the past few years has brought many changes to lifestyle, disease trend and health status. The progress on health care services correlate with the organized lifestyle has increase the lifespan of men and women to 72 years and 77 each from year 2005 to 2010 (United Nations, 2008) and has decrease the mortality and morbidity rate. This trend indicates that there is an increase number of elderly in Malaysia. The elderly with 65 years and above has increased from 0.93 million people (4.0 percent) in 2000 to 1.03 million people (4.1 percent) in 2003. This indicates that there is an enhance number of more than 33,000 elderly every year within the year of 2000 to 2003. The number is expected to increase to 2.2 million people or 6.2 percent in 2020 (Syed Abdul Razak, 2008). The increasing number of elderly in Malaysia is showed in Table 1 below:

Table 1: Percentage of elderly in Malaysia 1991-2020

Age	1991	2000	2005	2010	2015	2020
60-74	4.6	5.0	5.3	5.9	6.9	8.0
75+	1.2	1.3	1.4	1.5	1.7	1.9

(Syed Abdul Razak, 2008)

Population aging will be an inevitable phenomenon accompanying the rapidly developing economy in Malaysia. The increasing number of elderly persons, combined with the complexity of nutrition-related health problems ranging from nutrient deficiencies to over-nutrient and the vulnerability of the elderly to various-age-related disability and morbidity will exert increasing demand on the health care system (Zaitun Kassim & Seong, 1995).

Ageing is related to the deterioration of some physiological and health functions, thus elderly people are more susceptible to various disease and illness. Maintaining good health is important as achieving good physical health in order to ensure an optimum independency in daily living. Good nutrition is the foundation for health and it is important for an individual to have access to adequate nutrition, safe and quality food, and the nutrition knowledge to make informed healthy dietary changes (Souter & Keller, 2000). Optimal nutrition status is achieved when sufficient nutrient intake are consumed to support day-to-day body needs (Jong, 2000). This status promotes growth and development, maintains general health support activities of daily living and assist in protection from disease (Inelmen, 2006)

1.2 Research Problem Statement

The elderly are a more diverse population than any other age group; individuals have widely varying capabilities and levels of functioning. On the whole, elderly persons are more at higher risk for frank nutritional deficiency than younger adults.

The elderly may be more susceptible to using food supplements since individuals at this age often become more concerned about their health. An older adult's decision of whether or not to consume vitamin and mineral supplements might be based on personal knowledge and health beliefs. Since the effect of nutrition knowledge and health beliefs on supplement use has rarely been a variable included in research with the elderly, the present study will be conducted to determine vitamin and mineral supplement use and its relationship to knowledge and health beliefs. This study

will use the Health Belief Model to explain the psychological and behavioral adoption of vitamin and mineral supplements.

1.3 Objectives of the Study

The general objective of this study is to assess the knowledge, health beliefs of the elderly and correlates them with their use of vitamin and mineral supplements among elderly clients in KRK, HUSM

1.3.1 Specific Objectives

- To determine the type and frequency of vitamin and mineral supplement use among elderly clients in KRK, HUSM.

- To determine the nutrition knowledge related to the intake of vitamin and mineral supplements among elderly clients in KRK, HUSM.

- To determine the health beliefs related to the intake of vitamin and mineral supplements among elderly clients in KRK, HUSM.

1.4 Research Questions

1.4.1 What is the type and frequency of vitamin and mineral supplements use among elderly clients in KRK, HUSM?

1.4.2 Does nutrition knowledge influence the use of vitamin and mineral supplements among elderly clients in KRK, HUSM?

1.4.3 Do health beliefs influence the usage of vitamin and mineral supplements of the elderly clients in KRK, HUSM?

1.5 Hypothesis

1.5.1 H_0: There is no association between nutritional knowledge and usage of vitamin and mineral supplements among elderly

H_A: There is an association between nutritional knowledge and usage of vitamin and mineral supplements among elderly

1.5.2 H_O: There is no significance mean difference of knowledge between users and non-users of vitamin and mineral supplements

H_A: There is a significance mean difference of knowledge between users and non-users of vitamin and mineral supplements

1.5.3 H_O: There is no significance mean difference of health belief between users and non-users of vitamin and mineral supplements

H_A: There is a significance mean difference of health belief between users and non-users of vitamin and mineral supplements

1.6 Definition of Terms

1.6.1 Elderly

The elderly can be defined as individual with 60 years and above (Syed Abdul Razak, 2008). The United Nations World Assembly on Ageing held in Vienna, 1982, used 60 years and over as the cut-off in deliberating ageing trends. This paper has thus used the same age cut-off to refer to senior citizens in KRK, HUSM.

