

## **Assessment of Nurses Role in Vaccination Sessions in Primary Health Care Units in El-Hossania City at Sharkia Governorate.**

**Fatma Abdalla Metwali<sup>1</sup>, Salwa Abbas Aly<sup>1</sup>, Hanaa Kassem Farg<sup>1</sup>, Mervat I. El-Shahat<sup>1</sup>**

<sup>1</sup>Community Health Nursing Department, Faculty of Nursing Zagazig University, Egypt.

### **Abstract**

Background: community health nurse consider cornerstone and play important role in vaccination session. The aim of the study was to assess the nurse's role in vaccination sessions in primary health care units in El-Hossania city at Sharkia governorate. Subject and Methods: research design: Descriptive study design was used in this study. Subjects: the study included 86 community health nurses. Setting: working in primary health care units in El- Hossania city. Tools of data collection: data collected by questionnaire to assess socio- demographic data and nurse knowledge, observation check list to observe nurses' practice. Results demonstrate that 55.8% from studied nurses had inadequate knowledge about vaccination and 60.5% from studied nurses had inadequate practice. Conclusion: There are more than half of studied nurses had inadequate knowledge about their role throughout vaccination session. Meanly two third of them had inadequate practice throughout vaccination session. Only one third of them had good practice. Recommendations: Health education programs to community health nurses should be offered at regular intervals about vaccines, different types of vaccines and nature of each vaccine. Educate nurses about proper method of cold chain and it's important for safety of vaccine and keeps its potency.

**Key words:** nurse's knowledge, nurse's practice, vaccination session.

### **Introduction**

Vaccination is the best known and the most successful application of immunological principles to human health. Vaccinations are one of the most effective ways to protect children from serious illness. WHO and UNICEF reported that one in every 10 children across the world did not receive vaccinations in 2016(1). Vaccines play important and central role in preventing infectious diseases. Now vaccines protect more children than before but nearly one in

five infants missed out on the basic vaccines. Low immunization levels and low maternal and child health associated with poor country (2). A vaccine is a biological preparation that progresses immunity against specific disease. A vaccine naturally contains an agent that resembles a disease producing microorganisms. The agent motivates the body's immune system to identify the agent as external, destroy it and recall it so that the immune system can more simply identify and destroy any of these microorganisms at any

time (3). Vaccines were classified into several different types. These types include live attenuated vaccine its live micro-organisms that have been cultivated under conditions which disable their virulent properties and not cause illness such as MMR combined vaccine and BCG vaccine. Inactivated vaccine it is killed microorganisms with heat or chemical substances such as pertussis and hepatitis A vaccine. Toxoids vaccines these are inactivated toxic compound from micro-organisms such as diphtheria and tetanus vaccines. Subunit and conjugated vaccine such as hepatitis B and Hib vaccines (4). According to American Academy of Pediatrics, 2018 vaccines should always be stored carefully beginning at the factory where they manufactured and at every stage until the moment they are given to child. Excess heat or cold will reduce the vaccine potency and damage them. The cold chain contains three main components equipment for vaccine transport and storage, well trained personal and efficient management procedures (5). Community health nurse play a vital role in prevention of communicable diseases, but successful prevention depends up on knowledge of causation, dynamics of transmission, identification of risk factors and risk groups, availability of prophylactic or early detection and treatment measures. Health care centers for applying these

measures to appropriate person and continuous evaluation and development of procedures applied so community health nurse should be well training about all these factors (6). Community health nurse play an important role in administration of different types of vaccines because every type of vaccine administrating in different pattern. The community health nurse educated parents, family and community about the risks of infectious diseases that vaccines prevented from them. Community health nurse should demonstrate to parents and family the risks that may associate with vaccines and highlight the benefits from vaccinations to their children (7). According to World Health Organization WHO, immunization all over the world have been weak, although immunization prevent 2 to 3 million death each year, there are 1.5 million deaths cannot be occur if vaccines reach all child in the world , almost 1 in 5 children universally are still lost routine immunization for infectious diseases. for the period of world immunization week 2016, WHO focus on up to date immunization coverage and out lines future steps required to meet global vaccination goals by 2020 (8). According to United Nations Children's Fund in Egypt. UNICEF Egypt continuous working with the ministry of health and population to support the expanded program on immunization contributing to the

successful introduction of new vaccines and managing outbreaks of the measles that occur at the end of 2014 and to keep Egypt as a polio free country. There are about 15 million children under five years are received polio vaccine, about 23.2 million children are given MR vaccine and about 2.7 million under 18 months are given routine immunization such as DPT, BCG, MMR. (9). The present study was aimed to assess the nurse's role in vaccination sessions in primary health care units in El-Hossania city at Sharkia governorate through the following: To assess the nurse's knowledge about vaccination; To assess the nurse's practice throughout vaccination session; To achieve the above purpose of this study, the following questions should be answered: Are there relationship between nurse's knowledge and their practice in vaccination sessions.

