

ORIGINAL ARTICLE

Understanding the Negative Public Perception on Vaccination in West Coast and East Coast Peninsular Malaysia

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ABSTRACT

Introduction: Vaccination is a biological process that improves immunity level of an individual towards certain diseases. Vaccination is generally given to all newborn and kids. Most countries oblige their citizens to be vaccinated as early as new-born age. The aim of this research is to study the perception on vaccination intake and the associated factors that lead to its refusal among parents in east coast and west coast peninsular Malaysia. **Methods:** Primary data were collected using self-administered questionnaire and were distributed to assess the study objectives. Total 240 questionnaires were distributed equally in west coast and east coast study area. Questionnaire consists of demographic data, perception aspects and factors that may lead to the negative perceptions. **Results:** There is significant association between perception and religion, education level and side effect factor in east coast with majority of the respondents are Muslims (40.83%) while there is no significant association between education level and side effect factor ($p>0.1$) in west coast with majority of respondents are Muslims (51.67%) too. This study found that perception regarding vaccination is influenced by the religion restrictions in east coast of peninsular Malaysia and not in west coast region. The other factors associated with vaccination refusal varies according to education level, and regional basis. **Conclusion:** Most of the respondents who have negative perception regarding vaccination are from East Coast region as they are more prone into Islamic teachings. All the possible factors of vaccination refusal are accepted by the respondents but varies in its prevalence as the leading factor determined that caused the vaccination refusal are religion restriction and the least percentage for the factor is time restriction.

Keywords: Student Teacher, Basic Life Support, Knowledge Retention, Cardiopulmonary Resuscitation (CPR)

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INTRODUCTION

Vaccine is derived from the word 'vaccinia' (1). Vaccination is a biological preparation method that improves immunity level of individual towards certain disease. Generally, vaccination is given to all newborns and kids. Vaccines can protect us from 26 types of diseases such as Cholera, Diphtheria, Haemophilus influenzae type b (Hib), Hepatitis-A, Hepatitis-B, Influenza, Measles etc. And help to limit the spread of antibiotic resistance by preventing diseases in the first place (WHO, 2017) (2,3).

Vaccines can also be produced from dead organisms or

purified sources of protein, peptides, virus-like particles, or bacteria. Vaccine related perceptions are ranging from total refusal to complete acceptance (4). The vaccine will prepare the human or animal immune system to survive certain pathogens. "Thiomersal" is vaccine preservative that may contain mercury to inhibit bacterial or fungal growth. Vaccine stabilizing agents may include Gelatine derived from pigs that may lead some people to refuse the vaccine although some religious leaders see it acceptable to use the vaccines even if it contains gelatine unless it breaks religious rules (2, 3).

According to a report by the Ministry of Health in Malaysia August 2016, the number of confirmed diphtheria cases due to rejection of vaccination in Malaysia increased to 28 cases including 5 death cases (1,2). Due to restricted access to mass media among couples, there should be interpersonal communication by health care providers at the community level to educate them (2,3). Despite

the government's efforts to accelerate the immunization program to achieve its objective, there is a group called 'anti-vaccine' among Malaysians who think that the vaccine is unnecessarily given to healthy individuals. Problems involving the presence of these anti-vaccines can only be addressed if the study is conducted at the grassroots level. Therefore, the results of the study can help the Ministry of Health Malaysia find alternative solutions (5, 6).

The objective of this research was to identify whether there is any difference in the perception regarding vaccination among population in West Coast Peninsular Malaysia region and East Coast Peninsular Malaysia region, and also to establish the association between the demographic factors and the possible factors that lead to the vaccine's refusal.

MATERIALS AND METHODS

This research is a cross-sectional study (7,8), determining the perception of public regarding vaccination intake. The independent variables like social, demographic religion negative side effect from taking vaccines and the dependent variable is perception of people regarding vaccination (9). The study was conducted in the states of Kelantan and Terengganu (East Coast Peninsular Malaysia) and Selangor and Kuala Lumpur (West Coast Peninsular Malaysia). This include married couple with children with different races, age groups and work classifications. The selection of the samples for this research was conducted by convenience method and the sample size was calculated using single population proportions formula.

$$n = \frac{(Z^2) p (1-p)}{d^2}$$

Where;

- n = sample size
- Z = standard value of confidence interval
- p = estimated prevalence in project area
- d = desired precision level

$$n = \frac{[(1.96^2) 0.33 - (1-0.33)]}{0.05^2}$$

$$n = 240$$

$$n = 240 \text{ respondents}$$

For ethical consideration the consent form is attached along with the questionnaires All information by participants are kept confidential and is used for research only. The p-value of this study is obtained by using Chi-Square test in order to analyse the data and produce one value that showing the association level of those two variables (10).