1.6.2 Knowledge

Knowledge applies to the facts or ideas acquired by study, investigation, observation, association or experienced (Merriam-Webster Online, 2008)

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1.6.3 Health beliefs

Health beliefs can be defined as belief about health and illness causation and they are influencing by prevailing social and medical ideologies (Kloeblen, 1999)

1.6.4 Supplements

The supplements are defined as a product intended to supplement the diet that bears or contains one or more the following dietary ingredients: (a) vitamin; (b) mineral; (c) an herb or other botanical; (d) an amino acid; (e) a dietary supplementing use by man to supplement the diet by increasing the total dietary intake; or (f) a concentrate, metabolite, constituent, extract or combination of any ingredient described in clause (a), (b), (c), (d) or (e). These products can be ingested as a capsule, powder, gelcap, tablet, liquid, or other form (Nesheim 1998 in Yeh, 2000)

1.7 Significance of the Study

The aging process is much related to the role of nutrition. Since aging begins in the young adult and progressively erodes tissue function throughout the life, the relationship of nutrition and this process should be emphasized. The nutrition can influence the course and severity of the progressive age-related changes in tissue structure and functions as adults grow older. For example, loss of bone mineral content leading to osteoporosis is certainly affected by dietary factors (Huat, F. L. & Zaitun Yassin, 2000). Nutrition also is one of the prime candidates among etiological factors in age-related degenerative diseases such as atherosclerosis, cancer, etc (Abouta et. al, 2003). Finally, we have inadequate knowledge concerning the nutrient needs and intake of elderly once they have attained old age since they generally consume much less food than young adults.

This study will determine whether a proportion of the elderly population is having inadequate knowledge of the vitamin and mineral supplement intake to maintain

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their health and remaining tissue function and therefore better benefit of nutritional status can be acquired (Troppman et. al., 2002).

Besides, this study will evaluate the health beliefs among elderly based on Health Belief Model to prove its significant influencing the supplement usage. From the result, it could provide a basis for designing effective and measurable nutrition education programs for elderly especially regarding the nutritional supplement usage.

LITERATURE REVIEW

2.1 Conceptual/Theoretical Framework

Health belief model is a psychological model that attempts to explain and predict health behaviors by focusing on the attitude and beliefs of individuals. The model was developed on 1950s by Rosentock and Kegel. The model was developed to explain why some people who are healthy take specific actions to avoid illness, where as others do not do so (Yeh, 2000).

The health belief model assumes that people will perform a health-promoting behavior when they a) perceived themselves susceptible to developing the unhealthy condition (perceived susceptibility), b) perceived that unhealthy condition as severe (perceived severity), c) have the opinion that the advised action is effective in avoiding the unhealthy condition (perceived benefits), d) perceive more benefits than barriers in acting in the healthy way (perceived barriers), and e) have the conviction that they are able to execute the healthy behavior (self-efficacy) (Engels et. al., 2001). Generally, a behavior with a perceived beneficial outcome is more likely to be carried out than one that has a perceived negative outcome.