### **Material and method**

**Subjects and methods:** This section covers the methodological approach used to assess nurse's role in vaccination sessions in primary health care units in El-Hossania city at Sharkia governorate.

**Study design:** Descriptive study design was used in this study.

**Study setting:** The study was carried out at health care units in primary health care in El-Hossania city at Sharkia governorate (24 health care units).

**Study population:** All nurses working at health care units during the period of the study.

**Tools of data collection:** In order to collect the necessary data, two tools were used:

**First tool a structured interview questionnaire** retrieved from Saad (10) sheet was designed and consisting of two parts as the following:

**First part Socio-demographic characteristics** such as nurses age, educational level, number of years of experience, social status, and attending training program about vaccinations.

**Second part:** to collect data about nurse's knowledge about vaccination and their role throughout vaccination session.

**Scoring system:** every complete right answer takes 2 and every incomplete take 1 and wrong take zero then after summation any case get 75% of total score or more considered adequate knowledge.

**Second tool Observational check list** were used to observe the nurse practice throughout vaccination session.

**Scoring system** done take 1 and not done take zero then after summation any case get 75% of total score or more considered adequate practice.

**Content validity:** After developing tools and before data collection, the content of data collection tools had been tested from five experts' consultant in the field of the study.

**Pilot study:** The pilot study was carried out on 10% of the sample (8 nurses). It was conducted before data collection to test the applicability of the tools and techniques. According to the results of the pilot study, items were corrected, modified, omitted or added.

**Field work:** El- Hossania city was in northern region in Sharkia governorate and away from Zagazig city about 75 km<sup>2</sup> and about 120 km<sup>2</sup> from Cairo. The area of El-Hossania center is 1558.68 km<sup>2</sup> or 31.7% for the total area of the Sharkia governorate. A full explanation about nature and objectives of the study was carried out to the nurses in primary health care units in El-Hossania at Sharkia governorate. The aim of the study was explained to every nurse before starting data collection. The present study included 86 nurses working in 24 primary health care units. Staff nurses worked in these units introduced health care to approximately 384,670 children. Data were collected within four months period started between November 2017 and February 2018. There are from one to three nurses in every health care unit. The primary health care units were working from one to two days in vaccination session and another two days working in family planning and antenatal care every week. The average time taken for filling each sheet was approximately 25- 30 minutes. Every nurse was reassured that the

information obtained was confidential and would be used only for the purpose of the study.

**Administrative design:** An official letter was issued from the faculty of nursing, Suez Canal University to the directors of the selected health care units to obtain their permission to conduct the study.

**Ethical considerations:** The aim of the study was explained to health care units directors and nurses the purpose of the study and its importance to take the permission for conducting the study, were assured them that confidentiality were maintained and the nurses had the right to refused participation and withdrawal at any time. The study was reviewed by the research ethics committee (REC) in the Faculty of Nursing, Suez Canal University.

**Statistical design:** Data collected throughout history, questionnaire and checklist outcome measures coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) (Statistical Package for the Social Sciences) software for analysis. According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean  $\pm$  SD, the following tests were used to test differences for significance. Difference and association of qualitative variable by Chi square test ( $X^2$ ). Differences

between quantitative independent groups by t test, correlation by Pearson's correlation. P value was set at  $<0.05$  for significant results &  $<0.001$  for high significant result.

**Limitations of study:** There was limitation of the study related to the nurses this limitation concerned in number of nursing staff working in primary health care units. There was shortage in nursing staff that lead to work overload and the nurse had not enough time to participate with researcher.

### Results:

Table (1) shows that, 59.3% of the studied nurses their age ranged from 30 to 35 years old and 51.2% of them experience in vaccination 5-15 years and 95.3% of them nursing diploma. Most of them 93.0% were married, 93.0% having children and 77.9% of nurse attended training program about vaccination

