

## Relationship between Knowledge about Meningitis and Timeliness of Vaccination in Umrah Pilgrims

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### ABSTRACT

Meningitis is a global health problem that poses a high risk to Umrah pilgrims. WHO designated Saudi Arabia as a country that has a high incidence of meningitis (meningitis belt). Data from the Ministry of Health in 2024 is estimated at 10,658 cases of meningitis. Meningitis vaccination is a vaccination to protect against meningitis. The vaccine is given at least 14 days before departure to maximize immunity. Knowledge about vaccination is one of the factors that influence a person to vaccinate in a timely manner. This study aims to determine how the relationship between knowledge about meningitis vaccination and the timeliness of vaccination in umrah pilgrims at BKK class I Samarinda. Data collection using questionnaires on 166 respondents with the Chi-Square test. Of the 166 respondents, 98 respondents (59.04%) had a good level of knowledge and vaccinated on time, 7 respondents (4.24%) had a good level of knowledge and did not vaccinate on time, 13 respondents (7.83%) had a sufficient level of knowledge and vaccinated on time, 41 respondents (24.7%) had a sufficient level of knowledge and did not vaccinate on time, 1 respondent (0.6%) had a poor level of knowledge and vaccinated on time, 6 respondents (3.61%) had a poor level of knowledge and did not vaccinate on time. The results of the chi-Square statistical test showed that there was a significant relationship between the level of knowledge about meningitis vaccination and the timeliness of vaccination ( $p=0.00001$ ).

### INTRODUCTION

Meningitis infection is an acute disease transmitted through droplets caused by *Neisseria Meningitis*. (1) Meningitis has an incubation period of 3-4 days, which can cause several symptoms. Several risk factors can cause meningitis, including traveling to a country with epidemics. (2) Indonesia is the country with the largest Muslim population in the world, which was recorded in June 2024; the number of Muslims in Indonesia was 245.93 million people or 87.08% of the total population of Indonesia. This makes many Indonesians perform Umrah in Saudi Arabia. As of September 2024, the number of Indonesian Umrah pilgrims who have left for Saudi Arabia reached almost 2 million people. WHO has designated Saudi Arabia as one of the countries with a high incidence of meningitis (meningitis belt). (3)

According to data from the Ministry of Health, in 2024, there are an estimated 10,658 cases of meningitis. Therefore, based on the circular letter of the Secretary General of the Ministry of Health No. HK.02.02/A/3717/2024 concerning the implementation of Meningitis Vaccination in Hajj and Umrah Pilgrims, every prospective hajj and Umrah pilgrim entering Saudi Arabia must carry out meningitis vaccination as an absolute requirement and after vaccination will be given an International Certificate Vaccination (ICV) which will be used for a travel visa to Saudi Arabia (5). Meningitis vaccination is a special vaccination given to the public to protect themselves against diseases in certain situations, such as performing Umrah (6). The meningitis vaccine is given at least 14 days before departure, it is expected to form immunity effectively when entering the destination country (7,8). Therefore, it is important to vaccinate against meningitis on time. Knowledge about vaccines is one factor that influences a person to vaccinate on time (9). The existence of knowledge makes a person aware of the causes and consequences of their actions, such as vaccination (10). If a person has sufficient knowledge about the meningitis vaccine, they are expected to vaccinate meningitis on time. If a person vaccinates promptly, then antibodies have been formed to protect themselves. Research conducted by Rhezka et al. (11) said there was a significant relationship between the level of knowledge and the timing of meningitis vaccination injections in prospective Umrah pilgrims at the Port Health Office (KKP) class II Of Pontianak.

Health Quarantine Center (BKK) class I of Samarinda is a Technical Implementation Unit (UPT) of the Indonesian Ministry of Health. It is under and responsible to the Director General of Disease Control and Health (Dirjen PP and P) and has main tasks and functions, one of which is to organize international vaccination services(12).

Based on the above background, the researcher is interested in knowing how the Relationship between Knowledge about Meningitis Vaccination and Timeliness of Vaccination for Umrah Pilgrims at BKK Class I of Samarinda.

## METHODS

This study is a type of quantitative research with a cross-sectional design to analyze the relationship between the knowledge level, and the timeliness of Meningitis vaccination carried out at BKK Class I Samarinda from November 06 to December 06, 2024. The sample in this study were prospective Umrah pilgrims who would take the Meningitis Vaccination and sign an Informed Concern. Exclusion criteria in this study are pilgrims aged  $\leq 17$  years. The total population in this study was 174 pilgrims with a sample size of 166 pilgrims with the accidental side formula by the inclusion and exclusion criteria where 166 pilgrims were  $> 17$  years old and became the sample size based on the inclusion criteria. This study uses Primary Data with Questionnaires. The questionnaire used is a Meningitis vaccine knowledge questionnaire containing 10 questions (13) in accordance with the questionnaire titled Questionnaire of Knowledge and Attitudes in Validated and Rehabilitated Health Research, where respondents can choose true or false answers according to the respondent has knowledge. Knowledge about meningitis vaccination is good if the percentage is  $> 75-100\%$ , sufficient if the percentage is  $56-74\%$ , and less if the rate is  $< 55\%$ . Timeliness of vaccination was seen from the registration form containing the departure schedule with the meningitis vaccine schedule. On-time if the distance between departures was  $\geq 14$  days and not on-time if  $\leq 14$  days.

