KNOWLEDGE ATTITUDE AND PRACTICE (KAP) TOWARDS ACCEPTANCE OF *HUMAN PAPILLOMAVIRUS (HPV)* VACCINATION AMONG SECONDARY SCHOOL STUDENTS IN KUCHING

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Master of Public Health
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ACKNOWLEDGEMENT

Assalamualaikum,

First of all I would like to thank God for giving me all the strength and passion to finish this study. I also would like to thank my wife and kids for their patience and support throughout this research. Not only that, I am also indebted to my supervisor, Tan Sri Datu Prof Dr Mohamad Taha Bin Arif for being a good mentor who has been the main guidance throughout this research project. Not to forget my other lecturers especially Associated Professor Mizanur Abdul Rahman, who has been the best advisor in statistics and our MPH coordinator, Dr Cheah Whye Lian, for being the best coordinator ever. Finally, I would like to thank all the relevants people in UNIMAS, Ministry of Education and all the involved schools for all their cooperation and I am looking forward to work with everyone in future if condition permit.

Wassalam.
ABSTRAK

Pelitian baru HPV telah di beri secara percuma melalui Program Kesihatan Sekolan bermula pada tahun 2011 bertujuan untuk mencegah penularan jangkitan HPV serta mengurangkan insiden kanser pangkal rahim. Satu kajian telah di adakan dengan objektif untuk mengetahui tahap pengetahuan, sikap dan amalan terhadap penerimaan satu vaksin yang baru ini di kalangan pelajar sekolah menengah di Kuching. Ini merupakan sebuah kajian keratan rentas yang telah diadakan di lima buah sekolah umum di Bandaraya Kuching. Sebanyak 387 pelajar sekolah menengah berusia 13 sampai 14 tahun menyertai kajian ini. Data dikumpulkan melalui kertas soalan 'self-administered'. Hasil kajian telah menunjukkan bahawa para pelajar memiliki tahap sikap yang tinggi jika dibandingkan dengan pengetahuan dan amalan di mana ini telah menentukan niat mereka untuk menerima vaksin HPV tanpa mengambil kira tingkat pengetahuan dan amalan. Tiada hubungan yang signifikan dari segi statistik antara etnik dengan pengetahuan, sikap dan amalan (p=0.08). Kaum Melayu didapati memiliki pengetahuan, sikap dan amalan yang baik berbanding dengan Kaum Cina dan kaum-kaum yang lain dimana mereka mencatat nilai purata tertinggi dalam pengetahuan (4.63 [SD=1.770]), sikap (5.38 [SD=1.637]) dan amalan (2.73 [SD=1.433]). Tidak ada hubungan signifikan dari segi statistik di antara tahap pendidikan ibu bapa dengan pengetahuan, sikap dan amalan. Tidak juga terdapat hubungan yang signifikan secara statistik antara jumlah pendapatan keluarga dengan pengetahuan, sikap dan praktis. Kesimpullannya, meskipun korelasi sederhana didapati antara pengetahuan dan sikap dan pengetahuan dan amalan, dapat disimpulkan bahawa, memiliki pengetahuan yang baik akan menyebabkan sikap dan amalan yang baik. Diharap penemuan kajian ini boleh memandu program kesihatan sekolah dalam meneruskan usaha penerimaan vaksin ini di kalangan murid sekolah.
ABSTRACT

(A new vaccine, the HPV vaccine has been given for free via the school health program since the year 2011 with the aim of preventing the spread of HPV infection and reducing the incidence of cervical cancer. A study was conducted to determine the level of knowledge, attitude and practice towards HPV vaccination acceptance among secondary school students in Kuching. A cross-sectional study was conducted at five randomised selected public schools in Kuching City. A total of 387 students aged 13 to 14 years were recruited into the study. Data were collected via self-administeredquestionnaires. Results showed that the students had high attitude levels compared to knowledge and practice, which indicated their intention to receive the HPV vaccine regardless of their level of knowledge and practice. However, there was no statistical significant relationship between knowledge, attitude and practice (p=0.08). Malays were noted to have good knowledge, attitude and practice compared to Chinese and others as they scored the highest mean scores in knowledge (4.63 [SD=1.770]), attitude (5.38 [1.637]) and practice (2.73 [SD=1.433]). There were no statistical relationship between parents’ level of education with knowledge, attitude and practice. There were also no statistical significant between total family income with knowledge, attitude and practice. In conclusion, despite the moderate correlations between knowledge and attitude and knowledge and practice, it is concluded that, having good knowledge will lead to good attitude and practice. It is hope that the study is useful for the School Health Program in delivering the service further among school children.)
TABLE OF CONTENTS

