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ORIGINAL ARTICLE

Nursing knowledge, attitude, and practice to influenza vaccination at suburban hospital in West Java, Indonesia

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Keywords

Attitude • Influenza vaccination • Knowledge • Nurses • Practice

Summary

Background. *High epidemiology of influenza in the world and Indonesia causes some groups to have high risk for getting infected with influenza, one of which is healthcare workers. The low rates of influenza vaccination among healthcare workers, especially in nurses, raise the need for an educational strategy to prevent influenza. This study aimed to measure the level of knowledge, attitude and practice among nurses in suburban hospital in West Java.*

Method. *This was a cross-sectional study with a random sampling method which started on July-August 2018 at Annisa Medical Center General Hospital. Knowledge, attitude, and practice of research subjects were measured using questionnaire containing 37 items. The questionnaire was the result of adaptation of several questionnaires and a validity test has been was conducted. The data obtained was then analyzed descriptively by the proportion of the score of knowledge, attitude, and practice.*

Results. *Of 104 respondents, 19% respondents had a low level, 74% respondents had a moderate level and 7% had a high level of knowledge toward influenza vaccination. For attitude, 67% of the respondents had a positive attitude and 33% respondents had a negative attitude. The study also showed that 58% of the respondents had a positive practice and 42% respondents had negative attitude.*

Conclusions. *Nurses possess adequate knowledge and showed a positive attitude and practice toward influenza vaccination. A continous educational strategy was needed to improve nurses' knowledge, attitude and practice about influenza vaccination.*

Introduction

The influenza virus is one of the main contributors to the increased morbidity and mortality due to respiratory disorders [1]. The World Health Organization (WHO) stated that there are 3-5 million cases of influenza in the world every year [2]. The data in Indonesia shows that from > 10 samples with respiratory diseases examined, 30% were influenza positive [3]. The groups with a high risk of influenza includes pregnant women, children under 5 years old, people with chronic diseases, and health professionals [1, 4].

A study conducted by Kuster et al. [5] in Toronto Ontario, Canada on the incidence of influenza in healthy adults and health professionals suggested that health professionals are exposed to a higher risk of influenza compared to non-health professionals. It is indicated by the fact that approximately 50% of health facilities experience influenza outbreaks every year. Health professionals may transmit back the influenza virus to their patients, thus leading to the increased rate of nosocomial infections in hospitals.

The incidence of influenza among health professionals should be prevented by administrating the influenza vaccine. Some studies suggest that vaccination for health professionals can reduce patient mortality rate up to 55% [6]. A study conducted by Loulergue [7] in Paris, France, concerning vaccination related to health professions stated that the coverage of the influenza vaccine administration in health professionals is still low. Health professionals who work in suburban and rural areas have lower vaccination rates compared to those who live in urban area [8]. Nurses have the lowest vaccination rates among other health professionals, although they are the ones who spend most time in contact with patients [9].

The low rate of vaccine administration in health professionals, especially nurses is due to several factors. A research conducted by James et al. [10] in Sierra Leone from February to April 2016 on the knowledge and attitude of health professionals related to the influenza vaccine suggested that influenza vaccination coverage is highly correlated with knowledge about influenza and influenza vaccine. Some nurses are still afraid of the side effects resulting from the administration of influenza vaccine, and unaware of the importance of vaccination [11].

The high risk of health professionals exposed to influenza and the low rate of influenza vaccination, especially in nurses, has led to the need for educational strategies for the prevention of influenza. The study of knowledge, attitudes, and practices are the most commonly researched

to develop educational strategies in the disease prevention stage [12]. The research of knowledge, attitudes, and practices (KAP) in a population can describe what has been known, believed, and done related to particular topic [13]. From here, the level of knowledge, attitudes, and practices of a population can be identified, which are useful in developing programs for the control, education, and prevention of a disease [14].
Data on the level of knowledge, attitudes, and practices is important in the treatment and prevention of a disease [12]. No research has been conducted so far on nurses in Indonesia about their level of knowledge, attitudes, and practices regarding influenza vaccine. So, this study aimed to identify the level of knowledge, attitude and practice of nurses in our setting associated with influenza vaccine.

