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Knowledge and Limitations Associated with the Uptake of Seasonal Influenza Vaccine among Nursing Students

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Abstract: **Aims and objectives. The aim of the current study was to assess the knowledge and limitations associated with the uptake of seasonal influenza vaccine among nursing students.**

Background: Yearly influenza vaccination for nursing students helps to decrease morbidity and mortality rate among nurses and patients as well. The research studies revealed that vaccination rates among nurses and nursing students are usually low.

Design: A descriptive, correlational, cross-sectional design was used.

Methods: 241 undergraduate nursing students from King Saud bin Abdulaziz University for health science (KSAU-HS) Riyadh Saudi Arabia were included. One tool was developed by researchers and consisted of three sections was used to measure the key variables; the first section was related to sociodemographic data, the second section consisted of twelve items to assess nursing students' knowledge While the third one consisted of nine items to assess the limitation associated with the uptake of seasonal influenza vaccine among nursing students.

Results: Regarding the knowledge, the total mean knowledge score was 6.48 ±1.8out of 11. The results indicated that there was a significant positive relationship between years of studying and total mean knowledge score among nursing students. As regards the limitation more than one third of participants answered that the side effect and safety concerns are hindering health care professional to get influenza vaccine.

Conclusions: The study concluded that the knowledge alone is not enough to increase influenza vaccine uptake rate, so the institution needs to establish workshops and educational sessions to modify the nursing student's attitudes toward the positive side.

Keywords: **Knowledge, Limitations, Seasonal Influenza Vaccine, Nursing Students.**

I. INTRODUCTION

Seasonal influenza is a respiratory tract infection disease. According to WHO three to five millions of cases get the disease and 250000 – 500000 deaths each year worldwide (Zhang, Bambrick, Mengersen, Tong, & Hu, 2018). The signs and symptoms of influenza appear 1-4 days and can be mild to severe. The virus approximately attacks 5-10% of adult and 20-30 % of children in the world and causes major levels of disease and death. The way of the transmission of the

virus can be from person to another through droplet or direct contact (Olatunbosuna, Esterhuizen, & Wiysonge, 2017). Every year in Saudi Arabia millions of Muslims from several countries visits the holy cities for Omera and Haj. This huge congregation causes the influenza transports to Saudi nationals and residents (Alqahtani, Althobaity, Al Aboud, & Abdel-Moneim, 2017). Immunization against seasonal influenza is an effective method to improve patient safety and will reduce the risk of getting influenza virus. Also, it is shortening the duration of the influenza and decrease the severity of the signs and symptoms of it. Moreover, influenza is contagious disease nursing students at high risk of getting influenza virus from the patient, and they may transmit the virus to the patient while providing care (Bonville, Domachowske, Cibula , & Suryadevara, 2017).

The flu vaccine is containing dead virus which cause the body create antibodies in fourteen days and improve the immune system. Uptake of influenza vaccine is an effective infection control measure for health care professionals. It is necessary to assess uptake of influenza among health care professionals because they contact with patient this will increase risk for getting flu. A cross-sectional study was conducted by James, Rehman, Bah, Lahai, Cole, Khan (2017) among health care professionals in many countries. In this study number of participate was 706. Number of women was 378 (53.6%), and nurses 425 (60.4%). The age of participate in this study was from 20 to 39 years old. Number of participate who vaccinated against influenza were only 46 from 706participate. The result show that the reasons why they did not take influenza vaccine were lack of awareness about the influenza vaccine 580 (82.73%), high cost of the vaccine 392 (55.92%).Some beliefs among health care professional were virus will transmit to other persons after symptoms appear 585 (84.3%) health care professional felt that the symptoms appear after exposure from 8 - 10 days 579 (83.2%), and half of HCPs were have lack of awareness about uptake of influenza immunization guidelines that are published by the Advisory Committee on Immunization Practices and Centre Disease Control 321 (46.0%).The result of this study found that few of the health care professionals taking the seasonal influenza vaccine. The most important barriers that made health care professional did not take influenza vaccine were the first was lack of awareness of vaccinations and availability. The second was high cost of the vaccine (James, Rehman , Bah , Lahai, Cole , & Khan , 2017).