Acknowledgement i
Abstrak ii
Abstract iii
Table of Contents iv
List of Tables viii
List of Figures ix
List of Abbreviations x

CHAPTER 1
INTRODUCTION

1.1 Study Background 1
1.2 Acceptability of the students towards HPV vaccination 5
1.3 Literature Review 6
  1.3.1 What is HPV? 6
  1.3.2 HPV Vaccines 10
  1.3.3 Benefits of HPV vaccination 12
  1.3.4 Potential challenges to vaccination acceptance 12
1.4 Statement of problem 19
1.5 Objectives of the study 21
  1.5.1 General Objective 21
  1.5.2 Specific Objectives 21
1.6 Research Hypotheses 22
CHAPTER 2
METHODOLOGY

2.1 Study design

2.2 Location, population and sampling

2.2.1 Location and population

2.2.2 Sampling

2.2.2.1 Sample size of the study

2.2.2.2 Sampling method

2.2.2.3 Inclusion and exclusion criteria

2.4 Study instruments

2.5 Data entry, analysis and interpretation

2.6 Ethical issue

CHAPTER 3
RESULTS

3.0 Introduction

3.1 Socio-demographic Characteristics

3.2 Knowledge, attitude and practice score

3.3 Level of knowledge, attitude and practice

3.4 Correlation between total knowledge score with total attitude score and total practice score
3.5 Independent t test between total knowledge score with attitude and practice

3.5 Independent t test between total knowledge score and attitude and practice

3.6 Relationship between socio-demographic characteristics and level of knowledge, attitude and practice

CHAPTER 4
DISCUSSION

4.0 Introduction

4.1 Level of knowledge, attitude and practice

4.2 Correlation between total knowledge score total attitude score

4.3 Correlation between total knowledge score total practice score

4.4 Relationship between ethnicity with knowledge, attitude

4.5 Relationship between father’s and mother’s level of education and knowledge, attitude and practice

4.6 Relationship between total family income with knowledge, attitude and practice

CHAPTER 5
SUMMARY AND CONCLUSION

5.0 Introduction

5.1 Summary of the study

5.2 Significance of the study

5.3 Limitations of the study

5.4 Recommendations
5.5 Conclusion

REFERENCES

APPENDICES

Appendix A – Supporting letter from supervisor
Appendix B – Approval letter from Medical Ethics Committee
Appendix C – Approval letter from Ministry of Education Malaysia
Appendix D – Approval letter from Sarawak State Education Department
Appendix E – Patient Information Sheet and Consent Form
Appendix F – Questionnaire
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Percentage distribution of the students by socio-demographic characteristics</td>
<td>34</td>
</tr>
<tr>
<td>3.2</td>
<td>Knowledge, attitude and practice score</td>
<td>35</td>
</tr>
<tr>
<td>3.3</td>
<td>Distribution of students by level of knowledge, attitude and practice</td>
<td>36</td>
</tr>
<tr>
<td>3.4</td>
<td>Correlation between total knowledge score with total attitude score and total practice score</td>
<td>37</td>
</tr>
<tr>
<td>3.5</td>
<td>Relationship between socio-demographic characteristics with practice, attitude and knowledge</td>
<td>40</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Different types of HPV strains</td>
<td>7</td>
</tr>
<tr>
<td>1.2</td>
<td>Schematic representation of HPV infection</td>
<td>9</td>
</tr>
<tr>
<td>1.3</td>
<td>Conceptual framework based on Theory of Reason Action</td>
<td>23</td>
</tr>
<tr>
<td>2.1</td>
<td>Flowchart on sampling method</td>
<td>28</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------</td>
<td></td>
</tr>
<tr>
<td>HPV</td>
<td>Human Papillomavirus</td>
<td></td>
</tr>
<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
<td></td>
</tr>
<tr>
<td>STI</td>
<td>Sexually Transmitted Infection</td>
<td></td>
</tr>
<tr>
<td>CIN</td>
<td>Cervical Intra-epithelial Neoplasm</td>
<td></td>
</tr>
</tbody>
</table>
1.1 Study Background

Human papillomavirus (HPV) is a family of viruses that are etiologically linked to a number of disease conditions such as cancers as well as benign conditions such as warts and condylomas. At least 15 high-risk HPV types can cause cervical cancer and most anogenital cancers; HPV type 16 and 18 are the most common of these (Gillison et al., 2000) (Ragin et al., 2006).