Belief in a connection between diet and disease may be notable predictor of the adoption of healthful diet, including use of supplements. The Health Beliefs Model provides one theoretical framework for studying compliance in regard to using preventive health-behavior measure (Yeh, 2000).
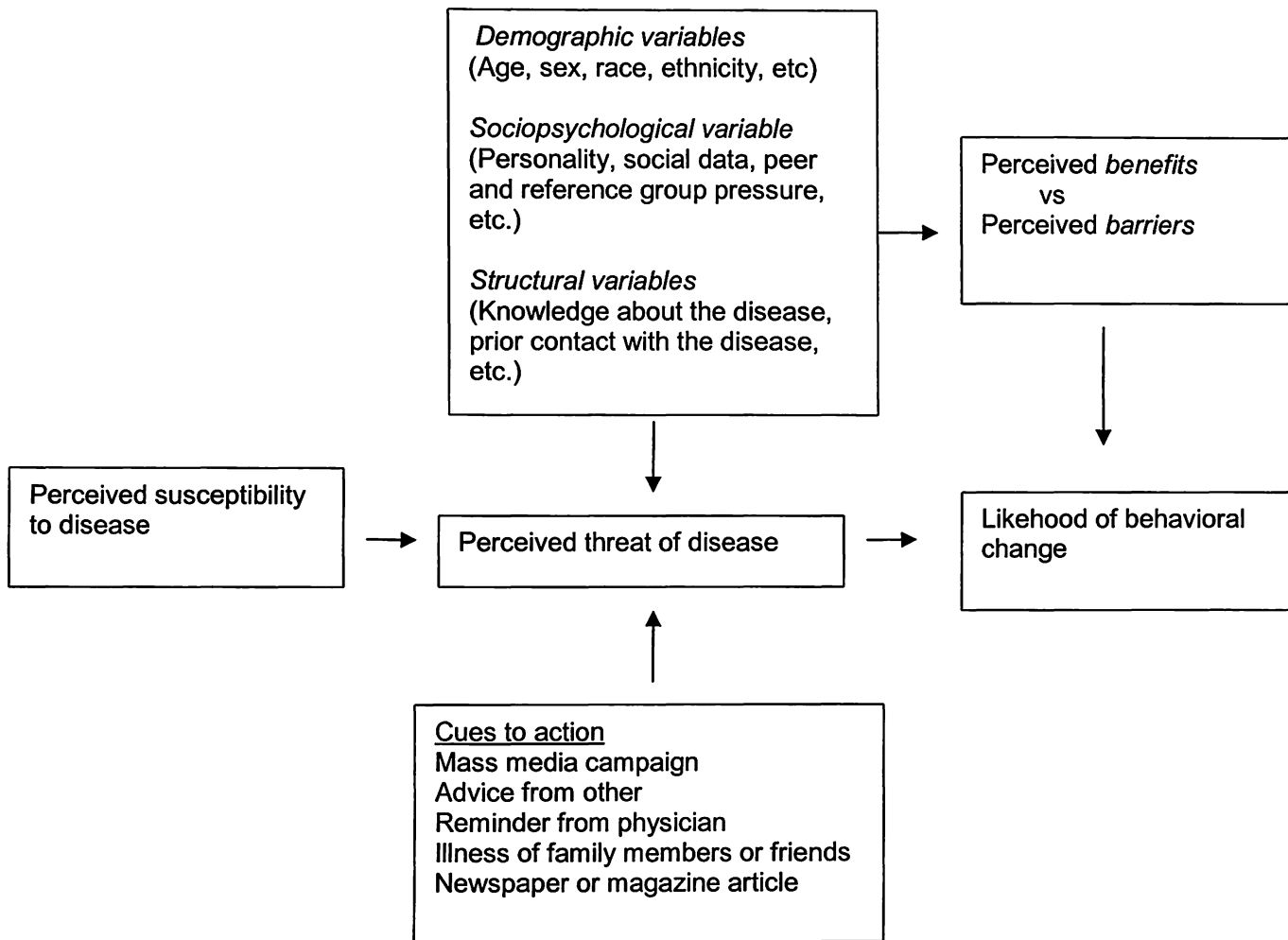
Figure 2.1: Conceptual model modified from Health Belief Model (Witte, 2007).

2.2 Elderly and nutrition

The diet and dietary patterns of older persons are important as contributors to health, various physiological and psychological charges in the elderly and to a nutritional deficiencies involving energy intake, intake of proteins, vitamins, trace elements and minerals (Chandra, 2004). More than 40% of older American has been certified as "nutritional risk" and between 10 and 51 percent are malnourished or have an inadequate nutritional intake (Souter & Keller, 2000). In older people, the risk of

developing nutritional deficiencies increases due to age-related reductions intake with the presence of debilitating disease (Shahar, Shai, & Fraser, 2003)

With advancing age, the risk of developing nutritional deficiencies increases. Nutritional inadequacies may contribute to the burden of disease, functional dependency, increased morbidity and mortality, and greater use of health care resources (Souter & Keller, 2000).