Table (2): shows that, all nurses had complete correct knowledge about important of vaccination, vaccine lost its potency and 97.7% reported complete knowledge regarding types of vaccine. While 90.7%, 73.3% and 67.4% had incomplete knowledge about component of different types of vaccine, the aim of vaccination and the causes of losing vaccine its potency respectively. Figure (1): portray the total nurse knowledge regarding vaccination. According to the figure 55.80% of studied nurses had inadequate knowledge. Table (3):

illustrated that, all nurses had complete knowledge about arrangement of DPT, measles and pentavalent vaccine in refrigerator. While 65.1% of them had incomplete knowledge about the arrangement of BCG vaccine in the refrigerator. Table (4): shows that, 62.8%, 81.4% and 97.7% had complete knowledge about role of nurse after session end, bottle of vaccine not using it during session and documentation of vaccine respectively. While 61.6% and 66.3% had incomplete knowledge about role of nurse before session and amount of vaccine using it during session and less than half of them (43.0 %) had in complete knowledge about role of nurse during vaccination session. Figure (2): portray the total nurse's practice regarding vaccination. According to the figure 60.50% of studied sample had inadequate practice.

Table (5): shows that, there was statistical significance relation between adequate knowledge, Bachelors and training nurses. Table (6) shows that, there was statistical significantly relation between adequate practice, Bachelors and not married nurses. Table (7): illustrate that, no statistically significant positive correlation between nurse's knowledge and nurse's practice.

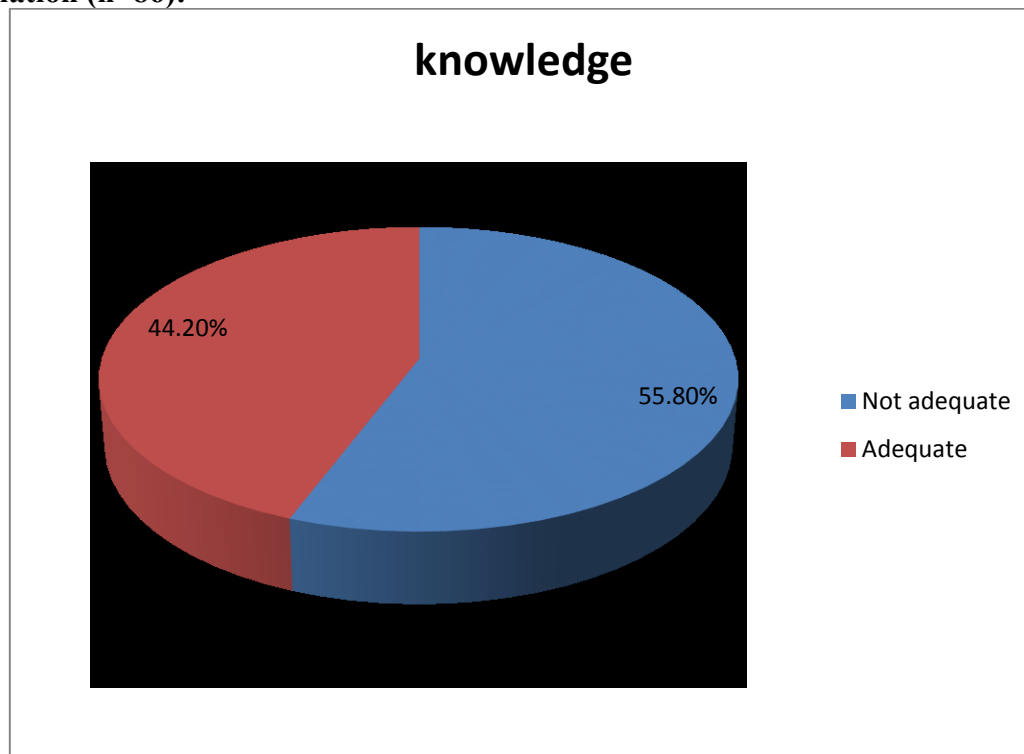
**Table (1) Distribution of studied nurses according to their socio-demographic characteristics (n= 86):**

Socio-demographic characteristics.		Number	Percent %
Age	30-35	51	59.3
	>35 -40	18	20.9
	> 40	17	19.8
Experience	<5	2	2.3
	5-15	44	51.2
	> 15	40	46.5
Level of education	Diploma	82	95.3
	Bachelors	4	4.7
Marital status	Married	80	93.0
	Widow	2	2.3
	Divorced	4	4.7
Having children	Yes	80	93.0
	Not	6	7.0
Training program	Yes	67	77.9
	Not	19	22.1

