



Knowledge, awareness, and practice (KAP) towards intestinal parasitic (IP) infection among university student in Selangor

Mehru Nisha^{*1}, Nurul Nadiah¹, Khairul Nizam Mohd. Isa¹, Fabian Davamani²

¹Universiti Kuala Lumpur, Institute of Medical Science Technology (MESTECH), 43000, Kajang, Selangor, Malaysia

²School of Health Sciences, International Medical University (IMU), No.126, Jalan Jalil Perkasa 19, Bukit Jalil, 57000, Kuala Lumpur, Malaysia

Article History:

Received on: 30.08.2019
Revised on: 17.11.2019
Accepted on: 25.11.2019

Keywords:

Intestinal Parasites (IP),
Knowledge,
Awareness,
Practice,
Malaysia,
University

ABSTRACT

This study was aimed to obtain baseline information on the knowledge, awareness, and practice (KAP) towards intestinal parasitic (IP) infection among university students in Selangor, Malaysia. Questionnaire surveys were circulated among 150 university students *via* online to assess social demographics, knowledge, awareness, and practice of parasitic infection. The simple questions with yes-no and listings were used in this survey. Total correspondents were 60 university students from various fields of study from Selangor. Total participation of male and female students was 28.30%, and 71.10%, bachelor students (51.67%), followed by diploma students (45%) and both master and PhD students at 1.67%. Assessment on knowledge indicated that 56.67% of students knew about IP, and 8.3% had an idea on the protozoan parasites, which can be transmitted *via* unclean environment or contaminate food. However, the students showed a higher level of awareness for IP infection but failed to know that food handlers can spread IP infection. Lastly, for the assessment for practice, generally, all responded positively, despite not knowing that poor hygiene is causative for IP infection. KAP among university students a lacuna still prevails, which can aid them to be susceptible for parasitic infection.



*Corresponding Author

Name: Mehru Nisha
Phone: (603) 87395894
Email: mehrunisha@unikl.edu.my

ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11i1.1809>

Production and Hosted by

Pharmascope.org
© 2020 | All rights reserved.

INTRODUCTION

Intestinal parasitic (IP) infections have been one of the most common causes of human diseases that can bring harm to the human body (Campbell *et al.*, 2017). The impact of parasitic infections on human lives has been a great topic in the field of medicine,

and it still remains a major public health problem in developing countries, including Malaysia (Nissapatorn *et al.*, 2005). Many factors may contribute to the transmission of parasites. These include inadequate sanitation and poor hygienic living conditions, which, in turn, may lead to fecal contamination of the environment, lack of health education, contaminated water supplies, and failure to control vectors (Zakai, 2007).

Successful treatment and control of parasitic infections requires not only comprehensive information about the parasite itself but also a good understanding of the nature of parasites' interactions with their hosts. Other than that, health education among students also can be one of the prophylactic ways to control the parasitic infections. The fact is that the majority of the parasitic infections are more prevalent among school children with age ranges from 5 to 14 years. The common symptoms would

be intestinal bleeding, malabsorption of nutrients, nutritional deficiency, destruction of cells and tissues not only can result in their growth retardation, this not only impacts the student's health, additionally affect their academic performance (Hailegebriel, 2017).

According to a review study done by Salam in 2017, lack of basic knowledge on worm infestation is one of the factors that lead to parasitic infection among children in India. In Malaysia, much attention has been drawn to the prevalence of parasitic infection among rural and aborigine communities and also drug efficacy against IP (Sinniah *et al.*, 2014), but yet on concerning the knowledge, awareness, and practice of parasitic infections among students in Malaysia. In line with this, this present study was an attempt to investigate the level of knowledge, attitude, and practices towards parasitic infections among university students in Selangor, Malaysia. The info gathered from this study can be used as a preliminary data to measure the knowledge of parasitic diseases as well as to educate the students on the awareness of parasitic disease.

MATERIALS AND METHODS

Study design

A stratified random sampling technique was used to identify 150 university students from Selangor state, in Malaysia. All the data collected were analyzed using Microsoft excel to measure the percentage of knowledge, awareness, and practice of parasitic infections among university students in Selangor.