As people age, activity levels and energy requirements tend to decrease. The concomitant decrease in food consumptions also may cause protein and micronutrients intake to fall below desirable levels. Many factors affect the nutritional status of elderly such as physiological factors, psychosocial factors, functional factors and pharmacological factors (Kranti, 2006)

The physiological factors involve the physiological changes that occur naturally in older people. The decline in muscle mass and strength that occurs with aging may resulted from an intake of proteins that is less than optimal (Borsheim, Bui, Tissier, Kobayashi, Ferrando & Wolfe, 2008). The deficiency of vitamin D intakes in turn, is a major cause metabolic bone disease in elderly (Meunier & Chapuy, 2005). Besides, many nutrient deficiencies common in the elderly including zinc, vitamin B6, seems to result in decreased or modified immune response (Chandra, 2004). Overt deficiency of several vitamins is associated with cognitive deficits in old age (Suzana, Lee, Siti, Mokhtar, Nor & Junara, 2007).

Physical activity decreases with age and results in an overall lower caloric intake (Souter & Keller, 2000). Furthermore, elderly persons may change their eating habits because of health, social, or financial reasons (Sahyoun, Pratt & Anderson, 2004). Bowman reported that 13.9 percent of low income household with older adults experienced food insecurity with or without hunger (Bowman, 2007).

There is a connection between nutritional intake and quality of life. Hickson reported that worse nutritional states correspond to worsening quality of life (Hickson & Frost, 2004). An adequate and balanced nutrition of elderly people is important for

providing a healthy life and improved quality of life (Akbulut & Ersoy, 2007). Meanwhile, Gollub and Weddle (2004) found that elderly, who participate in breakfast program with home-delivered meals, improved the nutritional status and quality of life.

Since the risk of undernutrition is increased in elderly due to their decreased lean body mass and many other factors that may compromise with nutrient and fluid intake, inadequate intake of protein, energy and micronutrients should be corrected by nutritional support. The use of supplementation may corrected the problem of micronutrient deficiencies suffered by most elderly.

2.3 Vitamin and mineral supplements

Shahar et al (2003) recommends that obtaining nutrient from a wide variety of foods maintain the health and reduce the risk of disease. Evidence is accumulating that deficiencies intake of nutritional supplementation affect the risk for many diseases. For example, multinutrient deficiencies are seen influenced the immune responses, improved the cognitive function (Suzana et. al.,2007), vitamin D may prevent osteomalacia (Meunier & Chapuy, 2005), enhanced levels of antioxidant that have an effect on antibody response to influenza vaccine (Dickinson, 2004), the use of folic acid by pregnant women reduces the occurrence of neural tube defects (Kloeblen, 1999), amino acid supplementation may showed improvement of lean body mass, muscle strength and physical function (Borsheim et. al., 2008).

Nutritional supplements includes vitamins, minerals, herbs supplements, sports nutrition product, natural food supplements and other related products used to boost nutritional content of the diet. The nutritional supplements can be added to diet to boost overall health and energy, to provide immune system support and reduce the risk of illness and age-related conditions, and to support the healing process during illness and diseases (Yeh, 2000).

By definition, vitamins are micronutrients or organic carbon containing substances that needed in small amounts in the diet. Vitamins are present in food but

adequate quantities of vitamins may be reduced when food is overcooked, processed and improperly stored. Vitamins are classified as either a fat soluble or water soluble. Vitamin A (retinol, carotene), vitamin D (cholecalciferol), vitamin E (tocopherols), and vitamin K (phyloquinone, menquinone and menadione) are fat soluble vitamin. Vitamin C and B complex, thiamin, riboflavin, niacin, pantothenic acid, pyridoxine (B6), cabalamin (B12), folate, and biontin are water soluble vitamin. Low to inadequate intake may account for much of the poor vitamin nutrition deserved in the elderly. Moreover, physiologic changes associated with the aging gut may increase or decrease vitamin absorption, thereby influencing total dietary vitamin requirements (Yeh, 2000).

