UNIVERSITI PUTRA MALAYSIA

KNOWLEDGE, ATTITUDE, BELIEF AND PREVENTIVE PRACTICES OF LEPTOSPIROSIS AMONG RESIDENTS IN HULU LANGAT RURAL AREAS IN SELANGOR, MALAYSIA

NORAMIRA BINTI NOZMI

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By

NORAMIRA BINTI NOZMI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirement for the Degree of Master of Science

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

KNOWLEDGE, ATTITUDE, BELIEF AND PREVENTIVE PRACTICES OF LEPTOSPIROSIS AMONG RESIDENTS IN HULU LANGAT RURAL AREAS IN SELANGOR, MALAYSIA

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August 2018

Chairman : Associate Professor Rukman Bin Awang Hamat, MD
Faculty : Medicine and Health Sciences

Objective: The aim of this thesis is to identify the level of knowledge, attitude, belief and practices towards leptospirosis. **Methodology:** A cross-sectional study was conducted among 444 residents aged 18 years old and above. Respondents were sampled using cluster sampling. A set of validated questionnaires were used to determine level of knowledge, attitude, belief and practice. Knowledge consisted of questions on causative agent, diagnosis, modes of transmission, prevention actions, sign, symptoms and complications. Practices consisted of questions on waste management, personal hygiene and environmental cleanliness. **Result:** This study showed that majority of respondents have poor knowledge (57%), unacceptable attitude (90.3%) and have unacceptable practice (69.1%). Regression analysis was conducted and the result showed that Malay respondents are three times more likely to have good knowledge compared to non-Malay with an odd ratio (AOR)=0.71, 95% confidence interval (CI)=0.209-0.973. Among the KAP variables, attitude (AOR = 4.357, 95% CI = 2.613–7.264) was the only predictor for the preventive practices by logistic regression analysis. **Conclusion:** Continuous education for rural communities regarding leptospirosis and its prevention should be initiated urgently. Campaigns on leptospirosis using social and mass media should be conducted to alert this multi-ethnic community for better preventive strategies in future.

Keywords: leptospirosis, knowledge, attitude, practice, belief, rural

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

PENGETAHUAN, SIKAP, KEPERCAYAAN DAN AMALAN PENCEGAHAN TERHADAP PENYAKIT KENCING TIKUS DALAM KALANGAN KOMUNITI LUAR BANDAR HULU LANGAT DI SELANGOR, MALAYSIA

Oleh

NORAMIRA BINTI NOZMI

Ogos 2018

Pengerusi : Professor Madya Rukman bin Awang Hamat, MD
Fakulti : Perubatan dan Sains Kesihatan

Objektif: Tujuan tesis ini ditulis adalah untuk mengenalpasti tahap pengetahuan, sikap, kepercayaan dan amalan terhadap penyakit kencing tikus. **Metodologi:** Kajian irisan lintang telah dijalankan dalam kalangan 444 penduduk berumur 18 tahun dan ke atas. Responden dipilih menggunakan kaedah persampelan kluster dan kajian dijalankan menggunakan borang soal selidik yang telah disahkan. Bahagian pengetahuan mempunyai enam bahagian, iaitu agen penyebab, diagnosis, mod transmisi, tindakan pencegahan, tanda dan gejala, serta komplikasi. Bahagian amalan pula terdiri daripada amalan pengurusan sampah, amalan kebersihan diri dan persekitaran. **Keputusan:** Kajian ini mendapati majoriti responden mempunyai pengetahuan yang lemah (57%), sikap yang kurang baik (90.3%) dan amalan yang kurang baik (69.1%) terhadap penyakit leptospirosis. Analisis regresi mendapati responden Melayu mempunyai kebarangkalian tiga kali lebih tinggi untuk mempunyai tahap pengetahuan yang baik berbanding responden bukan Melayu (AOR)= 0.71, 95% CI=0.209-0.973. Antara ketiga-tiga pemboleh ubah KAP, sikap (AOR=4.357, 95% CI=2.613-7.264) adalah prediktor kepada amalan pencegahan melalui analisis regresi. **Kesimpulan:** Pendidikan berterusan untuk komuniti pedalaman tentang penyakit leptospirosis dan kaedah pencegahannya harus dijalankan serta merta. Kempen meggunakan media sosial dan media massa hendaklah dijalankan untuk sebagai amaran kepada komuniti pelbagai etnik di negara ini supaya strategi pencegahan dapat dijalankan pada masa akan datang.