Research Instrument and Procedure

The research utilized the quantitative study methodology, adapted from a series of questionnaires carried out among school children in Asmara, Eritrea. A set of questionnaires containing 22 questions divided into 4 sections, which are social demographic, knowledge, awareness, and practice of parasitic infection. Different question- types, such as yes-no and listing, were used in the questionnaire. Before the actual data collection period, a pilot study was conducted to assess the validity of the research instrument. During the actual study, the modified questionnaire were distributed on social media using such as Instagram, Twitter, Facebook, and WhatsApp.

RESULTS AND DISCUSSION

Demographic data of respondents

Questionnaires were distributed to 150 science stu-

dents from three universities via online to university students in Selangor. However, only 60 volunteers were selected by stratified random sampling in the survey.

Based on Figure 1, the feedback from male students was 28.30 %. Meanwhile, female students were 71.10%. Most of the students whom responded were between 18-21 years of age (86.70%), followed by 22-25 years of age (10%) and the rest in the late twenties about 1.7%.

We also surveyed the level of education among the respondents. The highest was from bachelor students (51.67%), followed by diploma students (45%) and both master and PhD students at 1.67%.

Most of the respondents were found not to be not sure if they had intestinal parasitic (IP) infection (50%), around 33.33% reported no history of the infection. Finally, 16.67% reported to have the infection earlier. However, those who responded to have a history of IP mentioned dengue as the type IP they had previously. Thus, this clearly shows, they are not aware of IP infection (Figure 1).

Assessment of Knowledge

For assessment on knowledge toward IP, students were tested if they have any previous information on IP, mode of IP transmission to humans, knowledge on protozoan/worm type of intestinal parasites, and also the consequent of IP infection. We found the majority of the students had no idea about intestinal parasites (56.67%), meanwhile, 43.35% has some basic knowledge about IP.

The surveys on the mode of IP transmission were carried out base on the unclean dormitory, coughing/sneezing, unclean environment, and contaminated food/water. Majority answered contaminated food/water would be the most favorable method for IP transmission (38.33%) and least was via unclean dormitory (16.67%).

Since IP can be categorized into protozoan and helminths (worms), we tested the students on this topic. We found the majority did not know about protozoan parasites (91.67%), while only 8.3% of students have some idea about protozoan parasites. However, in contrary, we found students have good information on worm infection (83.33%), and only 16.67% did not know about worm parasites.

For the implication of IP infection in humans, majority (83.33%) suggested it has some danger to human health, and some felt it ignorable (16.67%) (Figure 2).