Mineral elements are inorganic substances that occur in simple form or in combination with organic compounds such as the iron in hemoglobin. It can be classified as:

1) Macronutrients – constituting more than 0.0005% of body's weight, or so parts of per million (ppm) such as calcium, chloride, phosphorus, potassium, magnesium, sodium and sulfur.

2) Micronutrients – mineral which identified roles in health maintenance include chromium, cobalt, copper, fluoride, iodide, iron, manganese, molybdenum, selenium and zinc.

3) Minerals with unestablished roles in health maintenance such as arsenic, boron, cadmium, lithium, nickel, silicon, tin and vanadium.

(Yeh, 2000)

In most countries, mineral deficiencies receiving the most attention are iron (iron-deficiency anemia) (Suzana et. al, 2007.), calcium (osteoporosis) (Zaitun & Huat, 2000), iodine (goiter) and fluoride (dental carries) (Kranti, 2006).

2.4 Knowledge, health belief and practice of nutritional supplements intake

Despite numerous recommendations that healthy individuals should be able to meet their entire nutrient needs with diet rather than nutritional supplements nutrition, the use of nutrition supplements is common practice in some countries. In a study of elderly in Germany, 46.1 percent of the total study population reported using one or more nutritional supplements (Schwarzpaul et. al., 2006). Brownie found that 43 percent of the older Australian reported using some form of nutritional supplements, while 36 percent of urban elderly and 41 percent of rural elderly in United Kingdom were taking at least one dietary supplement (Brownie, 2005).

Vidal (2004) conducted a study on vitamin supplement usage and nutritional knowledge among a healthy science student in Portugal. The findings revealed that supplement users perceived more benefits of supplement than non-users. Most students believed that vitamin could cure several common diseases; this belief in the therapeutic effect of vitamins is in agreement with other study (Vidal, 2004).

In a study of 333 adolescent between the ages of 13 and 19 years old, Bell and his associates conducted a study to examine the use of nutritional supplements by adolescent. The findings suggested that most adolescent do use nutritional supplements. The most popular supplements consumed were multivitamin and mineral preparations with percentage of 42 percent consumption (Bell, Dorsch, MacCreary & Hovey, 2004).

Another recent study examined the possible interaction among health beliefs and supplement intake. That study based on a sample of 826 adults (age 30-60 years old), suggested that supplement users were more likely than non-users to believe that the intake of supplements exerted a beneficial health effect (Hu, 1995).

Neuhouser and his associates conducted a study on motivations for using vitamin and mineral supplements among adults to monitor attitudes and behavior related to cancer risk and prevention. The findings show that supplement users have strong health beliefs about supplement intake. Among the respondent, 40 to 60

percents believed that the diet alone did not provide enough micronutrients (Neuhouser, Patterson & Levy, 1999).

CHAPTER 3

METHODOLOGY

3.1 Research Design

This study was conducted by using quantitative approach. This study employed the cross sectional descriptive method by using self-administered questionnaire.

3.2 Population and Setting

This study was carried out in Klinik Rawatan Keluarga (KRK) clinic, Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian, Kelantan. The clinic deals with the out-patient either the patient comes with appointment or by themselves. The subjects were recruited from the KRK.

3.3 Sample

3.3.1 Sample Size

The calculation of the sample was taken from the previous study done by Yeh (2000). Data was collected from sample 0f 82 elderly with 64.6% consumed some type of nutritional supplement (Yeh, 2000). The sample calculation was done by using 'the parameter was a proportion' by Naing (2003).

The formula used to calculate the sample size as bellow:

$n = (Z/\alpha)^2 \times P(1-P)$, where

$Z = 1.96$ (from normal distribution table. This value is standard)

$\alpha = 0.05$ (level of significance)

P = prevalence

$$n \quad = \quad [1.96/0.05]^2 \times 0.646 \times (1-0.646)$$

$$= \quad 351$$

The samples of 351 older people were required to be sample at analysis stage. However, there were only 150 respondents recruited in this study.

3.3.2 Sampling Design

The study was conducted by using purposive sampling.

