THE EFFECTIVENESS OF HEALTH EDUCATION PACKAGE ON KNOWLEDGE, ATTITUDE AND PRACTICE OF INFLUENZA A (H1N1) AMONG SECONDARY SCHOOL CHILDREN IN KELANTAN

171.20

by WAN ARFAH NADIAH BT WAN ABDUL JAMIL

Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science (MEDICAL STATISTICS)

> UNIVERSITI SAINS MALAYSIA MAY 2011

ACKNOWLEDGEMENTS

Bismillahhirrahmanirrahim.

Praise to Allah SWT, The Most Merciful and Most Compassionate, whose blessings has helped me throughout the entire study until the completion of this study. I would like to express my deepest thanks to the following individuals for helping me during the preparation of this thesis for the Master of Science (Medical Statistics) Universiti Sains Malaysia, Kelantan.

- Associate Professor (Dr) Norsa'adah Bachok, my supervisor, Unit of Biostatistics and Research Methodology, School of Medical Sciences, Universiti Sains Malaysia (USM) for her comments, suggestions and contributions of her time throughout the research.
- Professor (Dr) Syed Hatim Noor, the Coordinator of Unit of Biostatistics and Research Methodology, School of Medical Sciences, USM for his valuable advice, support, wise comments and contributions of his valuable time throughout the research and completion of this dissertation.
- All lecturers in the Unit of Biostatistics and Research Methodology and Department of Community Medicine who have given their guidance, knowledge and support especially to Dr. Zaliha Ismail and Dr. Nik Rosmawati Nik Hussin
- All the staff and respondents from both schools (SMK Bachok and SMK Kota) for their cooperation and their involvement in this research.

- Human Ethics Committee of USM that approved this research.
- Ministry of Education Malaysia and State Department of Education Kelantan who gave permission to conduct this research in schools.
- USM for providing fund Research University Grant No. 1001/PPSP/812055
- My colleague and coursemates for their cooperation, encouragement and suggestion throughout the research.
- Last but not the least, my deepest gratitude to my family for their endless patience, tolerance, full encouragement support and love.

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LIST OF ABBREVIATIONS

ANCOVA	Analysis of Covariance
BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
CI	Confidence interval
GDP	Gross domestic product
Н	Hemagglutinin
ICU	Intensive care unit
ILI	Influenza-like illness
IQR	Inter quartile range
КАР	Knowledge, attitude and practice
КМО	Kaiser Meyer Olkin
МОН	Ministry of Health
N	Neuraminidase
NPI	Non-Pharmaceutical Intervention
PS	Power and sample size calculation
rRT-PCR	Real-time reverse transcription-polymerase chain reaction
S-OIV	Swine-origin influenza virus
SD	Standard deviation
SMK	Sekolah Menengah Kebangsaan
SPM	Sijil Pelajaran Malaysia
STPM	Sijil Tinggi Pelajaran Malaysia
UK	United Kingdom
USA	United States of America
USM	Universiti Sains Malaysia
WHO	World Health Organization

LIST OF SYMBOLS

1 - β	Power
α	Level of significance
n	Sample
<	Less than
>	More than
%	Percentage
σ	Standard deviation
Δ	Estimated difference from population mean
3	Epsilon
У	Dependent variable
ŷ	Predicted value
е	Residual
Ho	Null hypothesis
H _A	Alternative hypothesis
df	Degree of freedom

KEBERKESANAN PAKEJ PENDIDIKAN KESIHATAN TERHADAP TAHAP PENGETAHUAN, SIKAP DAN AMALAN TENTANG INFLUENZA A (H1N1) DALAM KALANGAN PELAJAR SEKOLAH MENENGAH DI KELANTAN