Methods

This study was conducted between July-August 2018 at the *Annisa Medical Center* (AMC) General Hospital using a descriptive cross-sectional study design. The subjects of the study were all nurses working at the AMC General Hospital, Cileunyi, Bandung. Nurses who were unwilling or refused to sign the informed consent were excluded. Samples were taken by simple random sampling method using a random figure table. The minimum sample number required in this study was 97, determined on the basis of the categorical descriptive formula of the study.
The data in the present study were obtained from the responses given to the 37 items of the questionnaire. The questionnaire was adapted from several questionnaires and was subject to the validation test process. The questionnaire consists of items about the characteristics of the respondents and questions about knowledge, attitudes, and practices of nurses regarding influenza vaccine. The knowledge questions consisted of 19 items about the definition, epidemiology, etiology, risk factors, classification, transmission, clinical manifestations, treatment, and prevention of influenza as well as the objectives, benefits, recommendation-giving, contraindications, and influenza vaccination schedule. Questions on attitude consisted of 10 items, and the questions on the practice consisted of 8 items, both in the form of Likert scale. Five point Likert scale was used to assess attitude (5 = Strongly agree, 4 = agree, 3 = neutral, 2= disagree, 1 = strongly disagree for positive attitudes statements, while 5 = strongly disagree, 4 = disagree, 3 = neutral, 2 = agree, 1 = strongly agree for negative attitudes statements) and practice (5 = very frequently, 4 = frequently, 3 = occasionally, 2 = rarely, 1 = never for positive practices statements, while 5 = never, 4 = rarely, 3 = occasionally, 2 = frequently, 1 = very frequently for negative practices statements) related to influenza vaccination.
The validity and reliability test of the questionnaire was conducted between June-July 2018 and repeated twice. The first validity and reliability test of the questionnaire was carried out in clinics and health centers in Jatinangor on 20 subjects in accordance with the inclusion and exclusion criteria, while the second test was carried out in a private hospital in Jakarta on 35 subjects in accordance with the inclusion and exclusion criteria.
There were 26 questions on knowledge, 9 questions on attitudes and 8 questions on practices, which then became 31 questions on knowledge, 10 questions on attitudes, and 8 questions on practices after passing the first validity and reliability test phase. These questions were then reduced to 19 questions on knowledge, 10 questions on attitudes, and 8 questions on practices after going through the second validity and reliability test phase. The reliability test used α-Cronbach value, namely a reliability coefficient to see the consistency of a variable. In this study, $\alpha = 0621$ was for knowledge and $\alpha = 0778$ for attitudes and practices. Valid questionnaires were then given to the head nurse at the AMC General Hospital for distribution in accordance with the names of the nurses listed in the table of random numbers that had been given.
The data obtained were then analyzed descriptively according to the proportion of the scores obtained for knowledge, attitude, and practice. The scores of knowledge, attitudes, and practices obtained were then categorized. The level of knowledge was categorized as good, fair, and poor. It was included in a good category if > 75%, fair if 50-75%, and poor if < 50%. The attitude of the respondents was categorized as positive (percentage ≥ median) and negative (percentage < median). The practice of the respondents was categorized as positive (percentage ≥ median) or as negative (percentage < median).

