UNIVERSITI PUTRA MALAYSIA

KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT LEPTOSPIROSIS AND STRESS, AND SEROPREVALENCE LEVEL AMONG RESERVE OFFICER TRAINING UNIT MEMBERS IN A MALAYSIAN PUBLIC UNIVERSITY

ABDUL-AZEEZ BELLO

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By

ABDUL-AZEEZ BELLO

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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

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February 2016

Chair : Assoc. Prof. Hejar Abdul Rahman MD., MSc Community Health
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Introduction: Leptospirosis is a worldwide zoonotic disease. The annual incidence of the disease varies across the globe and it is more common in tropical region. Pasukan Latihan Pegawai Simpanan (PALAPES) are chosen for this study since their activities involved rigorous military exercise which can expose them to leptospiral infection from the environment.

Objective: To determine the seroprevalence and the level of knowledge, attitude and practice on leptospirosis as well as stress among PALAPES in UPM.

Methodology: A cross sectional study was conducted among 131 PALAPES. The study was conducted from September, 2014 to September 2015. PALAPES are students of UPM who were enrolled in to the military training during their stay on the university campus. Simple random sampling was conducted using computer generated random number of three digits. Information about the socio-demographic characteristics, knowledge, attitude and practice with the stress level were obtained using self-administered validated questionnaire in both English and Malay. Finally, five ml of blood samples were collected from the students and the samples were investigated for antibodies against leptospirosis in the laboratory. Microscopic agglutination test (MAT) was used to test against 12 serovars, using the 1:20, 1:40,1:50,1:100,1:200 and 1:400 dilution. The tested serovar were Batavae, Pomona, Hardjobovis, Canicola, Icterohaemorrhagiae, Grippotyphosa, Australis, Autumnalis, Tarasovvi, Hebdomadis, Javanica, Celledoni. In addition, strain of Sarawak and Terengganu were also tested. More so, ELISA technique was conducted using a kit from CUSABIO.

Result: The response rate of this study was 72.8%, majority of the respondent (71%) were female with the mean age of 19.95 (±1.27) years and most of them were Malays (91.6%). The study had found that there was high level of knowledge, good attitude and positive practice 50.4%, 50.4% and 48.1% respectively. There was considerable high level of stress 51.1% among the students. Furthermore, there was a significant association between student years of enrolment into PALAPES with the attitude ($x^2 = 6.212$ df = 2 P = 0.045), there was a significant association between student year of enrolment into PALAPES with the practice ($x^2 = 13.301$ df = 2 P = 0.001) and there was a significant association between student year of enrolment into PALAPES with the stress level ($x^2 = 13.301$ df = 2 P = 0.047). All the samples that were tested against the 12 serovars and two strains were found to be negative of titre ≥1:100. However, 2 samples were found to be positive at titre 1:50 and is an indication of past or recent exposure to the infection of Hardjobovis and Canicola. The entire samples tested with the ELISA kit were found to be negative.

Conclusion: The study had found there was high level of knowledge attitude, practice and stress among the study population. There was Zero seroprevalence among the study group

Keywords: Knowledge, attitude, practice, leptospirosis, serovar, seroprevalence

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

SEROPREVALEN, PENGETAHUAN, SIKAP DAN AMALAN MENGENAI LEPTOSPIROSIS SERTA TEKANAN DALAM KALANGAN PASUKAN LATIHAN PEGAWAI SIMPANAN DI UNIVERSITI PUTRA MALAYSIA

Oleh

ABDUL-AZEEZ BELLO

Februari 2016

Pengerusi : Profesor Madya Hejar Abdul Rahman MD., MSc Kesihatan Komuniti
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Pengenalan: Leptospirosis merupakan penyakit zoonotik di seluruh dunia. Kejadian tahunan penyakit ini berbeza di seluruh dunia dan ia adalah lebih biasa di kawasan tropika. Pasukan Latihan Pegawai Simpanan (PALAPES) dipilih untuk kajian ini memandangkan aktiviti-aktiviti mereka melibatkan latihan tentera ketat yang mana boleh mendedahkan mereka kepada jangkitan leptospira dari persekitaran tersebut.