In Malaysia perspectives, cervical cancer is the second most common female cancer, comprised of 12.9% of all female cancers (Parkin et al., 2000). The Malaysian National Cancer Registry reported an average of 2,000 – 3,000 hospital admissions of cervical cancer in Malaysia with the majority presenting at late stages of the disease (Lim et al., 2003).

Prevention of cervical cancer can be done by identifying pre-cancerous lesions early using Pap smear screening and treating these lesions before they progress to cancer (Wong et al., 2009). Prevention, early diagnosis and treatment have been shown to reduce mortality due to cervical cancer in many countries (Free et al., 1991) and HPV vaccine has high efficacy for prevention of HPV vaccine types and related outcomes (Garland et al., 2007).

In Malaysia, the cervical cancer screening programme was established in 1969 to ensure early detection of cervical cancer among the target group of women aged 20 – 65 years (Wong et al., 2009) and many action plans and cancer awareness campaigns have been launched over
the years (Lim et al., 2004). Nevertheless, no reduction in the prevalence of cervical cancer has been noted to date (Wong et al., 2009). The coverage uptake of cervical cancer screening is considered poor as the Pap smear coverage in the country is less than 2% in 1992, 3.5% in 1995 and 6.2% in 1996 (MOH, 1997). Many reasons are behind this poor coverage. Unawareness of the general public about the benefits of screening is one of the possible reasons (Othman, 2002). Based on the finding in National Health Morbidity Survey III done in 2006 however, the overall prevalence of ever doing pap smear examination among women 18 years and above was 43.7% and among ever married women was 52.8%. The reason of these increment were due to increase the levels of knowledge and awareness towards the importance of pap smear screening (MOH, 2008).

The United States (US) Food & Drug Administration (FDA) recently approved an HPV vaccine with the purpose of reducing the risk of cervical cancers caused by HPV 16 and 18. The Centres for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) recommended routine HPV vaccination for 11 - 12 year olds and for girls as young as 9 years old. The committee also recommended the vaccination of 13 - 26 years old females who have not been previously vaccinated or have not completed the full vaccination series (Markowitz et al., 2007). The vaccine is most efficacious if administered before sexual debut (Koulova, 2008).

It is predicted that HPV vaccination will prevent thousands of cases of cervical cancer worldwide (Taira et al., 2004). HPV vaccines that have been introduced in developed countries recently which are consist of recombinant HPV major capsid protein L1, which generate virus-like particles (VSL) resembling HPV virions, but which are non-infectious and
immunogenic. Both bivalent and quadrivalent vaccines have shown excellent efficacy and safety. Although antibody levels and clinical efficacy appear to be sustained for at least 4.5 years after vaccination, the full duration of protection and the possible need for boosters is unclear (Harper et al., 2006; Villa et al., 2006). Indeed, the limited follow-up duration of current studies may be insufficient to detect persistent high-grade cervical dysplasia, which may take many years to develop.

In 2006, the Malaysian government provided regulatory approval of the vaccine (Wong, 2009). Health Minister Datuk Seri Liow Tiong Lai had announced that free HPV vaccination will be given to 13 years old female students with consent of their parents during the year of 2010 (The Star online, 2009). However, barriers to vaccination include costs, limited vaccine availability, and lack of vaccine awareness (Herzog et al., 2008). A little is known about the level of knowledge and attitude toward HPV vaccine in Malaysian women and also little is known about the barriers of HPV vaccine acceptance in this country. A qualitative study in Malaysia reported that the majority of participants were not aware of HPV or HPV infection and only ten percent of them had heard about the HPV vaccine (Wong, 2009).