Kata Kunci: kencing tikus, pengetahuan, sikap, amalan, kepercayaan, pedalaman

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I certify that a Thesis Examination Committee has met on 9 August 2018 to conduct the final examination of Noramira binti Nozmi on her thesis entitled "Knowledge, Attitude, Belief and Preventive Practices of Leptospirosis among Residents in Hulu Langat Rural Areas, Selangor" 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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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the Master of Science. The members of the Supervisory Committee were as follows:

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I hereby confirm that:

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Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
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Name of Member of Supervisory Committee: Associate Professor Dr. Hejar Abd Rahman

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LIST OF ABBREVIATIONS

CDC	Communicable Disease Control
CSF	Cerebral Spinal Fluid
ELISA	Enzyme-linked Immunosorbent Assay
FGD	Focus Group Discussion
g	gram
KAP	Knowledge, Attitude and Practice
KABP	Knowledge, Attitude, Belief and Practice
kg	kilogram
MAT	Microscopic Agglutination Test
mg	milligram
ml	millilitre
MOH	Ministry of Health
NGO	Non-Goverment Organization
OSHA	Occupational Safety and Health Administration
PCR	Polymerase Chain Reaction
PPE	Personal Protective Equipment
RM	Ringgit Malaysia
UNESCO	United Nation of Educational, Scientific and Cultural Organization.
UPM	Universiti Putra Malaysia
WHO	World Health Organization

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Leptospirosis is a globally important zoonotic disease that affects humans in rural and urban settings, in both industrialized and developing countries (Levett, 2001; Bharti et al., 2003; McBride et al., 2005) and is caused by *Leptospira* infection (Haake et al., 2015). Transmission of *Leptospira* pathogens to human occurs mainly through indirect contact with water or soil contaminated by the urine of infected animals (Faine et al., 1999). Leptopirosis is considered as a worldwide zoonosis, which exists in all continents except Antarctica, and its prevalence is higher in tropics compared to temperate countries (Langoni, 1999; Bharadwaj, 2004; Adler, 2010). In the early years, leptospirosis was identified to be associated with occupational exposure, which included agricultural workers, military armies, mining workers and veterinary workers being among the high risk groups (Levett, 2001; Bharti et al., 2003). However, recreational exposure was reported to cause the increase in leptospirosis cases over the years which targeted those who were involved in water sports as the high risk groups in getting leptospirosis (Haake et al., 2002).

Abundance of rats found in recreational areas and in urban and rural residential areas contributed to the high risk of infection to the visitors and residents of the areas (Wasinki et al., 2013). Poor sanitary condition, accumulation of garbage and open sewers attract the rat population to scavenge in the area thus creating a favourable condition for their survivability in the environment (Ko et al., 2009).

In addition, flood was proved to be one of the risk factors that contributed to the leptospirosis infection (Kawaguchi et al., 2008; Socolovschi et al., 2011; Allwood et al., 2014). Monsoon season in Malaysia which comes with heavy rainfall and floods may cause the increasing risk of leptospirosis infection (Benacer et al., 2016). Benacer's study is supported by the previous studies which proved that outbreaks of leptospirosis did occur after floods and rainy season (Kawaguchi et al., 2008; Socolovschi et al., 2011).

Although the prevalence of leptospirosis in Malaysia is quite alarming, there seems to be a gap of knowledge on leptospirosis amongst Malaysians. Previous studies on the disease reported that the knowledge level of Malaysians was still under unsatisfactory level (Rahim et al., 2012; Sakinah et al., 2015; Suhailah, 2017). Previous studies on leptospirosis among people in Southeast Asian countries and Asian countries also reported similar results

(Wiwanitkit, 2006; Charmaine et al., 2014, Arbiol et al., 2016, Prabhu et al., 2014; Ravikant et al., 2014; Arulmozhi and Natarajaseenivan, 2017).