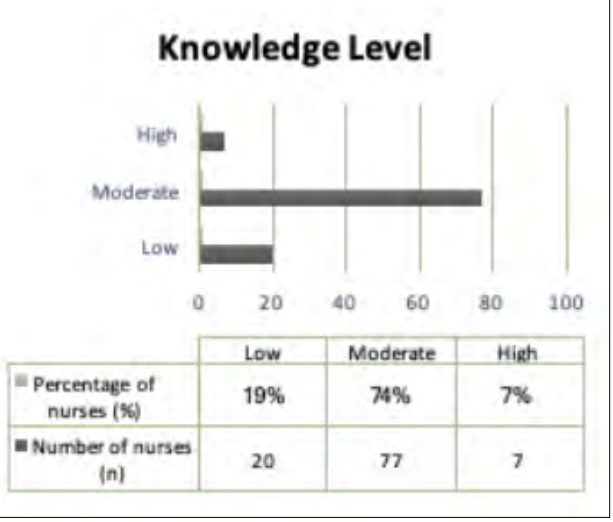
Results

In our setting, there were 104 nurses, who fully completed the questionnaires and all agreed to provide their informed consent. Of the 104 respondents, 64.4% (37) were females, and 35.6% (67) were males; 69 (66.3%) respondents were aged between 20-29 years, 31 (29.8%) 30-39 years, 3 (2.9%) 40-49 years, and 1 (1.0%) respondent was aged between 60-69 years. By education, 96 respondents (92.3%) held a D3 diploma, and by working hours, 76 respondents (73.1%) worked for a duration of ≤ 8 hours. Of the 104 respondents, 86 (82.7%) respondents had served for ≤ 9 years (Tab. I).
The responses to the knowledge questions instrument were about influenza vaccine (Tab. II). With regard to the question about knowledge, the majority of the respondents answered incorrectly to the following items: to item 8, 99 respondents (95.2%) gave the wrong answer; to item 16, 97 respondents (93.3%) gave the wrong answer; to items 17 and 19, respectively 76 and 75 respondents (73.1% and 72.1%) gave the wrong answer.
The respondents' knowledge about influenza vaccine showed that 20 respondents (19%) had a poor level of knowledge, 77 respondents (74%) had a fair level of knowledge, and only 7 respondents (7%) had a good level of knowledge (Fig. 1).

Tab. I. Characteristics of respondents.

Characteristics	Number (n)	Percentage (%)
Gender		
Male	37	35.6
Female	67	64.4
Age (years)		
20-29	69	66.3
30-39	31	29.8
40-49	3	2.9
50-59	0	0.0
60-69	1	1.0
Education		
D3 Nursing	96	92.3
S1 Nursing	8	7.7
Service term		
≤ 9 years	86	82.7
10-29 years	18	17.3
Total	104	100

Fig. 1. Distribution of subject by knowledge level.

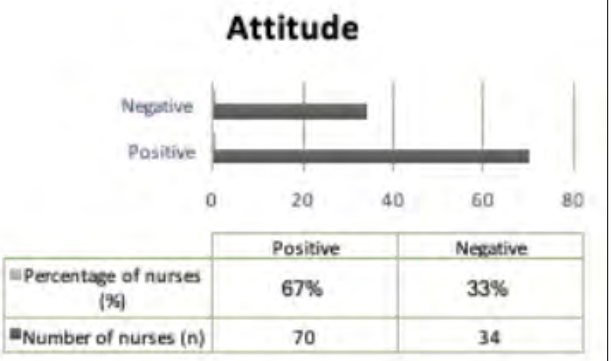


With regard to the questions regarding attitude towards the influenza vaccine (Tab. III), 31 respondents (29.8%) and 66 respondents (63.5%) respectively answered strongly agree and agree on item 6 about influenza vaccines.

The distribution of subjects according to the results of attitudes scores (Fig. 2), in showed that the median value of the questions on attitudes was 37 (range between 30 and 48). The results showed that 70 respondents (67%) had a positive attitude and 34 (33%) a negative attitude.

With regard to the practice, questions instrument about influenza and the influenza vaccine (Tab. IV), 94 respondents (90.4%) answered never to item 6 regarding

Fig. 2. Distribution of subject by attitude.



Tab. II. Responses to knowledge question instrument on influenza vaccine.