Vaccine acceptance can be maximized by effective communication of risks associated with HPV infection and benefits of vaccination. The social stigma towards HPV vaccination may give rise to uncertainty and hesitation when considering vaccination (McCaffery et al., 2003). Parental acceptance of HPV vaccination is vital since the vaccines are recommended for children and young adolescents before the onset of sexual activity. Two important factors associated with increased acceptance of HPV immunisation among parents were knowledge
of vaccine benefits and perception that their child is at risk of infection (Munoz et al., 2003; Zimet et al., 2005). Parents may fear that vaccination of their children may promote sexuality and result in unsafe sexual behaviour. It was found that intention to vaccinate was higher when the vaccine described as preventing cervical cancer, rather than preventing cervical cancer as well as sexually transmitted infections (STI) (Center of Excellence in Cancer Communication Study, 2006).

In Malaysia, the public sector full implementation was done in year 2011 among adolescent girls 13 years old in schools. According to Annual Report of Malaysia Ministry of Health (MOH, 2012), the immunisation coverage for complete 3 dosage of HPV vaccine was achieved 87.12% in year 2011 among girls aged 13 years old.

For Sarawak state, the first dose coverage of HPV vaccination for the year 2013 (till June 2013) was 98.89% while the second dose coverage was 99.13%. However, the third dose coverage of HPV vaccine was only 18% till June 2013 as the vaccination program was temporarily stopped in July and early August 2013 and will only resume after fasting month this year which is in mid-August 2013 (Sarawak State Health Department, 2013).
1.2 Acceptability of the students towards HPV vaccination

Based on our records from all the schools, the acceptance rate among the parents for HPV vaccination was 100%. With the assumption that parental acceptance would lead to positive acceptance among the students, we can say that the acceptance of the students towards HPV vaccination were 100%

Based on the current research on adolescent attitudes regarding HPV immunization, it was noted that dominant role in the vaccination decision were still being played by the parents. Adolescents often contribute to the familial decisions regarding HPV vaccination, and adolescents has been found to be similar to those of their parents regarding vaccine efficacy, the influence of the recommendations by healthcare professionals and consideration of vaccine cost (Zimet et al., 2000).

However, studies in the United States (Luman et al, 2003; Stampi et al., 2005) and Turkey (Torun et al., 2006) have found that parents with higher educational levels are less likely to worry about vaccine safety and have greater confidence in physicians and that their children receive more vaccinations.

On the contrary, studies done in Switzerland (Bulletin de l’OFSP, 1999) and Germany (CCDR-RMTC, 2006) have shown that children of university-educated parents had less probability of being vaccinated than children with lower educational levels.
1.3 Literature Review

1.3.1 What is HPV?

HPV is a non-enveloped, double-stranded DNA virus. There are over 100 HPV types, of which 40 typically affect the anal and genital areas (Figure 1). Thirty types are associated with cervical cancer, with the high risk types 16 and 18 accounting for over 70% of all cases worldwide, including Malaysia (Munoz et al., 2003; Cheah PL, 1994). Other less prevalent oncogenic types include types 31, 33, 45, 52, 58 and 59. 99.7% of cervical tumor specimens contain detectable HPV DNA, making the association between HPV infection and cervical cancer one of the strongest in cancer epidemiology. HPV types 6 and 11 are common low risk oncogenic types which are associated with more than 90% cases of genital warts (Walboomers, 1999). Transmission of HPV infection usually occurs from penetrating intercourse and genital skin-to-skin contact. Most infections are asymptomatic, transient and have no adverse effects. Thus, transmission may occur unknowingly and infected persons are often unaware that they are carriers. About 75% of adults may acquire HPV infection during their lives and the highest rates for HPV infection occur in women between 18-28 years. Cervical immaturity, due to factors such as metaplastic changes during puberty, may increase the susceptibility of adolescents to HPV infection (Tarkowski, 2004).
Over 100 types of HPV

Oncogenic
Affect anal and genital areas, about 40 types

Non-oncogenic
Common body warts (hand and feet), about 60 types

High risk types, about 30 types (16,18,31,33,45,52,58,59 and others)
- Low grade cervical changes
- High grade cervical changes
- Anogenital cancers

Low risk types (6,11,42,43,44 and others)
- Genital warts

Figure 1.1: Different types of HPV strains (Munoz et al, 2003)
The pathogenesis of HPV-associated cervical cancer has been reviewed (Figure 2)(Woodman et al., 2007). HPV infects basal cells of the cervical epithelium via micro-abrasions. On-going viral replication is associated with progressively dysplastic histological changes via cervical intra-epithelial neoplasia (CIN) grades 1 – 3. The integration of HPV into the host DNA leads to up-regulation of the viral oncogenes E6 and E7, which disrupt host p53 and RB control of the cell cycle and result in invasive cancer.
Cytologic and/or histologic abnormalities