1.2 Problem Statement

Historically, the annual incidence rate in Malaysia is from 0.97 to 12.47 cases per 100,000 populations from year 2004 to 2012 (Benacer et al., 2016). The number has been increasingly high in 2013 where Malaysia recorded the incidence rate up to 28.00 to 30.00 cases per 100, 000 population. Selangor had the highest incidence rate from year 2012 and 2013 with 24.68 cases per 100, 000 populations among all states in Malaysia. Hulu Langat recorded the highest death cases due to leptospirosis cases among districts in Selangor with 39 cases (Selangor State Health Department, 2010).

Most cases in Hulu Langat were reported to be sourced from contaminated water or soil. In February 2017, a resort in Sungai Congkak was ordered to close by JKNS after the area was found to be positively contaminated with leptospirosis (Zaini, 2017). In 2007, 11 pupils from Melaka were infected by leptospirosis after they went for a camping in Sungai Congkak, Hulu Langat (Othman, 2007). These cases indicated that residents in the study area are at risk in getting leptospirosis infection as their residence area is located nearby the contaminated rivers.

Home › Nasional › Hulu Langat diserang jangkitan kencing tikus

NASIONAL

Hulu Langat diserang jangkitan kencing tikus

By **Mohd Zaini Samsu Hadi** - 16 Februari 2017 2316 0

KUALA LUMPUR – Beberapa kawasan di sekitar Hulu Langat dikenalpasti diserang wabak penyakit tidak terkawal.

Menurut kenyataan yang dikeluarkan Bilik Gerakan Kawalan Penyakit, Pejabat Kesihatan Daerah Hulu Langat, antara wabak yang dikesan adalah jangkitan kencing tikus.

Lokaliti wabak tidak terkawal dan hotspot dalam daerah berkenaan sedang tular di media sosial minggu ini.

Sementara itu, kenyataan tersebut turut memberitahu, kawasan riadah Sungai Congkak ditutup untuk kerja-kerja pembersihan kerana didapati positif virus kencing tikus.

Orang ramai yang bercuti turut dinasihatkan agar tidak mengunjungi kawasan-kawasan sungai serta berhati-berhati sekiranya menginap di mana-mana inap desa yang berhampiran dengan sungai.

(Source: Malaysia Gazette, 16th February 2017)

Figure 1.1: Article on leptospirosis cases in Hulu Langat

Previous local studies have only focused on the knowledge, attitude and practice of leptospirosis among urban population in Malaysia (Rahim et al., 2012; Sakinah et al., 2015; Suhailah, 2017). However, there is still no published study regarding knowledge, attitude, belief and practice among rural population in Malaysia. Thus, there is a need to conduct a study on knowledge, attitude, belief and practices among residents in Hulu Langat rural areas. The study needs to be conducted in the area to identify the knowledge gap in rural population so the data can be used as a baseline in developing an effective intervention module.

1.3 Significance of Study

The symptoms and signs associated with leptospirosis are non-specific, which often cause misdiagnosis especially at early phase of infection (ESR, 2001). Majority of leptospirosis patients are not recognized or misdiagnosed as malaria, dengue and enteric fever (Lozano et al., 2012). This might due to the overlapping of signs and symptoms with other diseases, leptospirosis cases often lead to delayed treatment of severe complication and poor outcomes (Flannery et al., 2001).

To overcome this problem, an intervention module can be developed to guide medical practitioners such as doctors, nurses and laboratory officers in detecting leptospirosis at early stages. The data from this study can provide the information required in developing the intervention module.

1.4 Conceptual Framework

Figure 1.2 shows the conceptual framework of the study which explains the variables that were measured in the study. Socio-demographic and environmental information, past medical history, smoking and recreational behaviour were the independent variables while the KAP were the dependent variables.