The selection of the samples for this research was done by using convenience method as it is easy and economical to collect the data and estimation of the result. It will

also draw a valid conclusion of the objectives of the study. The inclusion criteria are Residence of the states involved (Kelantan, Pahang, Selangor & Penang) Must be from variety group ages, race, religion and work group. The exclusion criteria are Unmarried individuals and Individuals aged below 18 years old.

Data were collected by using the self-conducted questionnaire. Which is dichotomous "yes/no" closed-ended question with nominal scale is used is collected by distributing questionnaire to total 240 respondents the residents in the states of Kelantan and Terengganu (East Coast Peninsular Malaysia) and Selangor and Kuala Lumpur (West Coast Peninsular Malaysia). Which consists of 3 parts: part A: socio-demographic details, part B: Parents Attitude towards childhood vaccination (PACV) questionnaire, and part C: Factors of vaccination by using statistical Package for Social Science (SPSS) IBM (Version 20) (11). This questionnaire was constructed by referring to the previous related research.

For descriptive statistics, we used frequency distribution table and percentage, means and standard deviation as well as median and interquartile range. For inferential statistics, we used Chi-square for nominal data to test the hypothesis. We used odds ratio and 95% confidence interval as the measure of association. Significance level was set at 0.05. P value less than 0.05 was considered as significant.

RESULTS

Demographic Data of Studied Population

In this study, 240 respondents were approached for participation and all questionnaires were managed to be collected (100% response rate). The frequency analysis of each socio-demographic data has been tabulated in Table I. As shown in table I, the age group of more than 35 years old was slightly higher at 50.4% compared to the age group of less than 35 years at 49.6%. The percentage of female respondents (50.0%) was equal to male respondents (50.0%). The percentage of the diploma or equivalent qualification holder is the highest at 40.42% followed by degree and equivalent qualification holder at 30.0%, high school leavers 19.16%, and master and PhD at 10.42%. In term of religion, Muslim respondents was the highest percentage at 46.25% followed by Buddhist at 20.42, Hindu at 19.17%, Christian at 10.0% and Chinese Folk religion at 4.16%. My respondents also coming from few different employment status, with the majority one is full time employed (39.17%), followed by self employed (20.0%), part time employed (15.83%), unemployed (14.58%), retired (7.09%) an students (3.33%)

As shown in table I, the respondents in West Coast Peninsular Malaysia, the age group of more than 35 years old (25.0%) was equal to the age group of less than 35 years at (25.0%). The percentage of female

Table I: Frequency Distribution Table of Demographic Data of West Coast, East Coast and Total Respondents

Variable	West Coast		East Cost		Total		
	n	%	n	%	n	%	
Age	< 35 years old	60	25	59	24.58	119	49.6
	> 35 years old	60	25	61	25.42	121	50.4
Gender	Male	60	25	60	25	120	50
	Female	60	25	60	25	120	50
Level of education	High School	11	4.58	38	15.83	46	19.16
	Diploma/equivalent	45	18.75	52	21.66	97	40.42
	Degree/equivalent	42	17.5	19	7.91	72	30
	Master/phd	22	9.16	11	4.58	25	10.42
Religion	Muslim	49	20.41	62	25.83	111	46.25
	Buddha	15	6.25	34	14.16	49	20.42
	Hindu	34	14.16	12	5	46	19.17
	Christian	17	7.08	7	2.91	24	10
	Chinese Folk	5	2.1	5	2.1	10	4.16
Employment Status	Full Time	65	26.66	29	12.08	94	39.17
	Part Time	30	12.5	8	3.33	38	15.83
	Self employed	2	0.83	46	19.16	48	20
	Unemployed	11	4.58	24	10	35	14.58
	Retired	4	1.66	13	5.41	17	7.09
	Student	8	3.33	0	0	8	3.33

*N: number of respondents

respondents (25.0%) was also equal to male respondents (25.0%). The percentage of the diploma or equivalent qualification holder is the highest at 18.75% followed by degree and equivalent qualification holder at 17.50%, master and PhD at 9.16% and high school leavers at 4.58%. In term of religion, Muslim respondents was the highest percentage at 20.41% followed by Hindu at 14.16%, Christian at 7.18%, Buddhist at 6.26% and Chinese Folk religion at 2.10%. My respondents also coming from few different employment status, with the majority one is full time employed (26.66%), followed by part time employed (12.50%), unemployed (4.58%), students (3.33%), retired (1.66%) and self-employed (0.83%).