One of the developmental study by Alshammari, Alfehaid ,AlFarih and Aljadey (2014) was done in six major hospitals in Saudi Arabia. Two hundred forty five unknown questionnaires were dispensed to a convenient sample staff. The validated questionnaire combines information about beliefs and knowledge toward flu vaccination, and knowledge about flu virus, current practice and understanding of published guidelines. The reasons were given by health care providers for not receive flu vaccine; were afraid of contracting disease (16%), some of them beliefs that they are not at risk from flu because they are healthy and young (13%), and being unaware of vaccine accessibility (13%). Non-accessibility of flu vaccine (43%) was the most noteworthy barrier for not giving vaccine for patients and health care providers taken after by safety concerns for the patient (35%) Very nearly 75% of HCPs no aware of the flu vaccination rules distributed by the Advisory Committee on Immunization Practices and Center Disease control. Finally, only little percentage of HCPs in Saudi Arabian hospitals is getting flu vaccine against influenza. The consideration of health strategy creators is expected to enhance compliance of HCPs with rules on flu immunization (Alshammari, AlFehaid L, AlFraih, & Aljadhey, 2014).

Another cross-sectional study conducted by Abalkhail, Alzahrany, Alghamdi, Alsoliman, Alzaharni, Gosadi and Tharker in (2015) was used to measure the rate of influenza vaccine uptake among medical student. Also, it associated with barriers and level of awareness. The study was done at university hospital in Saudi Arabia on 421 medical student using questioner surveys in 2015. The result show misbelieves of effectiveness of influenza vaccine (14. 5%).The uptake rate of influenza vaccine was (20.7) in 2015. Barriers of vaccination constituted, supposition of not being at danger of influenza (37.9%). Vaccine side effects were (28.9). Knowledge levels were inadequate, and men scored lower (5.4 ± 1.7) than women (6.5 ± 1.4). Knowledge and uptake of the flu vaccine was inadequate (Abalkhail, et al., 2015).

Additional study by Anina, Stuart, Dunja, David, and Bernice in (2017) stated that yearly influenza vaccination of nursing and nursing students help to decrease morbidity and mortality rate among patients, Vaccination rates among nurses and nursing students are usually lower than those of physicians are. Nursing and nursing students more aware of the risk, they may be present to their patients by refusing the influenza vaccination. This study identified common reactions of nursing staff and nursing students towards applying measures to develop influenza vaccination; by permit, they discuss the problem. Best understanding of their attitudes and knowledge could help to direct interventions to raise vaccination rates (Pless , Shaw , McLennan , & Elger, 2017).

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Zhang, While, and Norman (2010) state that there is a strong relationship between nurses' knowledge and receiving vaccine. Also, there is a relationship between taking the flu vaccine shot and perception of the seasonal influenza as a thoughtful illness and the vaccine shot as an effective solution. In addition, taking the vaccine among the nurses and nursing students is depending on their knowledge of influenza virus and influenza vaccine. The higher nurses' knowledge is the higher the rate of taking the vaccine. Available free vaccine, experts' recommendation of flu vaccines, convenient process, and reduce the side effect of flu vaccine shots will increase the influenza vaccine rates (Zhang, While, & Norman, 2010).

Significance of the study

The effectiveness of influenza vaccine is protecting nursing student by reducing infections also reduce mortality and morbidity. It helps in reducing symptomatic and asymptomatic infection and illness. Influenza vaccine makes the disease milder when the person gets sick. Influenza vaccine reduces the number of hospitalization and the absence rate among nursing student. Therefore, this study conducted to assess the knowledge of Influenza vaccine among nursing student (Loulergue, et al., 2009).

II. AIM

The aim of the current study was to assess the knowledge and limitations associated with the uptake of seasonal influenza vaccine among nursing students

Research Questions: what are the knowledge and limitations associated with the uptake of seasonal influenza vaccine among nursing students?

III. MATERIAL AND METHODS

III.1. Study design.

To achieve the aim of the study a descriptive, correlational, cross-sectional design was used.

III.2. Setting.

This study was carried out in college of nursing at King Saud bin Abdulaziz University for health science (KSAU-HS) which is located in the capital of Saudi Arabia, Riyadh. College of nursing is a governmental college which was established in 2005. It provides free Bachelor of Science in Nursing (BSN) programs for Saudi female only. The program consists of four years. The first two years are pre-professional phase and the second two years are professional phase plus one year internship.