Assessment of Awareness

In order to assess whether IP infection can be trans-

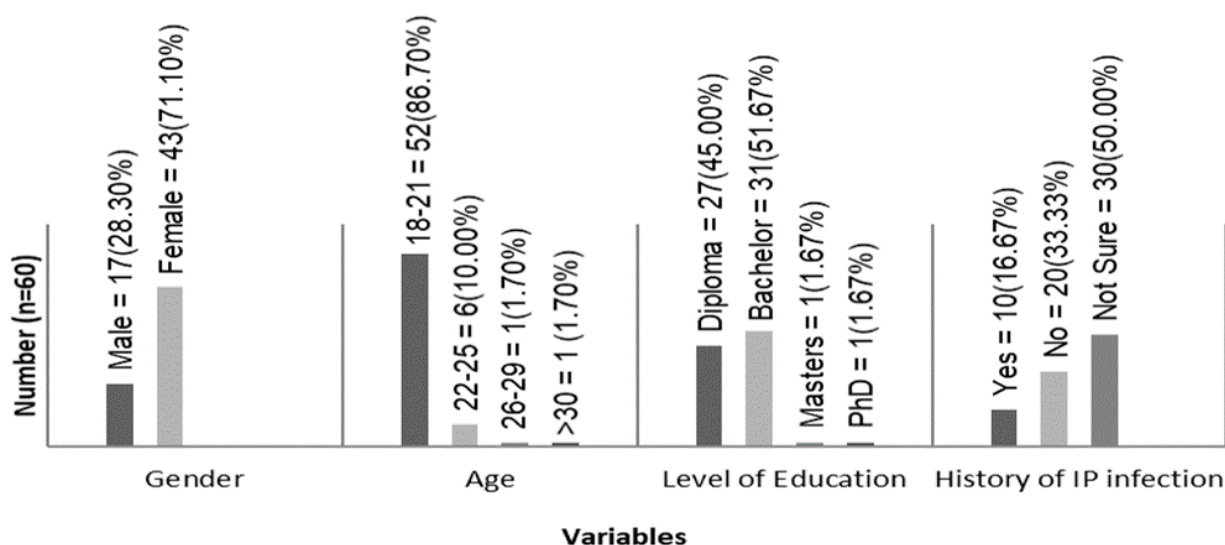


Figure 1: Demographic data of the respondents

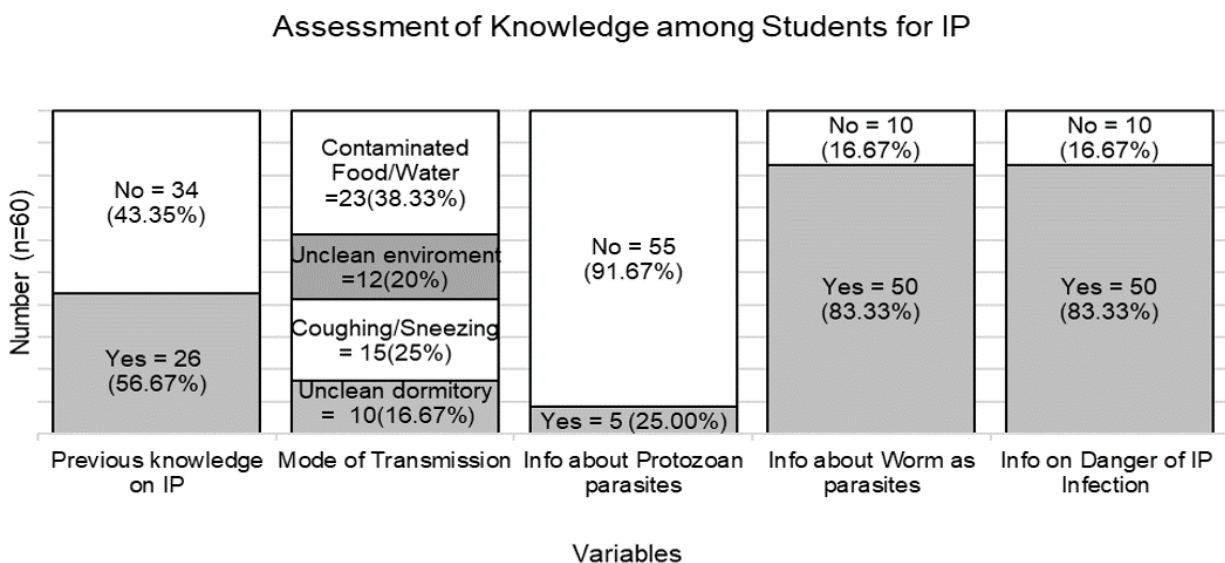


Figure 2: Assessment of Knowledge for Intestinal Parasite (IP)

mitted in university areas like classrooms and dormitory, 47.67% answered it will, 33.33% answered not possible, and around 25% of them were not sure. We also assessed on respondent’s awareness on the role of domestic animals in and around the university for transmission of IP.

Majority (45%) responded “yes”, 20% rated “no” and around 35% were “not sure” on this question. Moving on with question if food handlers can transmit IP while preparing/serving food, surprisingly majority rated “no” (63.33%), 23.33% rate ‘yes” and 13.33% were not sure.

The final question on awareness was on if unclean washroom can contribute to IP infection. Most of the students agreed it will be a risk factor for IP transmission (71.67%), followed by disagree (16.67%),

and around 11.67% were unsure about this risk factor (Figure 3).

Assessment of Practice

To investigate the student’s basic hygiene practices towards IP infection, they were asked on their hand hygiene habits, the practice of washing the fruit before consumption, drinking clean water, and the habit of cutting their finger nails.

As expected, most of them wash their hand before and after eating (76.67%), while 20% often does it, and only 3.33% do not practice it. We also probed if students have the practice of using soap after using the washroom, the answer were always (43.33%), often (35%), and never were 21.67%.