HPV TRANSMISSION

- Vaginal intercourse
- Genital skin-to-skin contact

Transient Infection

Persistent Infection

Figure 1.2: Schematic representation of HPV infection (Woodman et al., 2007)
1.3.2 HPV Vaccines

HPV vaccines have been introduced in developed countries recently. The vaccines consist of recombinant HPV major capsid protein L1, which generate virus-like particles (VSL) resembling HPV virions, but which are non-infectious and immunogenic. The US Food and Drug Administration (FDA) recently approved a quadrivalent vaccine (Gardasil, from Merck) against type 6, 11, 16 and 18. The vaccine is recommended for routine use among girls aged 11 to 12 years, and permitted to be used for females aged 9 – 26 years (Markowitz et al., 2007). A bivalent vaccine (Cervarix, from GlaxoSmithKline), which protects against HPV types 16 and 18 should be available soon.

Study had shown that the rejection of vaccination were largely due to new findings regarding the vaccine, as, not having enough information regarding safety and its efficacy (Rosenthal et al., 2008). Similar finding (Jain et al., 2009) reported that vaccination side effects were the main reason of concern among their participants. Another study reported that the newness of the vaccine, efficacy and safety were the major concerns of the study participants. Injection site pain, erythema and oedema were common and occurred significantly more often for vaccine recipients than placebo recipients (Wong, 2009).
Despite the findings that have been mentioned above, both vaccines have shown excellent efficacy and safety. The quadrivalent vaccine was 90.7% - 100% effective in preventing infection of four HPV types, and associated genital warts, cervical intraepithelial neoplasm (CIN), vulval intraepithelial neoplasia and vaginal intraepithelial neoplasia (Markowitz et al., 2007; Joura et al., 2007). The bivalent vaccine also showed similarly high efficacy in protecting against persistent HPV infection and CIN. The vaccine is most efficacious if administered before sexual debut (Koulova et al., 2008). Although antibody levels and clinical efficacy appear to be sustained for at least 4.5 years after vaccination, the full duration of protection and the possible need for boosters is unclear. Indeed, the limited follow-up duration of current studies may be insufficient to detect persistent high-grade cervical dysplasia, which may take many years to develop (Harper, 2006; Villa et al., 2006).

It should be emphasized that the vaccines do not protect against less common or unidentified strains of HPV that are associated with cervical cancer. Furthermore, HPV infection alone may not be sufficient to induce cervical cancer. Potentially important co-factors in the development of neoplasia include smoking, multiparity, prolonged oral contraceptive use, herpes simplex virus type 2, and other sexually transmitted infections (Kjellberg et al., 2000; Smith et al., 2002). There is also the theoretical possibility that other oncogenic types may fill the biological niche left behind if types 16 and 18 are eradicated, leading to a rise in cervical cancers caused by non-16 and 18 types (Sawaya et al., 2007).
1.3.3 Benefits of HPV vaccination

Due to the length of time required for malignant transformation, it is likely to be decades before the full impact of HPV vaccination on the incidence of cervical cancer can be determined. A study predicted that the vaccines would reduce the number of cervical cancer cases associated with HPV 16 and HPV 18 by as much as 95%. Vaccination could also allow less frequent screening and a later age of screening initiation, and thus reduced other HPV-related diseases such as genital warts along with their associated psychosocial and economic burden (Taira et al., 2004).

1.3.4 Potential challenges to vaccination acceptance

In Malaysia, the vaccine received regulatory approval in November 2006. Health Minister Datuk Seri Liow Tiong Lai had announced that free HPV vaccination will be given to 13 years old female students with consent of their parents during the year of 2010 (The Star online, 2009). Unfortunately, there is no data available on Malaysian public’s knowledge on HPV or attitudes to HPV vaccine. The general lack of knowledge about HPV is a major factor that might adversely affect HPV vaccine acceptance. A British survey revealed that less than 1% could name HPV as a cause of cervical cancer, while just 13% of high-school adolescents in Canada had heard of HPV (Waller et al., 2004; Dell et al., 2000). A lot of studies have evaluated acceptability and attitudes regarding the HPV vaccine, but almost all were carried out in developed nations. The characteristics of the vaccine itself, patient’s knowledge and