No.		True	False
		(n, %)	(n, %)
1.	The pathogen that causes influenza is divided into three types: A, B, and C.	99, 95.2	5, 4.8
2.	Influenza is a respiratory disease that attacks the upper and/or lower respiratory tract	85, 91.7	19, 18.3
3.	Influenza is an acute respiratory infection	94, 90.4	10 9.6
4.	Nurses have a small chance of of transmitting influenza to patients.	53, 51.0	51, 49.0
5.	Influenza virus can be spread through contact with hands or surfaces of people who have influenza	81, 77.9	23, 22.1
6.	Influenza vaccine can prevent influenza disease	101, 97.1	3, 2.9
7.	Mortality due to influenza globally is low	32, 30.8	72, 69.2
8.	Children, adults, and the elderly have the same risk of influenza infection	5, 4.8	99, 95.2
9.	Influenza vaccination in pregnant women can protect babies from the flu at birth	46, 44.2	58, 55.8
10.	The influenza virus can cause severe disease	88, 84.6	16, 15.4
11.	Severe influenza requires care in the Intensive Care Unit (ICU)	51, 49.0	53, 51.0
12.	Influenza vaccine for health professionals (nurses) is provided in the Regulatory of Minister of Health	89, 85.6	15, 14.4
13.	Influenza vaccine is safe to be given to people aged ≥ 65 years	67, 64.4	37, 35.6
14.	Influenza vaccination can save medical costs	79, 76.0	25, 24.0
15.	World Health Organization (WHO) gives recommendations for influenza vaccination of health professionals (nurses)	91, 87.5	13, 12.5
16.	Influenza is caused by infection with Haemophilus influenza	7, 6.7	97, 93.3
17.	A history of allergy to influenza vaccine is an indication of the next influenza vaccination.	28, 26.9	76, 73.1
18.	Adults can be infected with the influenza virus that usually affects animals	73, 70.2	31, 29.8
19.	Influenza vaccination in healthy adults should be done twice a year	29, 27.9	75, 72.1

Tab. III. Responses to attitude questions instrument on influenza vaccine.

No.		SA	A	N	D	SD
		(n, %)	(n, %)	(n, %)	(n, %)	(n, %)
1.	As a health professional, I am susceptible to influenza	42, 40.4	30, 28.8	26, 25.0	6, 5.8	0, 0.0
2.	I work in an environment that can increase the risk of influenza disease	38, 36.5	35, 33.7	26, 25.0	5, 4.8	0, 0.0
3.	In my opinion, influenza is not contagious disease	6 5.8	11, 10.6	5, 4.8	65, 62.5	17, 16.3
4.	I cannot transmit influenza virus to a patient, and vice versa	2, 1.9	10 9.6	11, 10.6	63, 60.6	18, 17.3
5.	In my opinion, influenza is not a dangerous disease	5, 4.8	23, 22.1	15, 14.4	50, 48.1	11, 10.6
6.	Influenza vaccine can protect me from being exposed to influenza	31, 29.8	66, 63.5	7 6.7	0, 0.0	0, 0.0
7.	In my opinion, the influenza vaccine can save medical costs	17, 16.3	57, 54.8	13, 12.5	16, 15.4	1, 1,0
8.	I'm afraid if there are side effects that arise after influenza vaccination	8 7.7	30, 28.8	25, 24.0	38. 36.5	3, 2.9
9.	I do not have influenza vaccination for fear of the contents therein do not correspond to my beliefs	2, 1.9	16, 15.4	25, 24.0	56, 53.8	5, 4.8
10.	I will go to the health facility if I feel symptoms such as fever, muscle aches, cough, runny nose and sore throat	25, 24.0	70, 67.3	6 5.8	3, 2.9	0, 0.0

SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

Tab. IV. Responses to practice questions instrument about influenza and influenza vaccine.

No.		VF	F	O	R	N
		(n, %)	(n, %)	(n, %)	(n, %)	(n, %)
1.	Do you go to a health facility when you have signs of cough, colds, and sore throat?	25, 24.0	31, 29.8	41, 39., 4	6 5.8	1, 1,0
2.	Do you use a mask when having signs of cough and cold?	33, 31.7	61, 58.7	8 7.7	2, 1.9	0, 0.0
3.	Do you wash your hands before and after contact with patients?	66, 63.5	34, 32.7	2, 1.9	0, 0.0	2, 1.9
4.	Have you ever recommended to have influenza vaccination?	6 5.8	28, 26.9	8 7.7	12, 11.5	50, 48.1
5.	Have you ever had *) influenza vaccination?	5, 4.8	4, 3.8	3, 2.9	5, 4.8	87, 83.7
6.	Do you have *) influenza vaccinations on a regular basis?	2, 1.9	2, 1.9	1, 1,0	5, 4.8	94, 90.4
7.	Have you ever taken your family to have regular influenza vaccination?	6 5.8	3, 2.9	3, 2.9	7 6.7	85, 81.7
8.	Have you ever read or attended an educational program about influenza and influenza vaccine?	6 5.8	12, 11.5	8 7.7	40. 38.5	38, 36.5

VF = Very Frequently; F = Frequently; O= Occasionally; R = Rarely; N= Never; * had/have = for yourself

the practice of influenza vaccine, and 85 respondents (81.7%) had never taken the family to regularly have an influenza vaccination.