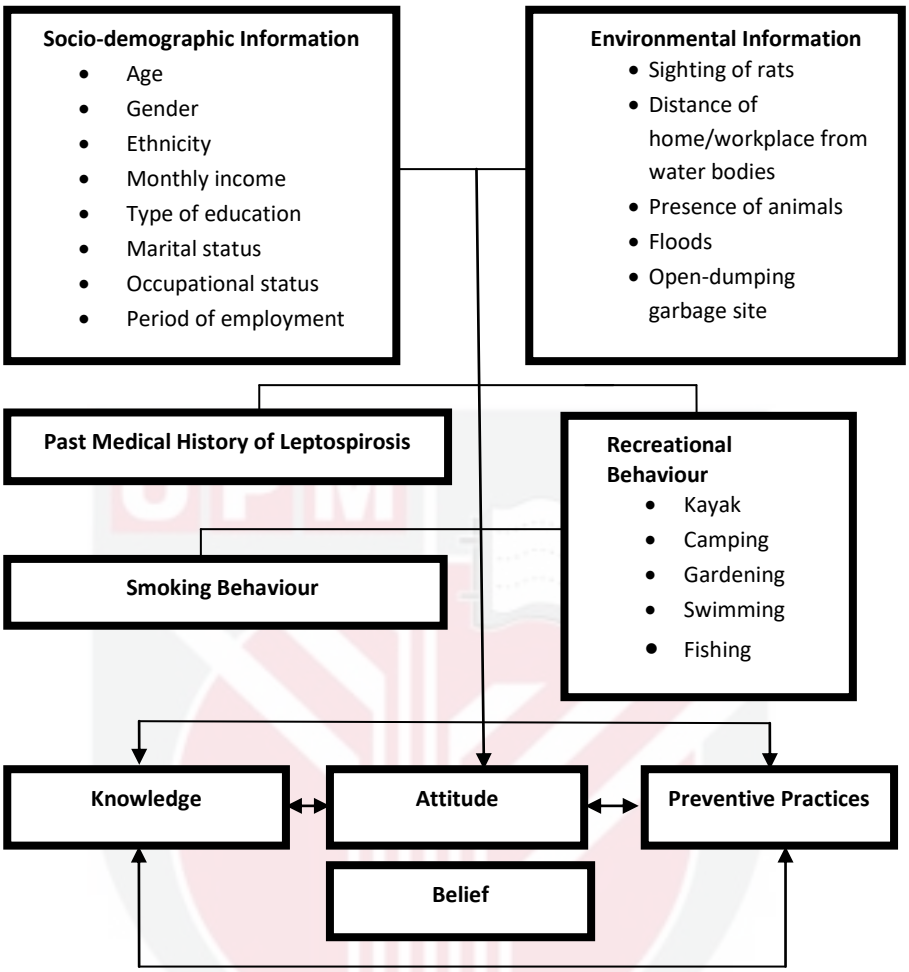

Figure 1.2: Conceptual framework of knowledge, attitude, belief and practices of leptospirosis among residents in Hulu Langat rural areas, Selangor

1.5 Research Question

What is the level of knowledge, attitude, belief and preventive practices of leptospirosis and the associations among residents in Hulu Langat rural areas?

1.6 Research Objectives

1.6.1 General Objective

To determine the level of knowledge, attitude, belief and preventive practices (KABP) on leptospirosis and its associations among residents in Hulu Langat rural areas.

1.6.2 Specific Objectives

1. To describe the belief distribution of leptospirosis among residents in Hulu Langat rural areas.

2. To describe the socio-demographic factors (age, gender, ethnicity, marital status, monthly income, education type, and occupational status and period of employment) of residents in Hulu Langat rural areas.

3. To describe the environmental information (sighting of rats, distance of home or workplace from water bodies, presence of animals, floods, open-dumping garbage area) of residents in Hulu Langat rural areas.

4. To describe the past medical history, smoking behaviour, and recreational behaviour of residents in Hulu Langat rural areas.

5. To determine the associations between socio-demographic factors (age, gender, ethnicity, marital status, monthly income, education type, occupational status and period of employment) with knowledge, attitude, and preventive practices (KAP) of leptospirosis among residents in Hulu Langat rural areas.

6. To determine the associations between environmental factors (sighting of rats, distance of home or workplace from water bodies, presence of animals, floods, open-dumping garbage area) with knowledge, attitude, and preventive practices (KAP) of leptospirosis among residents in Hulu Langat rural areas.