Interestingly for assessment of food hygiene, drink-

Assessment of Awareness of IP Infection among Students

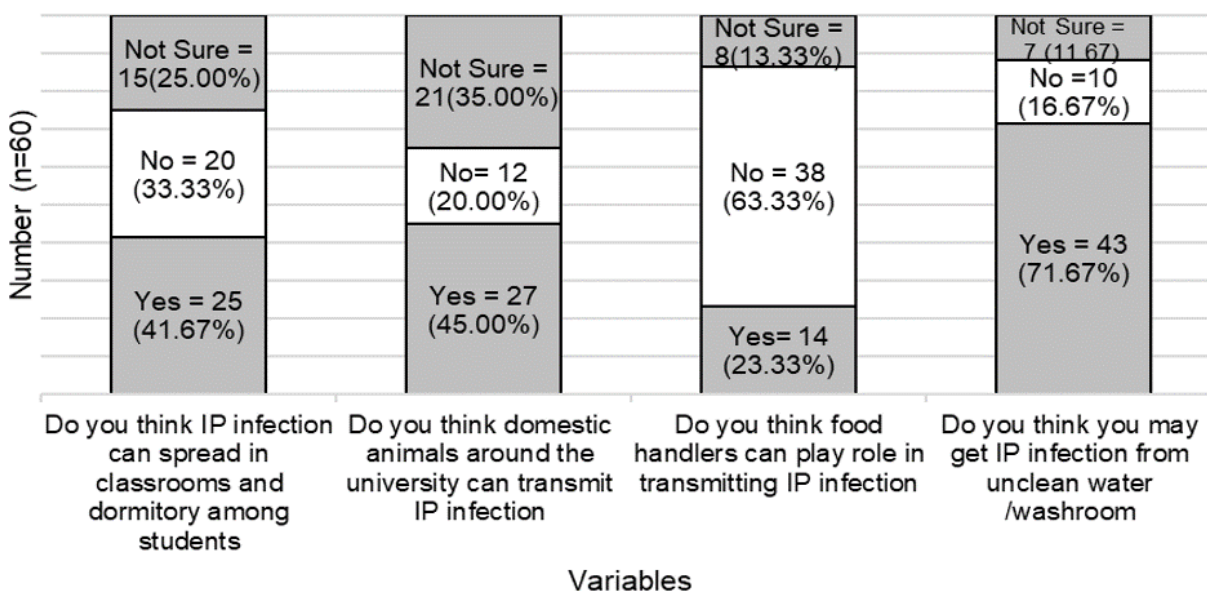


Figure 3: Assessment of Awareness for Intestinal Parasite (IP)

Assessment of Practice towards Risk factors for IP Infection among Students

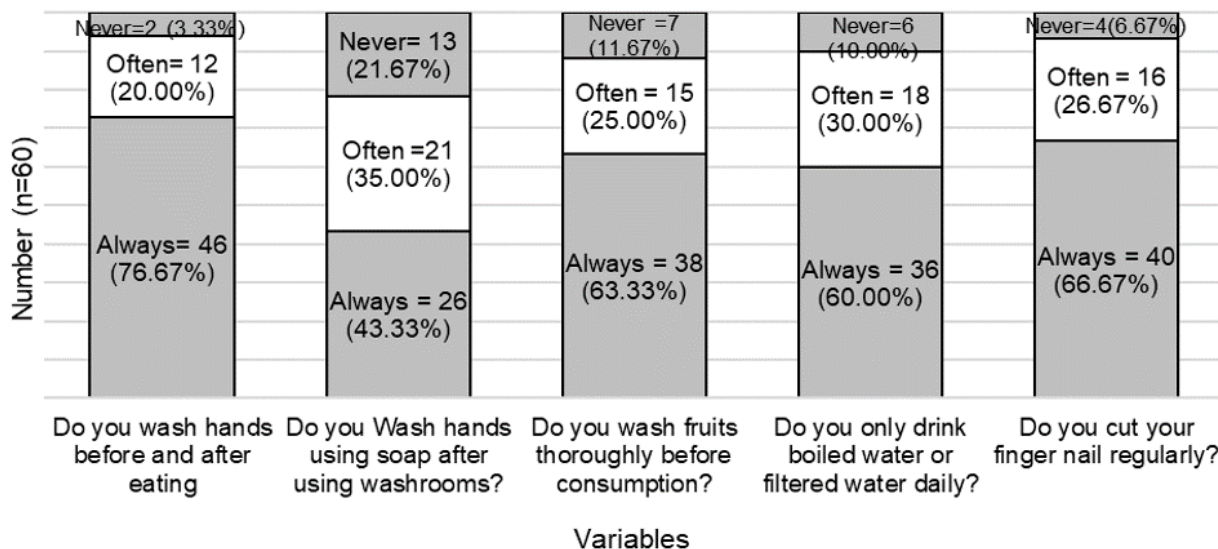


Figure 4: Assessment of Practice for Intestinal Parasite (IP)

ing boiled water and nail cutting habits, mostly all answered as ‘always” ($\geq 60\%$ and above) (Figure 4).