III.3. Study sample:

241 undergraduate nursing students in king Saud bin Abdulaziz university for health science KSAU-HS were recruited in the study with the following inclusion criteria; age 18-30 years old, females, registered in the collage of nursing-Riyadh, Saudi Arabia. Internship nursing students were excluded from the study.

III.4. Sampling Technique:

After the approval by the Institutional Review Board (IRB) of King Abdullah International Medical Research Center (KAIMRC), which is affiliated to National Guard Health Affairs, Riyadh, Saudi Arabia. The researchers distributed the questionnaire among the pre- professional students who met the inclusion criteria and professional students as well. The questionnaire was distributed during breaks between lectures. The researchers requested the participants to deposit the questionnaire in locked boxes outside each class to maintain confidentiality. After data collection, the researchers gave a serial number to each questionnaire. The data collection was done on the period from October to November, 2018.

III.5. Research Instruments: Data collection:

One tool was developed by researchers consisted of three sections. The first section consisted of eight items related to sociodemographic data as age, years of study and marital status. The second section consisted of twelve items related to knowledge associated with the uptake of seasonal influenza vaccine among nursing students. The third section consisted of nine items related to the limitation associated with the uptake of seasonal influenza vaccine among nursing students. Validity and reliability; The content validity of the questionnaire were assessed by 3 experts in the field of the study.

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Reliability was assessed using Cronbach Alpha and was 7.81, a pilot study was applied to ensure unification on 25 subjects to assess the clarity and applicability of the study tool then they were excluded from the study sample.

III.6. Data Analysis

Data entry, cleaning, and analysis were done using SPSS software (Version 20.0). Frequencies and percentages were used for categorical data while the one way ANOVA test was used to study the relationship between years of studying and total knowledge score with a p-value of < 0.05 considered significant.

III.7. Ethical considerations:

Before conducting the study, the study was approved by research Unit of King Saud bin Abdulaziz University for Health Sciences, college of nursing and Institutional Review Board (IRB) in king Abdullah International Medical Research Canter (KAIMRC), National Guard Health Affairs, Riyadh, Saudi Arabia. Each participant was informed about the purpose of the study. Informed consent was obtained. Each participant had the right to withdraw at any time. Participant privacy and confidentiality were assured, no identifiers were collected and data both hard and soft copies was stored within college of nursing premises and access by the research team only.

IV. RESULTS

Table 1. Frequency Distribution of the Socio-demographic characteristics and biomedical data of the Sample: (N =241)

Variable	Number	Percentage
Age group (years)	Mean ± SD	20.41±1.61
Years of studying		
First year	64	26.6%
Second year	52	21.6%
third year	66	27.4%
Fourth year	59	24.5%
total	241	100%
Marital status		
Single	226	93.8%
Married	12	5.0%
Divorced	2	0.8%
Widow	1	0.4%
total	241	100%
Have you ever got seasonal influenza virus?		
yes	181	75.1%
no	60	24.9%
Total	241	100.0%
How many times have you get influenza virus per year?		
0-2	187	77.6%
3-4	46	19.1%
5-6	7	2.9%
7-8	1	0.4%
Total	241	100.0%
In last 6-12 months have you vaccinated yourself against influenza?		
yes	80	33.2%
no	137	56.8%
never vaccinated	24	10.0%
Total	241	100.0%

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Are you plan to receive the vaccine this year?		
yes	92	38.2%
no	102	42.3%
not sure	47	19.5%
Total	241	100.0%
Number of times receiving the vaccine past 5 years?		
Non	89	36.9%
1-4 times	130	53.9%
annually	22	9.1%
Total	241	100.0%

Table 1. Showed frequency distribution of the socio-demographic characteristics and biomedical data of the Sample with total number of 241 female nursing student participated in this study. The age of participants ranged from 18 to 25 years old with total mean age ± SD was 20.41±1.61. Regarding the Years of studying they were recruited from all years with almost equal percentage. Most of participants (93.8%) were single. Most of the participants (75.1%) get seasonal influenza virus. 77.6% of the participants reported that they had influenza virus 0-2 times per year. More than half of the participants (56.8%) had vaccinated in past 6-12 months against influenza virus. around half of the participants (42.3%) didn't plan to get the vaccine in the future. More than half of the participants (53.9%) times received the vaccine 1-4 times in the past 5 years from past 5 years. However, a few participants (9.1%) were receive the vaccine annually.