7. To determine the associations between past medical history, smoking behaviour and recreational behaviour with knowledge, attitude, and preventive practices (KAP) of leptospirosis among residents in Hulu Langat rural areas.

8. To determine the association between the level of knowledge with attitude and preventive practices, attitude with knowledge and preventive practices, and preventive practices with knowledge and attitude of leptospirosis among residents in Hulu Langat rural areas.

9. To determine the predictors of knowledge, attitude, and preventive practices of of leptospirosis among residents in Hulu Langat rural areas.

1.7 Research Hypothesis

1. There is a significant association between socio-demographic factors and KAP level of leptospirosis among residents in Hulu Langat rural areas.

2. There is a significant association between environmental factors and KAP level of leptospirosis among residents in Hulu Langat rural areas.

3. There is a significant association between past medical history and KAP level of leptospirosis among residents in Hulu Langat rural areas.

4. There is a significant association between smoking habits and KAP level of leptospirosis among residents in Hulu Langat rural areas.

5. There is a significant association between recreational behaviour and KAP level of leptospirosis among residents in Hulu Langat rural areas.

6. There is a significant association between the level of knowledge, attitude and practices of leptospirosis among residents in Hulu Langat rural areas.

7. There is a probability of predictors being associated with socio-demographic factors, environmental factors, past medical history, smoking habits and recreational behavior with KAP level of leptospirosis among residents in Hulu Langat rural areas.

8. There is a probability of predictors being associated with knowledge, attitude, and practice among residents in Hulu Langat rural areas.

1.8 Definition of Variables

1.8.1 Conceptual Definition

1. Age

Age is the length of time that a person has lived or a thing that has existed (Oxford Dictionary of English, 2012).

2. Attitude

Attitude can be defined as a settled way of thinking or feeling about something (Oxford Dictionary of English, 2012).

3. Belief

Belief means an acceptance that something exists or is true (Oxford Dictionary of English, 2012).

4. Education level

Education level is the stages of the process of receiving or giving systematic instruction, especially at a school or university (Oxford Dictionary of English, 2012).

5. Environmental Information

Environmental information means the state of the elements of the environment, such as air and atmosphere, water, soil, land, landscape and natural sites including wetlands, coastal and marine areas, biological diversity and its components, including genetically modified organisms, and the interaction among these elements (Scottish Information Commissioner, 2018).

6. Ethnicity

Ethnicity is the fact or state of belonging to a social group that has a common national or cultural tradition (Oxford Dictionary of English, 2012).

7. Gender

Gender is the state of being male or female typically used with reference to social and cultural differences rather than biological ones (Oxford Dictionary of English, 2012).

8. Income

Income means money received, especially on regular basis, for work or through investments (Oxford Dictionary of English, 2012).

9. Knowledge

Knowledge is facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject (Oxford Dictionary of English, 2012).

10. Marital status

The state of being married or not married which often used on official forms to ask if a person is married, single, divorced, or widowed (Oxford Dictionary of English, 2012).

11. Occupation

Occupation can be defined as a job or profession (Oxford Dictionary of English, 2012).

12. Past Medical History (PMH)

In clinical medicine, the patient's past and present which may contain relevant information bearing on their health past, present and future. Medical history taking is an important tool in the management of patient (MedicineNet, 2016).

13. Personal Protective Equipment (PPE)

Personal protective equipment is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits. (OSHA, 2017). In this study, PPE refers to gloves, boots, face mask, and long-sleeved shirts.

14. Preventive

Preventive means a medicine or other treatment designed to prevent disease or ill health (Oxford Dictionary of English, 2012).

15. Practice

Practice means the actual application or use of an idea, belief or method, as opposed to theories relating to it (Oxford Dictionary of English, 2012).

16. Rat

Rat is a rodent that resembles a large mouse, typically having a pointed snout and a long tail. Some kinds have become cosmopolitan and are sometimes responsible for transmitting diseases (Oxford Dictionary of English, 2012).

17. Resident

A resident can be defined as a person who lives somewhere permanently or on a long-term basis (Oxford Dictionary of English, 2012).