ABSTRAK

Pendidikan kesihatan adalah penting untuk memberi individu maklumat, kemahiran dan motivasi yang perlu untuk membuat keputusan tentang gaya hidup dan tingkah laku kesihatan. Pendidikan kesihatan yang berkesan adalah penting memandangkan pandemik melibatkan ramai orang. Mereka mestilah dilengkapi dengan fakta yang terkini. Kajian ini adalah untuk menentukan tahap pengetahuan, sikap dan amalan dalam kalangan pelajar sekolah menengah tentang influenza A (H1N1) dan untuk menilai keberkesanan pakej pendidikan kesihatan tentang influenza A (H1N1). Intervensi komuniti telah dijalankan dalam kalangan pelajar sekolah menengah dalam dua daerah di Kelantan iaitu Kota Bharu dan Bachok bermula dari Julai hingga Disember 2010. Para pelajar di sebuah sekolah di Bachok dipilih sebagai kumpulan intervensi manakala pelajar di sebuah sekolah di Kota Bharu sebagai kumpulan kawalan. Pelajar dipilih melalui persampelan kluster berdasarkan kelas. Data dikumpulkan dengan menggunakan soalan kaji selidik pengetahuan, sikap dan amalan sebelum, sejurus selepas dan sebulan selepas intervensi diberikan. Kumpulan intervensi diberikan ceramah, tayangan video dan bahan-bahan cetakan seperti buku dan risalah tentang influenza A (H1N1). Manakala, kumpulan kawalan diberikan tayangan video tentang keburukan merokok. Analisis Kovarians Ukuran Berulang digunakan untuk analisis. Seramai 436 pelajar di SMK Bachok (kumpulan intervensi) dan SMK Kota (kumpulan kawalan) terlibat dalam kajian ini. Kajian ini melibatkan semua pelajar Melayu berumur 16 tahun. Lebih dari separuh pelajar merupakan pelajar perempuan (62.6% untuk kumpulan kawalan dan 52.8% untuk kumpulan intervensi). Min markah (sisihan piawai) pengetahuan, sikap dan praktis masing-masing adalah 69.35 (8.81), 65.77 (7.14) dan 35.42 (6.19). Selepas mengawal kovariat, terdapat peningkatan yang signifikan dalam min pengetahuan (F=53.70, p<0.001) dan sikap (F=5.37, p=0.005) dalam kumpulan intervensi dan kawalan berdasarkan masa. Namun begitu, tiada perbezaan signifikan antara kumpulan berdasarkan masa untuk amalan. Kajian ini mencadangkan bahawa pakej pendidikan kesihatan adalah komponen penting dalam meningkatkan pengetahuan dan sikap para pelajar tentang influenza A (H1N1). Mempunyai tahap pengetahuan dan sikap yang baik akan menjadikan pencegahan dan pengawalan lebih berkesan dan seterusnya dapat mengurangkan kadar insiden dan kos disebabkan oleh influenza A (H1N1) dan mungkin akan menghentikan penularan penyakit ini.

THE EFFECTIVENESS OF HEALTH EDUCATION PACKAGE ON KNOWLEDGE, ATTITUDE AND PRACTICE OF INFLUENZA A (H1N1) AMONG SECONDARY SCHOOL CHILDREN IN KELANTAN

ABSTRACT

Health education is crucial in providing individuals with the information, skills and motivation necessary for decision making about lifestyle and personal health behavior. An effective health education is vital as the pandemic will affect a very large numbers of people. People must be well informed with factual and up to date information. This study was conducted to determine level of knowledge, attitude and practice among secondary school children on influenza A (H1N1) and to evaluate the effectiveness of health education package on influenza A (H1N1). A community intervention trial was conducted among secondary school children in two districts in Kelantan; namely Kota Bharu and Bachok from July to December 2010. Students in one school in Bachok were allocated as the intervention group and those in Kota Bharu as the control group. Form four students were selected by using cluster sampling according to class. Data was collected using knowledge, attitude and practice questionnaire before, immediately after and one month after the intervention. The intervention group was given a lecture, video shows and printed materials (booklet and pamphlet) on influenza A (H1N1). The control group was given a video show on hazards of smoking. Repeated measures analysis of covariance (ANCOVA) was applied in data analysis. A total of 436 students in SMK

Bachok (intervention group) and SMK Kota (control group) were included in the study. The study involved all Malay students aged 16 years old. More than half of them were females (62.6% for control group and 52.8% for intervention group). The baseline mean (SD) for knowledge, attitude and practice scores were 69.35 (8.81), 65.77 (7.14) and 35.42 (6.19) respectively. After controlling the potential numerical covariate, there were significant improvements in knowledge (F=53.70, p<0.001) and attitude (F=5.37, p=0.005) scores in the intervention group compared to the control group over time. However there was no significant difference between the groups for practice. This study suggests that health education package is an essential component in improving knowledge and attitude of students on influenza A (H1N1). Having good knowledge and attitude will lead to better prevention and control and this in turn will reduce the incidence of disease and cost due to influenza A (H1N1) infection and may halt the epidemic.

CHAPTER 1

INTRODUCTION

Influenza viruses cause annual pandemics and occasional pandemics that caused a significant threat to public health worldwide. The recent emergence of pandemic was due to new H1N1 strain called swine-origin influenza virus A (S-OIV) (Centers for Disease Control and Prevention, 2009a).