Table 2: Frequency Distribution of Knowledge Associated with The Uptake of Seasonal Influenza Vaccine among Nursing Students (N =241)

Variable	correct		wrong	
	Number	Percentage	Number	Percentage
What is etiology agent of influenza?	220	91.3%	19	7.9%
What are the most typical symptoms of influenza?	152	63.5%	88	36.5%
What are the possible routes of influenza transmission?	163	76.6%	78	32.4%
Why is influenzas considered as dangerous disease?	149	61.8%	92	38.2%
For whom influenza is especially dangerous?	142	58.9%	99	41.1%
Why vaccination against influenza should be administered every year?	141	58.5%	100	41.5%
When can a person become vaccinated against influenza?	172	71.4%	69	28.6%
What is the minimal age of influenza vaccination in children?	67	27.8%	174	72.2%
What is the content of influenza vaccine?	120	49.8%	121	50.2%
Why despite vaccination against influenza, one can get common cold?	102	42.3%	139	57.7%
The efficacy of vaccines has been proven	124	51.5%	116	48.1%

Table 2 showed the frequency distribution of knowledge associated with the uptake of seasonal influenza vaccine among nursing students with total number of 241 nursing student and revealed that the majority of them answered the aetiology

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agent of influenza correctly (91.3%). More than half of the participants (63.5%) reported the symptoms correctly whereas 36.5% answered wrong. The majority of them knew the the possible routes of influenza transmission (76.6%). More than half of the participants (61.8%) knew why influenza is dangerous. More than half of the participants (58.9%) knew for whom influenza especially dangerous. More than half of the participants (58.5%) knew why the influenza vaccine should administer every year and the (41.5%) had lack of knowledge. The majority (71.4%) knew when the person become vaccinated against influenza. Only few of the participants (27.8%) were aware of the minimal age of influenza vaccine in children.

Table 3. Relationship between years of studying and total mean knowledge score among Nursing Students (N =241)

Variable		Mean±SD	F	P
Year 1	6.25	± 1.7		
Year 2	5.9	± 1.89	5.410	0.001
Year 3	6.53	±1.73		
Year 4	7.18	±1.73		
Total	6.48	±1.8		

Table 3. showed the Relationship between years of studying and total mean knowledge score among nursing students with total number of 241 nursing student and revealed that After comparing the mean between all years, the result showed that there was similarity in the mean between the first, second and third years. Out of 11 the mean for the first year was 6.25, second year was 5.9 and the third year was 6.53. The mean for the fourth year was 7.18 which were the highest score among all years and the results indicating that there was a siginficant positve relationship between years of studying and total mean knowledge score among nursing students.

Table 4: Frequency Distribution of limitation Associated with The Uptake of Seasonal Influenza Vaccine among Nursing Students (N =241)

Variable	Strongly agree		agree		Don't know		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
Influenza is not serious condition therefore not worth vaccinating against	15	6.2	55	22.8	38	15.8	81	33.6	52	21.6
Influenza vaccine is costly that is why not purchased normally	10	4.1	40	16.6	92	38.2	49	20.3	50	20.7
There is insufficient staff to administer vaccine	15	6.2	50	20.7	79	32.8	49	20.3	48	19.9
Side effect and safety concerns are hindering health care professional to get vaccine for influenza?	19	7.9	78	32.4	93	38.6	36	14.9	15	6.2
Due to needle fear I don't like to get vaccinated	16	6.6	42	17.4	38	15.8	60	24.9	85	35.3
the vaccine is not effective?	8	3.3	32	13.3	60	24.9	84	34.9	57	23.7
The vaccine is more dangerous than the virus?	13	5.4	23	9.5	60	24.9	79	32.8	66	27.4
The flu is not serious?	10	4.1	43	17.8	40	16.6	97	40.2	51	21.2
Fear of contracting illness?	19	7.9	76	31.5	77	32.0	47	19.5	21	8.7

Table 4 showed the frequency distribution of limitation associated with the uptake of seasonal influenza vaccine among nursing students with total number of 241 nursing student and revealed that more than one third of the participants

(33.6%) disagreed regarding that the influenza is not serious condition therefore not worth vaccinating against. The highest percentage (38.2%) didn't know if influenza vaccine is costly while (20.7%) were strongly disagree. 20.7 % of the participants were agree that there is insufficient staff to administer the vaccine, However; 20.3% of the participants were disagree that there is insufficient staff to administer the vaccine. Almost one third of participants (32.4%) answered that the Side effect and safety concerns are hindering health care professional to get vaccine for influenza. the majority of the participants (32.8%) disagree with the statement "The vaccine is more dangerous than the virus. Only (13.3%) of the participant believes that the vaccine is not effective. The participants disagreed with the statement "the flu is not serious" were 40.2 %. However, 31.5% agreed with the statement "fear of getting illness".