Objektif: Untuk menentukan seroprevalen dan tahap pengetahuan, sikap dan amalan mengenai leptospirosis serta tahap tekanan dalam kalangan PALAPES di UPM.

Metodologi: Satu kajian keratan rentas telah dijalankan dalam kalangan 131 PALAPES. Kajian telah dilaksanakan daripada September 2014 hingga September 2015. PALAPES merupakan pelajar UPM yang telah mendaftar masuk ke latihan ketenteraan sepanjang pengajian mereka di kampus universiti. Persampelan rawak mudah telah dijalankan menggunakan rawak tiga digit yang dijana komputer. Maklumat mengenai ciri-ciri sosio-demografi, pengetahuan, sikap dan amalan dengan tahap tekanan telah diperolehi dengan menggunakan soal selidik ditadbir sendiri yang telah disahkan dalam kedua-dua Bahasa Inggeris dan Bahasa Melayu. Akhir sekali, lima ml sampel darah telah dikumpul daripada pelajar dan sampel dikaji bagi antibodi terhadap leptospirosis di dalam makmal. Ujian pengaglutinatan mikroskopik (MAT) telah digunakan untuk menguji terhadap 12 serovar, menggunakan pencairan 1:20, 1:40, 1:50, 1:100, 1:200 dan 1:400. Serovar yang diuji adalah Bativae, Pomona, Hardjobovis, Kanikola, Icterohaemorrhagiae, Grippotyphosa, Australis, Autumnalis, Tarassovi, Hebdomadis, Javanica, Celledoni. Di samping itu strain di Sarawak dan Terengganu juga telah diuji. Tambahan lagi, teknik ELISA telah dijalankan dengan menggunakan kit dari CUSABIO.

Hasil: Kadar respon kajian ini adalah 72.8%, majoriti responden (71%) adalah wanita dengan purata umur 19.95 (± 1.27) tahun dan kebanyakannya adalah orang Melayu (91.6%). Kajian ini telah mendapati bahawa terdapat tahap pengetahuan yang tinggi, sikap yang baik dan amalan positif yang tinggi iaitu 50.4%, 50.4% dan 48.1% masing-masing. Terdapat tahap tekanan yang agak tinggi iaitu 51.1% dalam kalangan pelajar. Tambahan pula, terdapat hubungan signifikan antara tahun pendaftaran pelajar ke PALAPES dengan sikap ($x^2 = 6.212$ df = 2 P = 0.045), terdapat hubungan signifikan antara tahun pendaftaran pelajar ke PALAPES dengan amalan ($x^2 = 13.301$ df = 2 P = 0.001) dan terdapat hubungan signifikan antara tahun pendaftaran pelajar ke PALAPES dengan tahap tekanan ($x^2 = 13.301$ df = 2 P = 0.047). Semua sampel yang diuji terhadap 12 serovar dan dua strain didapati negatif pada titer ≥1: 100. Walau bagaimanapun, 2 sampel didapati positif pada titer 01:50 dan merupakan petunjuk kepada pendedahan kepada jangkitan Hardjobovis dan Kanikola pada masa lalu atau baru-baru ini. Semua sampel yang diuji dengan kit ELISA didapati negatif.

Kesimpulan: Kajian ini telah mendapati bahawa terdapat tahap pengetahuan, sikap dan amalan yang tinggi dalam kalangan populasi kajian. Seroprevalen didapati sifar dalam kalangan kumpulan kajia

Kata kunci: Pengetahuan, sikap, amalan, leptospirosis, serovar, seroprevalen

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I certify that a Thesis Examination Committee has met on 2 February 2016 to conduct the final examination of Bello Abdul-Azeez on his thesis entitled "Knowledge, Attitude and Practice about Leptospirosis and Stress, and Seroprevalence Level among Reserve Officer Training Unit Members 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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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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This is to confirm that:

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LIST OF ABBREVIATIONS

<	Less than
>	Greater than
≤	Less than or equal to
≥	Greater than or equal to
AOR	Adjusted odds ratio
CDC	Centre of Disease Control
CI	Confidence interval
COR	Crude odds ratio
DASS-21	Depression Anxiety Stress Scales
df	Degree of freedom
ELISA	Enzyme-linked immunosorbent assays
GHQ	General Health questionnaire
HIV	Human Immune-virus
IHR	International Health Regulation
ISMA	International Stress Management Association
KAP	Knowledge, attitude and practice
MAT	Microscopic Agglutination Tests
n	Number
OD	Optical Density
OIE	Office International des Épizooties
OR	Odds ratio
p	Level of significance
PALAPES	Pasukan Latihan Pengawai Simpanan
PCR	Polymerase Chain Reaction
WHO	World Health organisation

CHAPTER 1

INTRODUCTION

1.1 Background

Leptospirosis is one of the zoonotic diseases of public health importance and the disease is caused by a spirochaete of leptospira specie. Leptospirosis is reported in different parts of the world and the annual incidence of the disease varies in these reported areas (Levett 2001). The incidence of leptospirosis is estimated to be from 0.1 to 1 per 100,000 in temperate climates and in the humid tropics the incidence is estimated to be 10 to 100 per 100,000 (Victoriano et al., 2009). The case fatality rate ranges from <5% to 70% (Draghi et al., 2011). It has been established that rodents are primary reservoirs for human and animal infection (Shah, 2012). And this is why leptospirosis is more common in the tropical and subtropical region of the world and this can be attributed to the high rainfall and humidity. These climatic conditions are commonly seen in the tropical region and by implication this support the growth and proliferation of the microorganism and rats (Plank & Dean 2000)

In India, leptospirosis was linked with natural calamity and most commonly found during heavy rainy period and it was found that leptospirosis accounts for about 12.7% of cases of acute febrile illness during this season (Sehgal, Sugunan, & Vijayachari, 2003).

In South East Asia the incidence of leptospirosis was reported to be high. In Thailand, the incidence rate of the disease was reported to be rising from less than 0.3 per 100,000 in 1995 to 23.7 per 100,000 in 2000. Most of the cases 90% were commonly reported in the North Eastern region of Thailand (Tangkanakul, 1, 2, & Ashford, 2011). More so, in Indonesia, there had been an increase in the number of cases since 2006 and it was found that out of 667 reported suspected cases in 2007, 620 (93%) were confirmed to be leptospirosis and the case fatality rate was 8% (Victoriano et al., 2009).

In Malaysia, the disease was first reported in 1925 and certain epidemiological investigation establishes that leptospirosis is probably endemic in the country (El Jalii & Bahaman, 2004). The disease has great potentials to cause future outbreaks (Mohd Rahim et al., 2012). A nationwide seroprevalence study was conducted from the year 1961 to 1971 and 18 occupational groups were considered, total of 4646 serum samples were tested, out of which 592 were positive (El Jalii & Bahaman, 2004). More so, hospital based seroprevalence study was conducted on febrile patients and the results revealed that military were among the high occupational risk group (Rafizah A A Noor et al., 2013). Several outbreaks leptospirosis have been reported in different parts of Malaysia among the notables one are, Eco-Challenge-Sabah 2000-Borneo in 2000 and at Maran village in Lubuk Yu recreational forest outbreaks in 2010 (Sapian et al., 2012).

Low knowledge, negative attitudes and poor practices had been found to have positive correlation the spread of the disease. Based on the study that was conducted on 800 households in Trinidad and Tobago the result had showed that there is generally low level knowledge (Mohan & Chadee, 2011). More so, knowledge, attitude and practice on leptospirosis, were investigated among town service workers in Kota Bharu, Kelantan. The result had shown that most of the workers had poor knowledge and unsatisfactory practice, but they have satisfactory attitude (Mohd Rahim et al., 2012).

Several risk factors were identified to be linked to the emergence of the disease and these risk factors can be related to environment, human and animal. Risk factors related to environment were flooding, presence of stagnant water and improper sewage disposal. Human risk factors were bathing in the river, washing in the river, not wearing personal protecting equipment's while working in the forest or farm, walking through the flooded or water logged area without wearing shoes, drinking water from the river and contact with animal urine, bodies or tissue. Among the risk factors that were related animal source are the presence of rats and other animals in the environment (Wasiński & Dutkiewicz, 2013).