1.1 HISTORY OF INFLUENZA A (H1N1)

In the 20th century, three influenza viruses had caused major pandemics; the 1918 H1N1 virus (Spanish influenza), the 1957 H2N2 virus (Asian influenza) and the 1968 H3N2 virus (Hong Kong influenza). On the 11th June 2009, World Health Organization (WHO) declared an influenza pandemic caused by the new H1N1 strain. WHO had raised the worldwide pandemic alert level to phase 6 and declared the first pandemic of the 21st century (Centers for Disease Control and Prevention, 2009a). Phase 6 indicated human-to-human spread of virus in at least one other country in a different WHO region (World Health Organization, 2009a). As on the 30th May 2010, WHO had reported over 18,138 deaths due to influenza A (H1N1) worldwide (World Health Organization, 2010).

The first case of the current global outbreak of the influenza A (H1N1) pandemic was observed in Mexico and the United States of America (USA) in late April 2009. By that time, it has been estimated that 23,000 individuals had been infected in

Mexico, giving an estimated case fatality ratio of 0.4% based on confirmed and suspected deaths reported to that time (Fraser *et al.*, 2009). In the United Kingdom (UK), the first two confirmed cases were reported on the 27^{th} April 2009 in Scotland. There had been 7,447 reported cases in UK by the 2^{nd} July 2009. Until 8th November 2009, the overall estimated case fatality rate for influenza A (H1N1) was 26 per 100,000. For children aged five to 14, the case fatality rate was 11 per 100,000, while for those aged more than 65 it was 980 per 100,000, the highest among other age groups (Donaldson *et al.*, 2009).

The first German case was notified on the 27th April 2009. Until the end of May, only infrequent cases were notified, usually associated with travel to North America. Most secondary infections with influenza A (H1N1) which occurred in this period could be traced back to returning travelers. In June 2009, the number of new cases rose to approximately 10 to 50 new cases per day were reported. Cases in Germany increased with a peak of up to 500 cases per day and 3,000 cases per week at the end of July. As on the 25th August 2009, 14,940 cases of influenza A (H1N1) have been reported in Germany (Gilsdorf and Poggensee, 2009).

In Singapore, the first case was detected on 27th May 2009 when febrile travelers from the affected countries were screened for influenza A (H1N1). The first ten patients who were detected from 26th May to 3rd June 2009 had the mean age 27.6 (range 18 to 43) years. Eight of them arrived in Singapore on a return flight and all were overseas for a mean duration of 13 days (Liang *et al.*, 2009). From 27th May to 9th July 2009, 1,301 laboratory-confirmed cases of influenza A (H1N1) had been

detected. Nearly two-thirds (64.0%) were deemed as local transmission while others were imported. Most of the imported cases were patients who had travelled to Australia, Philippines, Indonesia, Thailand and the USA (Ministry of Health Singapore, 2009).

1.2 INFLUENZA A (H1N1) IN MALAYSIA

In Malaysia, the first confirmed case of influenza A (H1N1) was detected on the 15th May 2009 and this made Malaysia the 36th country to be affected by the influenza A (H1N1) virus. The first case was a student who returned from the USA on 13th May 2009 who seeked treatment the following day after falling ill (Ministry of Health Malaysia, 2010c). While in Kelantan, the first case was reported on the 1st July 2009 and as of 31st August 2009, the number of cases had increased to 329 with one death. Almost 74.0% of influenza A (H1N1) cases in Kelantan affected those in age group 10-25 years old (Ministry of Health Malaysia, 2010b).

As of 17th June 2009, in Malaysia, the number had increased to 22 confirmed cases of influenza A (H1N1) with one local transmission. Then it rose up to 196 confirmed cases on 1st July 2009, with 167 imported cases and 29 local transmission (Ministry of Health Malaysia, 2010a). As of 14th August 2010, the number of deaths due to influenza A (H1N1) was 92. There were 15,584 cases of H1N1 and 34 cases were in wards and three cases in the intensive care unit (ICU) (Ministry of Health Malaysia, 2010b).

1.3 SOCIETAL AND ECONOMIC BURDEN OF INFLUENZA A (H1N1)

Influenza A (H1N1) pandemic caused burden not only to society but also to economy worldwide. Each outbreak of the virus infection takes a significant effect on societies in terms of morbidity, mortality and financial resources. The social impact of influenza is due to both its short term incapacitating symptoms and to complications directly and indirectly arising from having influenza. This increases demands on health care systems, long-term illness and mortality. Annual estimates of influenza-associated deaths (underlying pneumonia and influenza; underlying respiratory and circulatory, and all causes of death) in the USA have increased substantially from year 1976 to year 1999 (Ryan *et al.*, 2006). In addition to excess deaths, influenza also results in extra hospitalizations. A total of 415 hospitalizations were reported by the Victorian Health Emergency Coordination Centre and 26.0% of them required admission to ICU. A further 224 cases were reported to be ward-based (Fielding *et al.*, 2009).