3.3.3   Inclusion and Exclusion Criteria

3.3.3.1 Inclusion Criteria

Participants are patients 60 years old and above, orientated to time, place and person, able to understand and communicate in Bahasa Malaysia or English, agree to participate in this study.

3.3.3.2 Exclusion Criteria

Participants less than 60 years old and did not agree to take part in this study.

3.4 Instrumentation

3.4.1 Instrument

The instrument employed in the study was developed by Yeh in 2000. Items were designed to establish participant's knowledge and health beliefs regarding the vitamin and mineral supplementation. The questionnaire consisted of three separate sections.

In the first section, subjects were asked to provide pertinent demographic information and the usage of vitamin and mineral supplements.

They were requested to identify their age, education and whether they take vitamin and mineral supplements.

A nutrition knowledge quiz made up the section two. The first part assessed on the general knowledge of vitamin and mineral supplements. The second part of the knowledge questions measured knowledge about individual's vitamin and mineral intake. The nutrition knowledge was the dependent variable when it tested with the usage of vitamin and mineral supplements.

The third section of the instrument was a health belief scale. The health beliefs were the dependent variable for this study.

3.4.2 Variables Measurement

The data were classified as section one. The questionnaire includes age, gender, education level and the usage of vitamin and mineral supplements.

3.4.2.1 Socio demographic data

Age was divided to 4 groups: 60-69, 70-79, 80-89 and 90 above. Gender was divided into two groups either male or female. Education was operationalised as 'complete years of schooling' and is divided into 4 grades: primary school (7-12 years), secondary school (13 to 17 years old), diploma and university graduates. Each participant is assigned to the category corresponding to his or higher level.

3.4.2.2 Nutritional knowledge

Knowledge of the nutrition and the supplements were measured in the section two. Thirteen true/false questions assessed general knowledge of vitamins and mineral supplements. Subjects also were asked to indicate if they did not know the answer to an item. Items 1 to 13 were true/false questions, which concerned with the general knowledge of vitamins and minerals. Items 14 to 20 were multiple choice

items, which designed to identify the functions or benefits of selected vitamins and minerals. The scores were based on the number of questions answer correctly and each right answer was given 1 point. The score >10 is the score for high knowledge and score <10 is the low knowledge (Vidal, 2004)

3.4.2.3 Health Belief questionnaires

The health beliefs regarding the vitamin and mineral supplements were determined in section three. The respondents were given the options of strongly agree, agree, neutral, disagree, and strongly disagree with regard to each item. Responses for this section were scored from 1(strongly disagree) to 5 (strongly agree). Total scores on the items were continuous with a higher score denoting a more positive attitude toward supplement use and a higher tendency to use supplements. Nine health belief statements about supplement use were constructed by previous researcher to assess overall attitude toward supplement use in the form a five point Likert-type scale.

3.4.3 Validity and Reliability

The questionnaires were designed to be short enough to allow elderly to complete the form without interrupting their activity. Content validity had established by the dietitians and nutrition director in previous research for reviewing the accuracy and efficiency of instruments administration.

A pilot study has been carried out to determine the reliability of the instrument. Thirty respondents involved in the pilot study, the 9 items of health belief statements proved reliable as indicated by standardized Cronbach's alpha coefficient of 0.788. In this study, Cronbach's alpha coefficient was 0.777.

3.4.4 Translation of Instrument

The original questionnaire in English version was translated into Bahasa Malaysia and the questionnaire in this study was prepared bilingually. Both languages prepared to help the participants understand the questions better.

3.5 Ethical Considerations

Ethical clearance and permission were obtained from USM ethical and Research Committee of USM, Director of HUSM, Head of Department and Sister in charge of KRK. The subjects were asked personally for their willingness to participate in the study as they need to fulfill the study requirements. Participation in the study is entirely voluntary. All information obtained was kept confidential and the survey is only for research purpose.