18. Recreational activity

Recreational is relating to or denoting activity done for enjoyment when one is not working while activity is a thing that a person or group does or has done (Oxford Dictionary of English, 2012).

19. Rural

Rural is related to the characteristics of the countryside rather than the town (Oxford Dictionary of English, 2012).

20. Smoking behaviour

Smoking behaviour can be defined as actions taken by a person that are associated with the burning and inhalation of a substance. Smoking behaviour includes the actual act of smoking, puffing style, depth of inhalation, and rate and frequency of smoking (Baker and Hooper, 2013).

1.8.2 Operational Definitions

1. Age

Age is categorized into two categories which are <34 years old and ≥34 years old.

2. Attitude

Attitude is this study is referred to the preventive and control practices on leptospirosis. Attitude level can be categorized into two groups which are acceptable and unacceptable attitude. Respondents with attitude score 80% and above is considered as respondents with acceptable attitude whereas respondents with score less than 80% are considered as unacceptable.

3. Belief

Belief means the acceptance of certain myths or rumours they believe is true regarding leptospirosis. In this study, belief is described per item separately.

4. Education level

In this study, respondents are categorized into six groups which are no formal education, primary school, lower secondary school, upper secondary school, form 6/certificate/diploma and others.

5. Education type

In this study, respondents are divided into two groups which are those who received formal and non-formal education. Formal education is defined as the

process of training and developing people in knowledge, skills, mind and character in a structured and certified program such as in schools and universities. Informal education is and educational model that comes spontaneously during the learning process and does not necessarily have a pre-defined curriculum. (Ngulube, 2016).

6. Environmental information

In the present study, environmental information was measured based on the presence of animals, flood, open-dumping garbage area and distance of home from water bodies.

7. Ethnicity

In this study, there are 6 categories of races which are Malay, Chinese, Indian, Sabah Bumiputera, Sarawak Bumiputera and others. For further testing, ethnicity is divided into Malay and non-Malay.

8. Gender

Gender is categorized into two which are male and female.

9. Income

Income is categorized into two which are <RM1500 and ≥RM1500. The average poverty line in Selangor is RM1, 500 per household. (Selangor State Government, 2014).

10. Knowledge

In this study, level of knowledge is divided into two categories which are good and poor. Ones is considered having a good knowledge if their score is 80% and above while those who get less than 80% is considered having moderate knowledge level. Respondents were tested on their knowledge regarding leptospirosis on the causative agent, signs and symptoms, complications, modes of transmission, diagnosis, and preventive actions.

11. Marital status

In this study, marital status is re-categorized into two groups which are married and unmarried. Unmarried include individual who is single, a widow or a widower.

12. Occupation

In this questionnaire, there are eight categories of occupations available which are unemployed, city council workers, soldiers, agricultural worker, veterinary worker, abattoir workers, restaurant/hawker/stall workers, office workers and others. In this study, these categories are divided into two occupational statuses which are employed and unemployed. Employed refers to people with jobs working for a company or another person. Unemployed refers to people who do not have a job that provides money (Cambridge Dictionary, 2017).

13. Past Medical History of Leptsopirosis

In this study, respondents were asked on their history of leptospirosis to determine its association with their KAP level.

14. Preventive practices

Preventive practice in this questionnaire includes actions taken regarding waste management, self-hygiene, environment and notification of disease infection to authority. Acceptable preventive practice regarding leptospirosis is determined when the respondents get 80% or more score whereas unacceptable practice is when the respondents get less than 80%.

15. Rat

Rat can be defined as any of several long-tailed rodents of the family Muridae, of the genus *Rattus* and related genera, distinguished from the mouse by being larger.

16. Resident

In this study, a resident must be 18 years old or older, and lived in Hulu Langat rural areas for at least 182 days or more in a year.

17. Recreational activity

In this study, recreational activities include kayaking, camping in the jungle/forest, gardening, swimming at a waterfall/river/lake, and fishing.

18. Rural

Rural areas can be defined as areas outside urban areas with population less than 10,000 people and at least 60% of the residents aged 15 years old and above are involved in agricultural activities (Department of Statistics Malaysia, 2010).

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