This study aimed to get baseline information on knowledge, awareness, and practice (KAP) towards intestinal parasitic infection among university students in Selangor, Malaysia. This is the first survey carried out in Malaysia among university students to assess their knowledge on IP infection. In Malaysia’s education system, only students who are doing biology-related courses are exposed on par-

asitic knowledge. During the school years, they learn biology related to cell biology, ecosystem, and animals. Their means to get information about infectious diseases mainly would be *via* TV/radious news, social media networks, newspapers, magazines, which mainly focuses on the viral outbreak or bacteria-related diseases. Furthermore, cases of IP infection in Malaysia are more prevalent to the rural and aboriginal community (Chin et al., 2016) which makes urban university students to be unaware of IP infection. However, it is very crucial to alert the

students on the health hazard of IP, as they have a risk on getting it *via* unclean environment or due to lack of hygiene practice (Strunz *et al.*, 2014).

In our survey, most of our respondents were between 18-21 years old, from undergraduate bachelor's programme. We had to omit the questionnaire of their study programme, as a majority of the respondents whom did not wish to reveal their course programme, which could be a good info and add value in our survey to identify the specific groups. As we speculated, the majority of the students responded not having a history of IP infection or not sure of the infection (50%). This is contradictory with a survey carried among students in Asmara, Eritrea (Africa) on IP infection, where 73% of them had previous info on IP infection (Ahmed *et al.*, 2017). The feedback showed most of our students had the idea of bacteria that causes intestinal complications, but not for parasitic infection.

For the analysis of assessment knowledge, we asked a question related to their university surroundings. Among the few options given, the student's corroborated contaminated food/water may have a close association for IP transmission. Similar feedback was observed in Egypt, and Cote d'Ivoire as the respondent related contaminated water/food can give adverse abdominal discomfort (Acka *et al.*, 2010). With regard to intestinal protozoan and intestinal worms, our study suggests the majority of students were very familiar with worms as parasites, but not for protozoans. Commonly we found the students had knowledge that not wearing footwear while walking could transmit worms, but the word protozoans were unfamiliar to them. Nonetheless, a higher percentage of students revealed that they knew the danger of IP infection.

To investigate the students' awareness of IP in their university niche, we questioned them the role of classroom cleanliness, domestic animals, food handlers, and washroom hygiene. We observed that students had a very low knowledge on the role of food handlers in transmitting IP infection. This is quite alarming as earlier studies conducted among food handlers in Malaysia revealed that the food handlers had adequate knowledge on food safety but failed to translate it into practices at work (Lee *et al.*, 2017). We believe this is due to that IP infection is less known in Malaysia. Hence students may relate this factor to other diseases. We also looked into the students' basic hygiene practice that can be associated with IP infection. Remarkably we found all of them responded to have good hygiene practice like hand washing after washroom, drinking boiled /filtered water, and nail cutting habit. However,

there are some students whom do not use soap to wash hand, considering that at times soap facility may not be available moderately in university washrooms. Proper handwashing techniques should be done with soap or alcohol sanitizer, as water may not be adequate to kill some microbes, including IP (Freeman *et al.*, 2014).

The overall results of this study proffers that there is a wide gap for KAP among university students in our selected group, which can be a representative sample of the local perception on IP in Selangor. As parasitic infection is low among urban communities in Malaysia (Nissapatorn *et al.*, 2005), university students may be at lower risk of infection. However, a study carried out among migrant workers in Malaysia showed the presence of various types of parasitic infection among these workers. As these workers are commonly employed to work in restaurants and university cafeterias, they could be a reliable source for IP transmission to urban communities (Sahimin *et al.*, 2016). Hence, we strongly substantiate a good KAP among university students is a need as prevention from parasitic infection.

