



**UNIVERSITI PUTRA MALAYSIA**

***KNOWLEDGE, ATTITUDE AND PRACTICE IN RELATION TO EFFECTS  
OF PROBIOTICS IN FOOD AMONG MEDICAL FACULTY STUDENTS IN  
A MALAYSIAN PUBLIC UNIVERSITY***

**HAZIRAH BT AZMAN**

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By

**HAZIRAH BT AZMAN**

**Thesis Submitted to the School of Graduate Studies,  
Universiti Putra Malaysia, in Fulfilment of the Requirements for the  
Degree of Master of Science**

**January 2016**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the Degree of Master of Science

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January 2016

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Probiotic food products have been introduced in Malaysia since 1990's and have been claimed as a beneficial food to human health and human intestines. The objective of this study was to determine the significant difference in level of knowledge, attitude and practice on effects of probiotics in food among Faculty of Medicine and Health Sciences UPM students.

There were 222 respondents involved in this study which mainly from undergraduate and postgraduate students in medical and health sciences programmes. Self-administered questionnaires were given to the respondents and it contained Section A: Socio-demographics, Section B: Knowledge on probiotics, Section C: Attitudes on probiotics and Section D: Practices on probiotic consumption.

The results indicated that majority of the respondents had poor knowledge (50.5%), negative attitude (56.8%) and poor practice (70.3%) towards probiotics and probiotic food products. The chi-square results showed that there was significant difference in knowledge with practice ( $X^2= 4.59, p= 0.03$ ) and attitude with practice ( $X^2= 6.28, p= 0.01$ ). However, there was no significant difference in knowledge with attitude ( $X^2= 0.18, p= 0.67$ ).

As a conclusion, majority of the respondents had poor knowledge, negative attitude and poor practice. It is recommended that the respondents should be exposed to health talk on probiotics or a probiotic training program conducted by the probiotic food manufacturers in enhancing their knowledge about probiotics.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

**PENGETAHUAN, SIKAP DAN AMALAN BERHUBUNG DENGAN KESAN  
PENGUNAAN PROBIOTIK DALAM MAKANAN DI KALANGAN PELAJAR  
FAKULTI PERUBATAN DI SEBUAH UNIVERSITI AWAM MALAYSIA**

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Produk makanan probiotik telah diperkenalkan di Malaysia sejak tahun 1990 dan telah diperakui sebagai makanan yang dapat memberi manfaat kepada kesihatan manusia dan usus manusia. Objektif kajian ini adalah untuk menentukan perbezaan signifikan tahap pengetahuan, sikap dan amalan terhadap probiotik di kalangan pelajar di Fakulti Perubatan dan Sains Kesihatan, Universiti Putra Malaysia.

Terdapat sebanyak 222 responden yang terlibat di dalam kajian ini di mana mereka terdiri daripada pelajar ijazah muda dan pasca-siswazah di dalam program perubatan dan sains kesihatan. Borang soal selidik telah diberi kepada responden dan ia mengandungi Bahagian A: Sosiodemografik, Bahagian B: Pengetahuan terhadap probiotik, Bahagian C: Sikap terhadap probiotik dan Bahagian D: Amalan terhadap penggunaan probiotik.

Keputusan menyatakan bahawa majoriti responden memiliki pengetahuan yang lemah (50.5%), sikap yang negatif (56.8%) dan amalan yang lemah (70.3%) terhadap probiotik dan produk makanan probiotik. Keputusan 'chi-square' menunjukkan bahawa terdapat perbezaan yang signifikan dalam pengetahuan dengan amalan ( $X^2=4.59$ ,  $p=0.03$ ) dan sikap dengan amalan ( $X^2=6.28$ ,  $p=0.01$ ). Walaubagaimanapun, tiada perbezaan yang signifikan dalam pengetahuan dengan sikap ( $X^2=0.18$ ,  $p=0.67$ ).

Kesimpulannya, majoriti responden mempunyai pengetahuan yang lemah, sikap yang negatif dan amalan yang lemah. Ia disarankan bahawa responden didedahkan dengan ceramah kesihatan berkaitan probiotik atau program latihan probiotik yang dijalankan oleh pengusaha makanan probiotik untuk meningkatkan pengetahuan terhadap probiotik.