World Bank experts believed that the economic cost of the influenza A (H1N1) pandemic could range from 0.7% to 4.8% of gross domestic product (GDP). Oxford Economics reported that the pandemic could push one to two years the recovery of the global economy. The impact of the pandemic has affected the European country the most. Oxford Economics estimates that the cost of the pandemic to Britain can be as high as five percent of GDP (Serrano, 2009).

In one study that measured disease burden and costs reported that case-patients of influenza accounted for 334,185 hospitalizations and about 3.1 million hospitalized days. Days of productivity lost due to illness amounted to 44.0 million. Medical costs, medical costs plus lost earnings and the total economic burden were \$10.4 billion, \$26.8 billion and \$87.1 billion respectively. Those aged more than 65 years accounted for 64.0% of the total economic burden on influenza, while those aged 50–64 years, 21.0% of the burden, and those aged 18–49 years, 10.0% of the burden. About 5.0% of the total burden of this illness was borne by children (Molinari *et al.*, 2007).

1.4 JUSTIFICATION OF THE STUDY

The first report on the influenza A (H1N1) pandemic suggested that the virus infections mainly affect children and younger adults, and the infection spread within households. During seasonal influenza epidemics, children were often the first to be infected and high infection rates were usually detected in school-aged children. Schools provide a suitable environment for transmission of influenza. Since the beginning of influenza A (H1N1) pandemic, several outbreaks in schools had been reported worldwide (Calatayud *et al.*, 2010).

Despite the fact that generally school children not having the highest mortality, they bear a substantial burden of influenza-related morbidity and other infections. Clinical attack rates in children that were reported in La Gloria, Mexico, were twice as much as in adults. Among those less than 15 years of age, the clinical attack rate was 61.0%, while among those age 15 years and above, the clinical attack rate was 29.0%. Schools and school children have been shown to play a major role in the spread of virus infection during the pandemic (Fraser *et al.*, 2009).

An imported case of influenza A (H1N1) was detected in a London school on the 29th April 2009. The person-to-person transmission started inside the school, first affecting group of children aged 11-12 years, then to children aged 10-11 years and finally with secondary transmission outside the school. The most affected group was children aged 11-12 years with an attack rate of 15.0%. While children aged 10 and 11 years had the lowest attack rate (1.0% for both). Majority of the contacts for school-aged children were with their peers which may explain the quick spread of influenza (Calatayud *et al.*, 2010).

While in South East England, the influenza A (H1N1) pandemic was confirmed in May and June 2009 in a boarding school. A clinical attack rate for the entire school population (students and staff) was five percent. Among the students, the clinical attack rate was eight percent. The students aged between 16 and 17 years had the highest attack rate of 11.9% (Smith *et al.*, 2009). A surveillance in Victoria in April to September 2009 reported that 67.0% of 977 notified cases comprised 5 to 17 years old school-aged children, with the highest notification rates in the 10 to 14 years and 15 to 19 years age groups (Fielding *et al.*, 2009).

Almost similar finding was reported in Germany where the majority of cases (77.0%) were from 10 to 29 years old, two percent of the cases were younger than 5 years, three percent were between 5-9 years old, 17.0% were between 30 to 59 years old and less than one percent of the reported cases were 60 years old and older (Gilsdorf and Poggensee, 2009). Meanwhile, in Japan, confirmed cases in the age group of 15 to 19 years accounted for 64.0% of all 401 cases, followed by 10.0% of cases in the age group of 10 to 14 years and only one percent were over 60 years of age (Shimada *et al.*, 2009).

Since schools play a major role in the spread of the infection, school children needed to be well equiped with the knowledge regarding prevention of influenza A (H1N1). Schools also have been identified as one of the main settings for health education. Implementation of health education is important as knowledge is gained through the relationships between personal behaviour and environmental conditions. Health education include learning opportunities directed towards achieving change in health risk behaviour. The advantage of giving health education in schools is to reach people at a certain stage of life in the development of knowledge, attitude and behavior which result in influencing current and future health (World Health Organization, 1997).

Effective health communication during outbreak is vital and a communication strategy has to be developed, specifically as a response to the increasing disease burden and cost due to influenza A (H1N1) epidemic. The pandemic will not only affect those in high-risk group but the general public. People must be kept well