3.6 Data Collection Methods

Prior to data collection, approval was obtained for the conduct of the study from the Hospital University Sains Malaysia and the Members of Research and Ethics Committee of School of Medical Science University of Universiti Sains Malaysia. The investigator meets with all the older adults who agreed to participate and invited those who were eligible to take part in the study. Individuals who agreed as a participant were given with a short explanation about the study. A personally addressed cover letter and questionnaires were distributed to each elderly in the sample. Separate consent forms were used to obtain the permission from the samples. The cover letter included a broad outline of the project, assurances about maintenance of individuals' confidentiality, and a contact telephone number for further information about the project. The subjects were instructed to complete the questionnaire truthfully in providing the required information and complete the set of questionnaire at the KRK. Those who had problem such as couldn't read, eye problem or did not understand the questions might need for assistance from the investigator or their family members accompany them.

3.7 Data Analysis

All questionnaire data were coded and analyzed with Statistical Package for the Social Sciences (SPSS) version 12.0. Grossly incomplete surveys lacking significant portions of needed information were discarded. Descriptive statistics were used to analyze the frequency and the percentage. Chi-square tests were used to determine significant levels (0.05) between supplement users and non-users of nutrition knowledge item correct responses. Independent t-test were used to compares differences between supplement users and users for total nutrition knowledge scores, total health beliefs statements scores and each of the health beliefs statements in the questionnaires

3.8 Expected Outcome

From this study it is expected that the link and relationship between the knowledge and health beliefs with the uptake of vitamin and mineral supplements among elderly clients in KRK, HUSM can be demonstrated and well explained. The study is also anticipated to be able to identify the type and frequency of vitamin and minerals supplements consumption among this target group. In addition to this, the study is also aimed to determine the association between the knowledge of the elderly and its influence on the use of vitamin and mineral supplements. Finally, the study is expected to conclude the link between health beliefs and the uptake of vitamin and mineral supplements among the elderly clients in KRK, HUSM.

CHAPTER 4

RESULTS

The data analysis consisted of descriptive statistics (frequency, percentage, mean and standard deviation) for all variables. In addition, Chi-square test was used to determine significance difference between supplement users and nutrition knowledge scores. Independent t-test was used to compare differences between supplement users and users for total knowledge score, total health beliefs statements scores and each of the health beliefs statements in the questionnaire.

4.1 Sociodemographic of respondents

Table 4.1 listed the frequency and percentages for the variables of sociodemographic data. Of all the total respondents, 49.3% (n=74) were male and 50.7% (n=76) were female. Respondents were from 60 years old up to 89 years old. About 64.0% (n=96) were between 60 to 69 years old, 30.0% (n=45) between 70 to 79 years old, and 6.0% (n=9) were 80 to 89 years old. Educational status showed 88.7% (n=133) went to primary school while 11.3% (n=17) completed primary school

Table 4.1: Sociodemographic Information of Respondents (n=150)

Sociodemographic	Frequency	Percentage (%)
Gender		
Male	74	49.3
Female	76	50.7
Age range		
60-69	96	64
70-79	45	30
80-89	9	6
Education		
Primary school	133	88.7
Secondary school	17	11.3

4.2 Supplement use

Table 4.2 illustrates supplement use bye the respondents. Twenty-four elderly (16%) reported they consumed some type of vitamin or mineral supplements; 15 of them consume daily and 11 persons take supplements weekly.

The respondents revealed the use of a large variety of nutritional supplements. Among all supplement users, multivitamin was the most commonly used supplement (46.2.0%), followed by vitamin B-complex, vitamin C and calcium (15.4% each) and vitamin B-6 (7.7%).

Table 4.2: Self-reported Nutritional Supplement Use (n=150)

Category	Frequency	Percentage (%)
Consumption of nutritional supplements		
Yes	26	16
No	124	84
Frequency of nutritional supplement use		
Daily	15	57.7
Weekly	11	42.3
Types of nutritional supplement use		
Multivitamin/minerals	12	46.2
Vitamin B-Complex	4	15.4
Vitamin B-6	2	7.7
Vitamin C	4	15.4
Calcium	4	15.4

4.3 Nutrition knowledge and its relationship with usage of vitamin and mineral supplements

In part two of the questionnaires, the elderly respondents were respond to a nutrition knowledge quiz. Items 1 to 13 were true/false questions, which were concerned about general knowledge of vitamins and minerals. Items 14 to 20 were

multiple choice items, which were designed to identify the functions or benefits of selected vitamins and minerals.