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I certify that a Thesis Examination Committee has met on 22 January 2016 to conduct the final examination of Hazirah Azman on her thesis entitled "Knowledge, Attitude and Practice in Relation to Effects of Probiotics in Food among Medical Faculty Students in a Malaysian Public University" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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## LIST OF ABBREVIATIONS

CI	Confidence interval
FAO	Food and Agriculture Organisation
FDA	Food and Drug Administration
F&N	Fraser & Neave
FOSHU	Food for Specified Health Uses
H <sub>2</sub> O <sub>2</sub>	Hydrogen peroxide
IBD	Inflammatory bowel disease
IBS	Irritable bowel syndrome
KAP	Knowledge, Attitudes and Practices
LAB	Lactic acid bacteria
MDD	Mamee Double Decker
Q	Question
USD	United State Dollar
WHO	World Health Organisation

## CHAPTER 1

### INTRODUCTION

#### 1.1 Functional food

Food is important in maintaining human metabolic requirement. Human nowadays are more health-conscious towards foods. Improving the food contents seems to be very useful thus, scientists had come out with several ideas.

One of the ideas was creating foods that have special functional properties to human thus improvising the human health and even in preventing diseases. This kind of food is called as functional foods. In general, functional foods can be defined as healthy foods with health-promoting and/or disease preventing properties beyond the traditional and basic nutrients such as vitamins and minerals (Venter et al., 2010).

The markets for functional foods were high in the United States, Europe and Japan. In 2003, the sales for functional foods were about 33.6%, 28.2% and 20.9%, respectively (Granato et al., 2010). It was assumed that Malaysia has an attractive functional food and beverage niche but the market information on functional food products in Malaysia is still lacking compared to other developing countries (Lau et al., 2013).

There were several types of functional foods for examples bread (fibre-rich with fatty acids/omega 3/wholemeal), fruit juices (probiotic/added vitamins or minerals), biscuits (added with oat/low cholesterol/low fat/less sugar), cereal (oatmeal with beta-glucan/added vitamins and minerals/low fat) and many more. One of the major components of functional food is probiotic. Probiotic foods are foods that contain probiotic bacteria and provide health benefits to human (Molin, 2001). According to FAO/WHO (Food and Agriculture Organisation/World Health Organisation) definition, probiotics are live microorganisms which when administered in adequate amounts would provide a health benefit to host (Homayouni et al., 2012). The concept of adding probiotics into foods is not to remove harmful components but rather to add a beneficial component to the diet. Examples of variety types of probiotic foods are yoghurt, kombucha tea (fermented tea), miso soup, soy milk, kefir, sauerkraut, milk, dark chocolate, microalgae, pickles, tempeh, kimchi and olives in brine (Granato et al., 2010; Siró et al., 2008).

#### 1.2 Statement of problem

The benefits of probiotics have been reported in various studies includes balancing the intestinal flora by increasing the lactose intolerance and



ingestion, reducing cholesterol levels, synthesis of B complex vitamins and cancer prevention (Viana et al., 2008). Probiotic can be found naturally in dairy and non-dairy food products. Nowadays, different types of probiotic bacteria are added to a wide variety of foods as a functional food including cheese, ice cream, milk-based desserts and fermented foods of plant origin, fruit juices, vegetables, legumes and cereals, malt and soybeans (Payahoo et al., 2012).

The availability of farmers or manufacturers to provide variety of probiotic foods for the consumers in Malaysia is still lacking. There were certain issues occurred when manufacturing the probiotic food products where the production was quite expensive and has multistage processes for example sensory acceptance, physical and microbial stability, price and chemicals (Granato et al., 2010). Moreover, in convincing the consumers to buy the probiotic food products, the manufacturers need to practice the principles of food safety, sensory appeal, brand marketing and others.

Even though numerous evidences are available in scientific and nutritional journals of the benefits for probiotic, Malaysian consumers were still unaware with probiotics in food and the importance of probiotics in health. This was because the Malaysian has less exposure about the knowledge in probiotics (Teng et al., 2012). Hence, this poor awareness may be due to lack of knowledge in consumer and the health professional which is the primary source of healthcare provider.

The students can also be considered as one of the consumers that would probably take the probiotic foods and concomitantly will provide the health information about probiotic foods to public and patients in the future. Therefore, the medical and health sciences students should be completely equipped with good knowledge, positive attitudes and positive practices as they themselves should be able to consult and provide the best information to their patients and public.

This study was conducted to assess the knowledge level, attitude and practices on effects of probiotics in food among Faculty of Medicine and Health Sciences Universiti Putra Malaysia (UPM) students in 2014.

### **1.3 Objectives**

#### **1.3.1 General Objectives**

To determine the significance difference of knowledge level, attitude and practice on probiotics in food among UPM students' socio-demographic factors.

### 1.3.2 Specific objectives

- 1) To determine the respondents' socio-demographic factors (gender, ethnicity, age and marital status, educational level, study programme, work status and working sector).
- 2) To determine the frequency distribution in socio-demographic characteristics with respondents' level of knowledge, attitudes and practices on probiotic food products.
- 3) To determine the association between knowledge level and attitudes.
- 4) To determine the association between attitudes and practices
- 5) To determine the association between knowledge level and practices
- 6) To determine the association between respondents' socio-demographics (gender, ethnicity, age and marital status, educational level, study programme, work status and working sector) with knowledge level, attitudes and practices towards probiotics.