Data analysis was performed using SPSS (Statistical Package for Social Sciences) version 27. Variables to be assessed univariately were knowledge about meningitis vaccine, age, gender, education level, occupation, and timeliness of meningitis vaccine. The variables evaluated bivariate are the relationship between knowledge about meningitis vaccination and the timeliness of vaccination in Umrah pilgrims. The relationship between these two variables will be analyzed using the chi-square statistical test with a 95% confidence level and a significance level of 0.05. If the p value  $> 0.05$  indicates results that are not meaningful or unrelated between the two variables. In comparison, the p-value  $< 0.05$  indicates meaningful or related results between the two variables.

## RESULT AND DISCUSSION

### RESULTS

#### Univariate Analysis

Table 1. Results of Univariate Analysis of Respondents Characteristics at BKK Class I of Samarinda

Characteristics n=166	Total	
	n	%
Age		
17-25 Years (Late Teens)	12	7,23
26-35 Years (Early Adulthood)	24	14,46
36-45 Years (Late Adulthood)	39	23,49
>46 Years (Elderly)	91	54,82
Gender		
Male	62	37,35
Female	104	62,65
Education		
Elementary School	3	1,81
Junior High School	3	1,81
Senior High School	99	59,64
University	61	36,75
Jobs		
Housewife / Not Working	61	36,75
private employee	65	39,16
Students and Scholars	7	4,22
Retired	13	7,83
Civil Servants (ASN)	20	12,05

Knowlegde Level			
	Good	105	63,25
	Simply	54	32,53
	Less	7	4,22
Timeliness			
	No	54	32,53
	Yes	112	67,47

Source: Data primer 2024

Table 1. Shows the results of 166 respondents obtained the results of most respondents aged > 46 years in the elderly category, namely 91 respondents (54.82%), respondents with the most gender are female with a total of 104 respondents (62.65%), the highest level of education is high school with a total of 99 respondents (59.64%). Most work is done by private employees, with as many as 65 respondents (39.16%). Most respondents had a good level of knowledge about the meningitis vaccine, as many as 105 respondents (63.25%). For the timeliness of carrying out meningitis vaccination, most respondents carried out meningitis vaccination on time, namely 111 respondents (67.47%).

### Bivariate Analysis

Table 2. Results of Bivariate Analysis of Level of Knowledge on Timeliness of Vaccination

Variables	Timeliness of meningitis vaccination		P-value
	No	Yes	
Knowledge Level			0.00001
Good	7	98	
Simply	41	13	
Less	6	1	

\*Chi-Square Test, P=0,00001

In Table 2. it can be seen that respondents who have a good level of knowledge are more likely to vaccinate against meningitis on time, as many as 98 respondents (59.04%) compared to a good level of expertise but do not vaccinate on time as many as 7 respondents (4.24%). The Chi-Square test results obtained a value of  $p=0.00001$  where the  $p$  value  $\leq 0.05$ , so the study concludes that there is a significant relationship between the level of knowledge about meningitis vaccination and the timeliness of meningitis vaccination in Umrah pilgrims.

## DISCUSSION

### *Relationship between Knowledge about Meningitis Vaccination and Timeliness of Vaccination in Umrah Pilgrims at BKK Class I Samarinda*

Chi-Square test results In this study showed a relationship between knowledge about meningitis vaccination and timeliness with a consequence of  $p = 0.00001$ . This result is supported by research conducted by Rhezka et al., which showed a relationship between the level of knowledge and the timeliness of meningitis vaccination ( $p = 0.028$ ). According to the Health Belief Model theory by a group of social psychologists at the United State Public Health Service, which contains the theory of action adoption, where the theory explains that knowledge, experience, and information obtained by individuals will greatly influence health behavior that will be carried out such as the desire to prevent a disease by getting vaccinated (14). Another theory by Lawrence Green and M. Kreuter states that the higher the knowledge about a disease, the higher the prevention efforts can be made. Both theories are in line with this study where a good level of expertise is related to the timeliness of meningitis vaccination (15). There is a relationship between a good level of knowledge and the timeliness of carrying out meningitis vaccinations; this is because knowledge results from "knowing," and this occurs after people do the sensing of certain objects. Sensing of particular objects. Objects are seen through the five human senses: sight, hearing, smell, taste, and touch. At the time of sensing to produce knowledge, it is greatly influenced by the intensity of attention to the perception of the object.

Most human knowledge is acquired through the eyes and ears. Objects are seen through the five human senses of sight, hearing, smell, taste, and touch. The intensity of attention greatly influences the time of sensing to produce knowledge of the perception of the object. Most human knowledge is obtained through the eyes and ears (16). In addition to the level of expertise, age and education level also affect the timely implementation of meningitis vaccination. Before the meningococcal meningitis vaccination is carried out, Umrah pilgrims will also be educated on the importance of timely meningitis vaccination to maximize the formation of antibodies and the risk of transmission of meningitis, which is very dangerous.

### CONCLUSIONS

In this study, it can be concluded that there is a relationship between the level of knowledge about meningitis vaccination and the timeliness of vaccination with  $p=0.00001$  where respondents who have a good level of understanding will carry out meningitis vaccination promptly as many as 98 respondents (59.04%) higher than respondents who have a good level of knowledge but do not vaccinate meningitis promptly as many as 7 respondents (4.24%).

Future researchers should conduct further research on other variables that influence the timeliness of vaccination, such as the affordability of health service locations, the cost of vaccination, and the respondents' activeness on social media.

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