The results of true/false items were summarized in table 4.3. Over 90% of the respondents correctly agreed that fruits and vegetables are good source of vitamin and minerals and that overcooking of vegetables in large amounts of water removes some of the vitamin/mineral values. Above 80% of the respondents correctly indicated that large doses of vitamins and minerals can be harmful to the body, beets are high in iron and medications can interfere with the body's supply of vitamins and minerals. About three-fourth of the respondents (76%) correctly agreed that vitamin D can be produced by the body from sunshine and 70.7% of them correctly disagreed that vitamin and minerals provide energy. About two-thirds of the respondent (67.3%) correctly agreed vitamin and mineral supplements work best when taken with food.

However, only 54.7% correctly identified that skim milk contains the same amount of vitamins, minerals, and protein as whole milk, 52.7% correctly agreed that potassium can be found largely in bananas and potatoes and 52% of the respondents correctly recognized that zinc deficiency causes loss of ability to taste.

Only 25.3% of the elderly falsely believed that vitamin C can prevent common cold and less than 20% correctly disagreed with the statements that natural vitamins and minerals are more effective than synthetic vitamins and minerals.

Table 4.3: Frequency Responses of True/False Nutrition Knowledge Item (n=150)

Questionnaire item	Frequency (%)		
	Correct answer	Correct	Incorrect
Fruits and vegetables are good sources of vitamins and minerals	T	140 (93.3)	10 (6.7)
Large doses of vitamins and minerals can be harmful to the body.	T	127 (84.7)	23 (15.3)
Overcooking of vegetables in large amounts of water removes some of the vitamin/mineral values.	T	140 (93.3)	10 (6.7)
Skim milk contains the same amount of vitamins, minerals, and protein as whole milk.	T	82 (54.7)	68 (45.3)
Potassium can be found largely in bananas and potatoes.	T	79 (52.7)	71 (47.3)
Zinc deficiency causes loss of ability to taste.	T	78 (52)	72 (48)
Vitamin D can be produced by the body from sunshine.	T	114 (76)	36 (24)
Vitamin C can prevent the common cold.	F	38 (25.3)	112 (74.7)
Beets are high in iron.	F	120 (80)	30 (20)
Medications can interfere with the body's supply of vitamins and minerals.	T	121 (80.7)	29 (19.3)
Vitamin and mineral supplements work best when taken with food.	T	101 (67.3)	49 (32.7)
Vitamins and minerals provide energy.	F	106 (70.7)	44 (29.3)
Natural vitamins and minerals are more effective than synthetic vitamins and minerals.	F	18 (12)	132 (88)

The multiple-choice section of the knowledge text revealed information about the respondent's level of knowledge about specific vitamins and minerals. The results of multiple choice items were summarized in Table 4.4.

Table 4.4: Frequency Responses to Multiple Choice Nutrition Knowledge Item

(n=150)

Questionnaire item	Frequency (%)		
	Correct answer	Correct	Incorrect
What is required for strong bones? (a) Vitamin D and calcium (b) Vitamin C and Vitamin E (c) Vitamin B-complex (d) Don't know	(a)	61 (40.7)	89 (59.3)
2. What can help protect the body against heart disease? (a) Vitamin D (b) Vitamin E (c) Iron (d) Don't know	(b)	33 (22.0)	117 (78.0)
3. What vitamin is destroyed in the body by smoking cigarettes? (a) Vitamin A (b) Vitamin C (c) Vitamin D (d) Don't know	(b)	38 (25.3)	112 (74.7)
4. What is essential to maintain healthy eyes and vision? (a) Vitamin A (b) Vitamin K (c) Vitamin B-complex (d) Don't know	(a)	55 (36.7)	95 (63.3)
5. What is important for healthy nerves? (a) Vitamin A (b) Vitamin B-complex (c) Vitamin D (d) Don't know	(b)	30 (20.0)	120 (80.0)
6. What is lost from the body due to excessive alcohol consumption? (a) Iron (b) Vitamin A (c) B-Vitamins (d) Don't know	(c)	24 (16.0)	126 (84.0)
7. What can help protect the body against cancer? (a) Vitamin C (b) Vitamin D (c) Iron (d) Don't know	(a)	30 (20.0)	120 (80.0)