As for the respondents in East Coast Peninsular Malaysia, the age group of more than 35 years old (25.42%) was slightly higher as compared to the age group of less than 35 years at (24.58%). The percentage of female respondents (25.0%) was also equal to male respondents (25.0%). The percentage of the diploma or equivalent qualification holder is the highest at 21.66% followed by high school leavers at 15.83%, degree and equivalent qualification at 7.91% master and PhD at 4.58%. In term of religion, Muslim respondents was the highest percentage at 25.83% followed by Buddhist at 14.16%, Hindu at 5.00%, Christian at 2.91% and Chinese Folk religion at 2.10%. My respondents also coming from few different employment status, with the majority one is self-employed (19.16%), followed by full time employed (12.08%), unemployed (10.00%), retired (5.41%), part

time employed (3.33%) and no student (0.00%) was recorded in the list of my respondents in east coast region.

Perception Regarding Vaccination (East Coast)/(West Coast)

As shown in Table II, the association between demographic details with the factors of vaccination intake, this study found that the most significant association is between the different religion group and the religion restriction in East Coast Peninsular Malaysia (p<0.001), however in West Coast region, the same association is not significant. At the same time, the employment status and time restriction also are significantly associated (p=0.01) in both West Coast and East Coast Peninsular Malaysia .

Factors Affecting Vaccination Refusal (East Coast)/(West Coast)

Table III shows that the religion restriction (10.83%) is the most leading factor of vaccination refusal among people in East Coast Peninsular Malaysia and followed by the fear of getting the side effect after being injected with vaccine.(10.00%) On the other hand, while in East Coast Peninsular Malaysia, the study result obtained shows that the same factor as in west coast, which is religion restriction (22.5%) as the main factor leading to vaccines refusal and followed by fear of getting side effects after the vaccine injections (17.50%) The percentage of the religion restriction factor is higher in East Coast Peninsular Malaysia.

TABLE II: Perception Regarding Vaccination (East Coast)/(West Coast)

VARIABLES	PERCEPTION (East Coast)				PERCEPTION (West Coast)				
	Positive		Negative		Positive		Negative		
	N	%	N	%	N	%	N	%	
AGE	18-24	14	5.83	16	6.66	23	9.58	7	2.91
	25-34	14	5.83	15	6.25	23	9.58	7	2.91
	35-44	11	0.04	20	8.3	21	8.75	9	3.75
	Above 45	6	2.50	24	10.00	20	8.33	10	4.16
GENDER	Male	22	9.16	38	15.83	48	20.00	12	5.00
	Female	23	9.37	37	15.41	39	16.25	21	8.75
EDUCATION	Foundation	15	6.25	23	9.58	7	2.91	4	1.66
	Diploma	15	6.25	37	15.41	34	14.16	11	4.58
	Degree	9	3.75	10	4.16	33	13.75	9	3.75
	Master/PhD	5	2.08	6	2.50	19	7.91	3	1.25
RELIGION	Islam	22	9.16	40	16.66	38	15.83	11	4.58
	Hindu	6	2.50	6	2.5	22	9.16	12	5.00
	Buddhist	12	5.00	22	9.16	12	5.00	3	1.25
	Christian	3	1.25	4	1.66	12	5.00	5	2.08
	Chinese Folk	2	0.83	3	1.25	3	1.25	2	0.83
EMPLOYMENT STATUS	Full time employed	18	7.50	11	4.58	49	20.41	16	6.66
	Part time employed	5	2.08	3	1.25	21	8.75	9	3.75
	Self employed	10	4.16	36	15.00	1	0.41	1	0.41
	Unemployed	8	3.33	16	6.66	6	2.50	5	2.08
	Retired	4	1.66	9	3.75	3	1.25	1	0.41

*N: number of respondents

TABLE IV: Factors Affecting Vaccination Refusal (East Coast)/(West Coast)

VARIABLES	FACTORS (East Coast)				FACTORS (West Coast)				
	RELIGION RESTRIC- TION	SIDE EFFECT	TIME RESTRIC- TION	UNNEC- ESSARI- TIES	RELIGION RESTRIC- TION	SIDE EFFECT	TIME RESTRIC- TION	UNNECES- SARITIES	
	%	%	%	%	%	%	%	%	
AGE	18 -24	2.08	1.66	1.66	1.25	0.2	1.25	0	0
	25-34	2.08	1.25	2.5	0.41	1.25	0.83	1.25	0
	35-44	2.08	2.91	1.25	2.08	0.83	1.25	0.83	1.25
	45 above	5	2.91	1.25	0.41	1.25	1.66	1.25	0.41
GENDER	Male	5.83	3.75	4.16	1.25	2.91	1.66	2.08	0.83
	Female	5.41	5	2.91	1.25	2.5	3.32	1.25	0.83
EDUCATION	Foundation	3.75	4.16	0	1.66	0.83	0.83	0	0
	Diploma	3.33	7.5	2.91	1.66	2.08	1.66	0.41	0.41
	Degree	0.83	2.08	0.82	0.41	0.83	2.08	0.41	0
	Master/PhD	0.83	0	1.66	0	0.41	0	0.83	0
RELIGION	Islam	11.25	4.16	0	0.82	4.16	0.83	0.41	0
	Hindu	0	1.25	0.41	0.82	1.25	2.91	0.41	0.41
	Buddhist	0	2.08	5	1.25	0	0.41	0.41	0.41
	Christian	0	0.41	0.82	0.41	0	0.83	0.83	0.41
	Chinese	0	0.82	0.41	0	0	0	0.41	0.41
EMPLOYMENT STATUS	Part time employed	1.25	0	0	0	1.66	1.25	0.41	0.41
	Unemployed	2.5	2.5	0	0.00	0.41	0.83	0.41	0.82