### 1.4 Hypothesis

1) **Null hypothesis:** There is no significant difference between socio-demographic and their knowledge, attitudes and practices on probiotic foods.

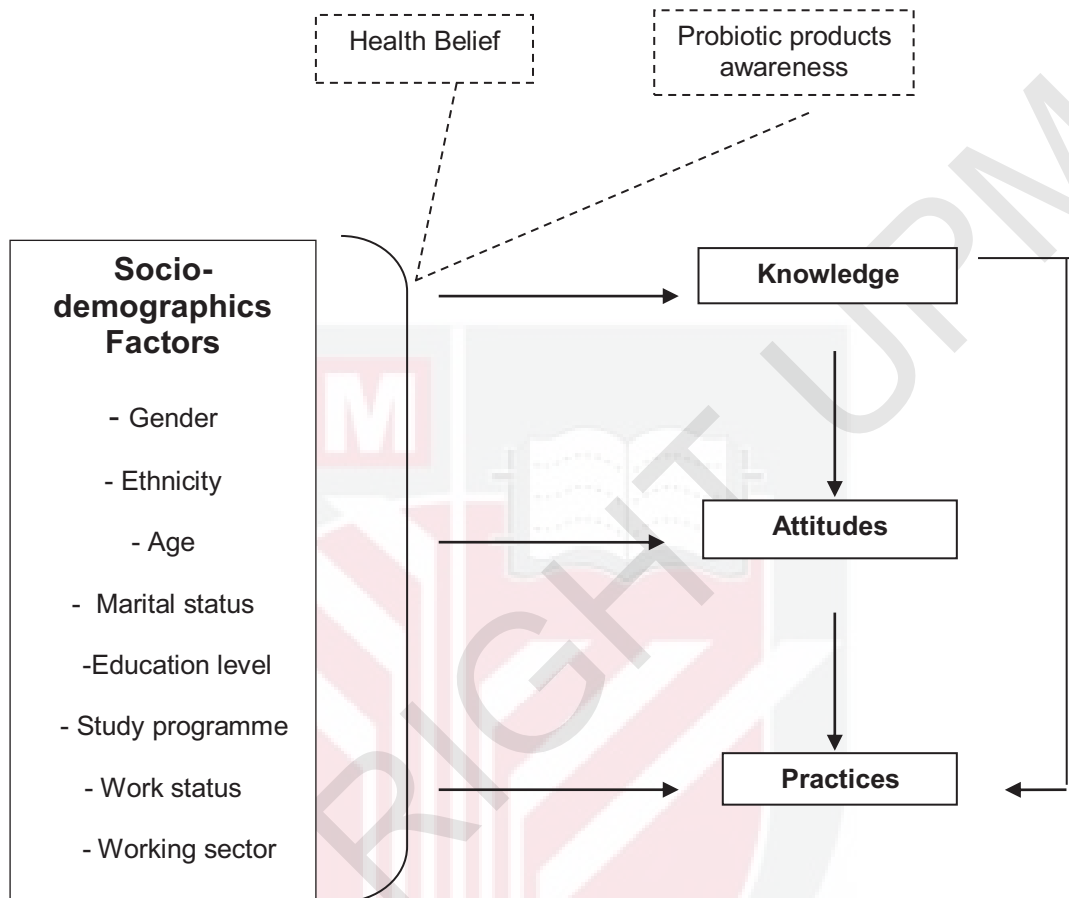
**Alternative hypothesis:** There is significant difference between socio-demographic and their knowledge, attitudes and practices on probiotic foods.

2) **Null hypothesis:** There is no significant difference between students' knowledge level on probiotics and their practices on probiotic foods.

**Alternative hypothesis:** There is significant difference between students' knowledge level on probiotics and their practices on probiotic foods.

3) **Null hypothesis:** There is no significant difference between students' attitudes and their practices on probiotic foods.

**Alternative hypothesis:** There is significant difference between students' attitudes and their practices on probiotic foods.



**Figure 1. Conceptual Framework**

Figure 1 represents the conceptual framework which explained the variables that were measured in this study. Socio-demographic factors were the independence variables while the KAP were the dependent variables. The measurements of KAP were made depending on the socio-demographic factors. Knowledge could affect the respondents' attitudes, meanwhile, attitudes could affect the respondents' practices and knowledge also could affect the practices. The dotted lines were confounders, which could also affect KAP but were not measured in this research because of the time constrain.

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