With regard to the results of the practice of respondents, the median value in the practice question was 19 (range between 12 and 40); 60 respondents (58%) had positive practices and 44 respondents (42%) had negative practices (Fig. 3).

Fig. 3. Distribution of subject by practice.

Discussion

This study aimed to describe the knowledge, attitudes, and practices of nurses regarding the influenza vaccine. In this study, 77 nurses (74%) had a sufficient level of knowledge, 20 (19%) had a poor level of knowledge and 7 (7%) had a good level of knowledge. These results were similar to those obtained by James et al. [10] showing that the knowledge scores of health professionals are still lacking. Instead, our results did not agree with those obtained by Smith et al. [15], who found that nurses' level of knowledge about influenza and influenza vaccine was good.

Regarding the question about knowledge on influenza risk factors, 51% of respondents knew that nurses as health professionals could transmit influenza to patients. This result was lower than a study conducted in Bali [16] which found that 95% of respondents knew that influenza could be transmitted to the patient. The study also showed that 84.6% of respondents knew that influenza virus can cause severe illness. This is consistent with the results of the study conducted in Bali [16] where 84.7% of respondents agreed.

The results showed that 67% of the respondents had a positive attitude and 33% had a negative attitude. These results were consistent with the research conducted by Mojamamy et al. [17] concerning the prevalence, knowledge, attitudes, and practices related to health professionals regarding influenza vaccine, which showed that 65.2% of the respondents had a positive attitude. Of the respondents, 69.2% believed that health professionals are vulnerable to influenza, these results were lower than the results obtained by Mojamamy et al. [17] indicating that 91.2% of respondents agreed. In this study, 93.3% of the respondents agreed that influenza vaccine can prevent influenza, these results were higher than the results of research conducted by Mojamamy et al. [17] showing that 62.5% of respondents agreed. In this study, 26.5% of the respondents feared side effects caused by the vaccine.

The present study showed that 60 respondents (58%) had positive practices and 44 respondents (42%) had negative practices; 83.7% of the respondents had never had an influenza vaccine and 90.4% of respondents had never had it regularly. This result was much lower than the one obtained by Smith et al. [15], which showed that 78.8% of the nurses had influenza vaccination.

The study conducted by Zhang et al. [11] on knowledge and perceptions related to the influenza vaccine on nurses reported that the vaccination rate is influenced by the respondents' knowledge. The level of knowledge has a relationship in the action/education of the respondents [11]. Education is necessary for nurses to further improve the level of their knowledge and increase the level of influenza vaccination.

The limitation of this study is the existence of information bias at the time of completing the questionnaire and the results of this study cannot be generalized to describe the condition of the knowledge, attitude and practice of nurses working in all the suburbs in Indonesia because the study was only conducted in one hospital in the suburbs.

Conclusions and recommendations

Although there were gaps in their knowledge, attitude and practice, the nurses in this study were well informed about influenza vaccination, but 83.7% of respondents had never had influenza vaccine, and 90.4% of the respondents had never had a regular influenza vaccination. These results call for the development of institutional frameworks and policy guidelines to empower nurses' actions regarding influenza disease. The results of this study are also expected to become an input for hospitals, especially in our setting, to provide free influenza vaccination for health professionals.

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Conflict of interest statement

The authors declare no conflict of interest.

Authors' contributions

BPR was mainly responsible for data collection, with the contribution of LER. BPR was responsible for data analysis, with the contribution of AYS, HS, and LER. BPR, AYS, HS, and LER contributed to the preparation of the manuscript.

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