DISCUSSION

Malaysia has achieved many achievements in variety of fields. However, regarding the health issue, the same recurring problem is still there; especially on controlling the contagious diseases which can be avoided by getting vaccination. Basically vaccines are available to prepare one's body to be immune from various diseases such as pertussis, measles, chickenpox, diphtheria, polio and many more.

However, there are still some Malaysians refuse to be injected with vaccines and would take risk of being infected by any diseases. The presence of this group of people called 'anti-vax' is something that should not be neglected by all, especially the Ministry of Health. They are not only rejecting immunisation programme but also spreading false ideology regarding vaccines and also influencing people to refuse to get vaccinated. To be said, there are inadequate convincing data about the factors that may affect the refusal of vaccination among the population in Malaysia. The aim of this study therefore is to determine whether there is any difference in the perception regarding vaccination among population in West Coast Peninsular Malaysia region and East Coast Peninsular Malaysia region, and also to establish the association between the demographic factors and the possible factors that lead to the vaccines refusal.

This study involved 240 respondents, 120 respondents from West Coast region (Kuala Lumpur and Selangor), and another 120 respondents are from East Coast region (Kelantan and Terengganu). The data is collected by distributing questionnaire. Total 240 respondents managed to answer the questionnaires well and the result obtained were analysed using JASP data analytical software.

The results obtained shows that in West Coast region, only 27.5% of respondents have negative perception regarding vaccination whereas in East Coast region, 62.5% of respondents have negative perception regarding vaccination. This perception is determined based on the respondents' answer in questionnaire in part B : PACV questions. The perception may have relation to the demographic factor especially the region that the respondents are coming from. As for information, Selangor, and Kuala Lumpur (west coast peninsular Malaysia) is crowded by non-local is referring to those who are not originally from Kuala Lumpur but have moved from other states in search of high salaried jobs. Whereas in Kelantan and Terengganu (East Coast Peninsular Malaysia) the residents there are originally from the same state.

This study results also shows that the religion restriction (10.83%) is the most leading factor of vaccination refusal among people in East Coast Peninsular Malaysia and followed by the fear of getting the side effects after

being injected with vaccine (10.00%) on the other hand, while in East Coast Peninsular Malaysia, The study results obtained shows that the same factor as in west coast, which is religious restriction (22.5%) as the main factor leading to vaccine refusal and followed by fear of getting side effects after the vaccine injection (17.50%). The percentage of respondents who consider the religion restriction as the factor who do not agree with vaccination, is higher in East Coast Peninsular Malaysia as they are more prone into Islamic teachings.

As for the association between demographic details with the factors of vaccination intake, this study found the most significant association is between the different religion group and the religion restriction in East Coast Peninsular Malaysia ($p < 0.001$), however in west coast region, the same association is not significant. At the same time, the employment status and time restriction also are significantly associated ($p = 0.01$) in both West Coast and East Coast Peninsular Malaysia. This may be due to the more the respondents are into their work, so the less time they have to go and get the vaccination in hospitals or medical centres. The p-value of this study is obtained by using Chi-square test in order to analyse the Data and produce one value that showing the association level of those two variables.

As recommendations, further studies needed to be conducted which may involve more states Kelantan, Terengganu and Pahang for East Coast Peninsular Malaysia and Selangor, Kuala Lumpur and Penang for West Coast Peninsular Malaysia. Besides from that, the number of respondents also can be increased in order to obtain more accurate result in future.

CONCLUSION

Based on this study, it can be concluded that this study is different at certain points than the previous study. Most of the respondents who have negative perception regarding vaccination are from East Coast region. This may be due to the strength and their attitude in East Coast Peninsular Malaysia which are more prone into Islamic teachings. All the possible factors of vaccination refusal are accepted by the respondents but varies in its prevalence as the leading factor determined that caused the vaccination refusal are religion restriction and the least percentage for the factor is time restriction.

ACKNOWLEDGEMENT

The authors need to express gratitude to all participants who willingly respond to the study questionnaire and enable the researchers to accomplish this study.

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