1.2 Statement of the problem

Leptospirosis is one of the emerging zoonoses with public health significance and the disease is proved to be endemic in Malaysia. Malaysia is greatly affected with the burden of the disease (El Jalii & Bahaman, 2004). Moreover, the actual annual burden of the disease was not well documented in this country. Data obtained from the Ministry of Health Malaysia from 2004-2013 had shown an increase in number of morbidity and mortality across the country. More so, total number 17,264 cases were recorded within the period of nine years (Division, 2014).

Majority of the cases were from hospital records and there were no in depth epidemiological studies. Despite the reported number of cases of leptospirosis in Malaysia the disease remains grossly neglected and underreported. These problems could be due to mimicking nature of the disease with other febrile illnesses.

In addition, the disease was not listed among the notifiable diseases under Communicable Disease Control Act until 2011. However, notifiable diseases under this Act covers only clinical stage of a particular disease (Rafizah et al., 2013). The disease occurs predominantly as a subclinical infection although cases of clinical disease with numerous nonpathognomonic signs and symptoms have been reported (Mohan et al. 2009). Conclusively, several asymptomatic patients may not be diagnosed.

Pasukan Latihan Pengawai Simpanan (PALAPES) usually performed two forms of training these are local and annual camp exercises. Local exercises were held every weekend at ROTU UPM Complex. All officer cadets are required to attend all

training except for those with special permission. In addition, annual camp exercise was divided into two phases. Camp phase and field phase and these exercises used to take place in forested area in which the may be exposed indirectly from the environment.

Malaysia is located in the tropical region of the world and the country is characterised by high temperature and humidity. The climatic condition supports the growth and proliferation of the leptospira as well as the principal reservoir host. Human can be infected directly from the animal reservoir or indirectly from the environment that is said to be contaminated with the animal urine.

Despite the fact that leptospirosis is listed among the notifiable diseases in 2011, there are numerous challenges face by the Malaysian government in the prevention and control of the disease as well as managing outbreak. These problems are lack of awareness of the disease, paucity of laboratory equipment for efficient and accurate diagnosis and lack of multiagency collaboration in the prevention and control of the disease (Wahab, 2015).

There are several financial challenges associated with leptospirosis and these are high cost of health care service for a short term condition, long term management of chronic condition, loss of source of income as a result of the illness. On a community level, several people may be infected during an outbreak and this can overburden health care as well as public health facilities (Lau, Smythe, Craig, & Weinstein, 2010).

1.3 Significance of the study

A nationwide seroprevalence study had found that leptospirosis was higher among student and armed forces 17% and 17.2% respectively (Tan, 1979). More so, seroprevalence study was conducted among PALAPES. The research also assayed the stress level of these students as predisposing factor of leptospirosis. Moreover, similar study has never been conducted on this group of students in UPM, and this will add to the body of the existing knowledge on epidemiology of leptospirosis particularly among a high risk group. Information from this study can be useful for the control and prevention of the disease within PALAPES.

1.4 Objective

1.4.1 General objective

The general objective of this study is to determine the seroprevalence, level of knowledge, attitude and practice on leptospirosis as well as stress among PALAPES in UPM 2014.

1.4.1 Specific Objective

The specific objectives of this study are:

1. To determine socio demographic characteristics of PALAPES in UPM.
2. To determine the level of knowledge, attitude and practice towards leptospirosis among PALAPES in UPM
3. To determine stress level among PALAPES in UPM
4. To determine the seroprevalence of leptospirosis among PALAPES in UPM.
5. To determine the relationship between socio demographic characteristics and the level of knowledge, attitude and practice on leptospirosis among PALAPES in UPM.
6. To determine the relationship between socio demographic characteristics leptospirosis and stress level among PALAPES in UPM.
7. To determine the predictors (age, gender, race) of knowledge, attitude and practice on leptospirosis among PALAPES at UPM.

1.5 Hypothesis

1. There is no significant association between socio demographic characteristics and level of knowledge among the PALAPES in UPM.
2. There is no association between socio demographic characteristics and attitude towards leptospirosis among PALAPES in UPM.
3. There is no association between socio demographic characteristics and practice towards leptospirosis among the PALAPES in UPM.
4. There is no association between the social demographic characteristics and the stress level among the PALAPES in UPM.

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