V. DISCUSSION

The current study aimed to assess the knowledge and limitations associated with the uptake of seasonal influenza vaccine among nursing students.

Participants of the study were 241 nursing students with total mean age ± SD was 20.41±1.61. Most of the participants reported that they got seasonal influenza vaccine while minority of them reported that they never got the vaccine. This could be explained by the researchers point of view that the students exposed to extensive orientation from the university about the importance of influenza vaccine in addition to established clinics in the colleges of university which makes the vaccine being accessible and feasible to all students, contradicting with the study results the results of Alshammari, AlFehaid L, AlFraih , & Aljadhey (2014) who reported that the minority of subjects 38% of health care profession reported getting vaccinated. The current study results showed that more than half of participant have got influenza maximum twice. Additionally More than half of the participants (56.8%) did not vaccinated in past 6-12 months against influenza virus, this results is in congruent with Rogers, C Bahr, K(2018) who confirmed that the students were reported not receiving a seasonal influenza vaccination within the last 10 months. 49.4% of students agreed with the statement "I believe that as a result of the flu shot I may actually get the flu," 44.9% of students agreed with the statement "I do not have time to get a flu vaccination," 30.4% of students agreed with the statement "I believe that vaccines may have dangerous side effects.

More than half of the participants (53.9%) received the vaccine 1-4 times in the past 5 years from past 5 years,This could be explained by because the nursing students have health insurance and have access to health services to receive the influence vaccine.

Regarding the knowledge of students associated with The uptake of Seasonal Influenza vaccine the study showed that the fourth year students get the highest score which means that they acquired more knowledge than the first three year ,the study findings showed that the students have highest scores of knowledge in the etiology agent of influenza, possible routes of influenza transmission, symptoms of influenza and when a person can become vaccinated against influenza this consistent with the researcher`s point of view who emphasized that the Bachelor of Science in Nursing curriculum typically covered information about the vaccination. Since this is a part of the core curriculum, the weight of influence from receiving encouragement or information from a students may shift toward other sources. Additionally Kuchar, et al. (2018) showed that the majority of the participants answered the route of transmission correctly

Referring to the limitations associated with uptake of influenza vaccine, the current study result showed that the main limitations to vaccination were Side effect and safety concerns, fear of adverse effect reaction , some of students agreed that the flue is serious and the vaccine is more dangerous than the virus these findings nearly consistent with Ali,(2018) who showed that the majority of the participants afraid of the side effect associated with the uptake influenza vaccine , moreover the current study showed that there is misconception of influenza vaccine which is consistent with Hofmann , Ferracin , Marsh , & Dumas , (2006)who revealed the two main barriers to satisfactory vaccine uptake were consistently reported: the first one is misperception of influenza, its risks, the role of health care providers in its transmission to patients, and the importance and risks of vaccination, the second is lack of (or perceived lack of) conveniently available vaccine.

VI. CONCLUSIONS

The study concluded that the knowledge alone is not enough to increase influenza vaccine uptake rate, so the institution needs to establish workshops and educational sessions to modify the nursing student's attitudes toward the positive side.

VII. RELEVANCE TO CLINICAL PRACTICE

Assessessment of nursing student's knowledge and limitations associated with the uptake of seasonal influenza vaccine among nursing students could help to direct interventions to raise the vaccination rates.

VII. RECOMMENDATIONS

- Further studies are required to assess the knowledge and limitations associated with the uptake of seasonal influenza vaccine among different population and in different settings.
- The study can be replicated including larger sample size for better generalization.
- Accordingly , the researchers recommended to establish regular teaching campaigns to provide relevant and reliable information so can increase the uptake influenza vaccine among the medical and nursing students .

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