The limitation we had during our study is the lack of interest from the participants and non-disclosure of their field of study. As there were no previous reports from Malaysia regarding this topic among the urban community, we could not elaborate further the KAP among working adults, geriatric communities, or school children.

CONCLUSIONS

To conclude, we observed a lack of KAP for intestinal parasitic (IP) infection among university in Selangor, Malaysia. Since our current target group are educated participants, their knowledge and practice on basic hygiene were good, despite not knowing IP. Therefore, we believe a more comprehensive study should be conducted in the future involving school going children, college students, and also working adults. Next, we suggest public health specialist to educate the public on possibilities of IP transmission via contaminated food, environment, and the possible prevention methods.

REFERENCES

- Acka, C. A., Raso, G., N'goran, E. K., Tschannen, A. B., Bogoch, I. I., Séraphin, E., Tanner, M., Obrist, B., U. 2010. Parasitic worms: knowledge, attitudes, and practices in Western Cote d'Ivoire with implications for integrated control. *PLoS Neglected Tropical Diseases*, 4(12):910-910.
- Ahmed, K. S., Siraj, N. M., Fitsumberhan, H., Isaac, S.,

- Yohannes, S., Eman, D., Araya, M. 2017. Knowledge, Attitude, and Practice (KAP) Assessment of Intestinal Parasitic Infection among School Children in Asmara. *Eritrea. Health*, (01):57–68.
- Campbell, S. J., Nery, S. V., Wardell, R., D’este, C. A., Gray, D. J., Mccarthy, J. S., Clements, A. C. A. 2017. Water, Sanitation, and Hygiene (WASH) and environmental risk factors for soil-transmitted helminth intensity of infection in Timor-Leste, using real-time PCR. *PLOS Neglected Tropical Diseases*, 11(3).
- Chin, Y. T., Lim, Y. A. L., Chong, C. W., Teh, C. S. J., Yap, I. K. S., Lee, S. C., Chua, K. H. 2016. Prevalence and risk factors of intestinal parasitism among two indigenous sub-ethnic groups in Peninsular Malaysia. *Infectious Diseases of Poverty*, 5(1).
- Freeman, M. C., Clasen, T., Dreifelbis, R., Saboori, S., Greene, L. E., Brumback, B., Rheingans, R. 2014. The impact of school-based water supply and treatment, hygiene, and sanitation programme on pupil diarrhoea: a cluster-randomized trial. *Epidemiology and Infection*, 142(2):340–351.
- Hailegebriel, T. 2017. Prevalence of intestinal parasitic infections and associated risk factors among students at Dona Berber primary school. *BMC Infectious Diseases*, 17(1).
- Lee, H., Halim, H. A., Thong, K., Chai, L. 2017. Assessment of Food Safety Knowledge, Attitude, Self-Reported Practices, and Microbiological Hand Hygiene of Food Handlers. *International Journal of Environmental Research and Public Health*, 14(1).
- Nissapatorn, V., Lim, Y. A., Jamaiah, I., Agnes, L. S., Amyliana, K., Wen, C. C., Anuar, A. K. 2005. Parasitic infections in Malaysia: changing and challenges. *The Southeast Asian Journal of Tropical Medicine and Public Health*, 36:50–59.
- Sahimin, N., Lim, Y. A. L., Ariffin, F., Behnke, J. M., Lewis, J. W., Zain, S. N. M. 2016. Migrant Workers in Malaysia: Current Implications of Sociodemographic and Environmental Characteristics in the Transmission of Intestinal Parasitic Infections. *PLOS Neglected Tropical Diseases*, 10(11).
- Sinniah, B., Hassan, A. K. R., Sabaridah, I., Soe, M. M., Ibrahim, Z., Ali, O. 2014. Prevalence of intestinal parasitic infections among communities living in different habitats and its comparison with one hundred and one studies conducted over the past 42 years. *Tropical Biomedicine*, 31(2):190–206.
- Strunz, E. C., Addiss, D. G., Stocks, M. E., Ogden, S., Utzinger, J., Freeman, M. C. 2014. Water, Sanitation, Hygiene, and Soil-Transmitted Helminth Infection: A Systematic Review and Meta-Analysis. *PLoS Medicine*, 11(3).
- Zakai, H. 2007. Level of Awareness about Parasitic Diseases among Students. *Journal of King Abdulaziz University-Medical Sciences*, 14(2):37–47.