**Table (2): Distribution of studied nurses according to their knowledge about vaccination (n=86).**

Nurses knowledge about vaccination		Number	Percent %
1- Is important to vaccinate children against specific disease?	Complete	86	100.0
	Incomplete	0	0.00
2- Diseases need to vaccination.	Complete	35	40.7
	Incomplete	51	59.3
3- What are types of vaccines?	Complete	84	97.7
	Incomplete	2	2.3
4- When answered yes, what are these types?	Complete	8	9.3
	Incomplete	78	90.7
5- What is the aim from children vaccination?	Complete	23	26.7
	Incomplete	63	73.3
6- Are there contraindications to give vaccine?	Complete	55	64.0
	Incomplete	30	34.9
	Wrong	1	1.2
7- What are these contraindications?	Complete	8	9.3
	Incomplete	56	65.1
	Wrong	22	25.6
8- Does the vaccine lose its potency?	Complete	86	100.0
	Incomplete	0	0.00
9- List causes that lost vaccine its potency?	Complete	28	32.6
	Incomplete	58	67.4

**Figure (1): Distribution of studied nurses according to their total knowledge about vaccination (n=86):**



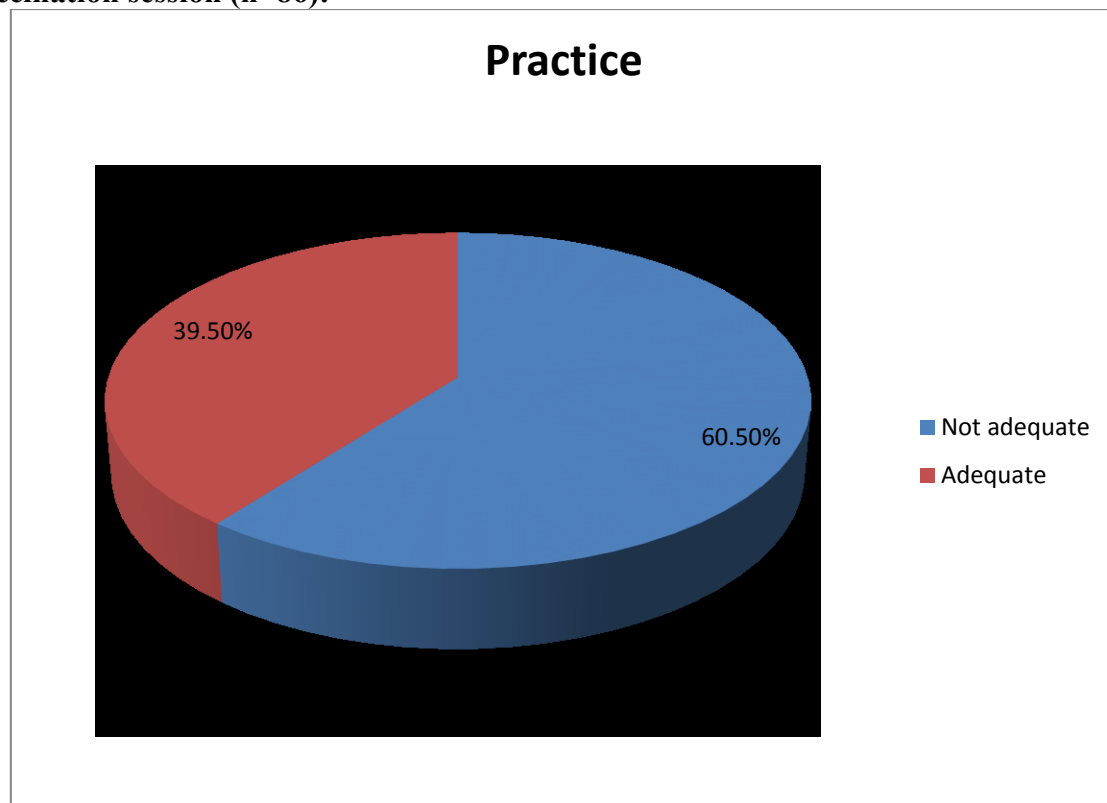
**Table (3): Distribution of studied nurses according to their knowledge about arrangement of different types of vaccines in refrigerator (n=86):**

Nurses knowledge about arrangement of different types of vaccine in refrigerator		Number	Percent %
1- Where put BCG vaccine in refrigerator?	Complete	26	30.2
	Incomplete	56	65.1
	Wrong	4	4.7
2- Where put polio vaccine in refrigerator?	Complete	77	89.5
	Incomplete	9	10.5
	Wrong	0	0.00
3- Where put DPT vaccine in refrigerator?	Complete	86	100.0
	Incomplete	0	0.00
	Wrong	0	0.00
4- Where put measles vaccine in refrigerator?	Complete	86	100.0
	Incomplete	0	0.00
	Wrong	0	0.00
5- Where put pentavalent vaccine in refrigerator?	Complete	80	93.0
	Incomplete	6	7.0
	Wrong	0	0.00

**Table (4): Distribution of studied nurses according to their role throughout vaccination session (n=86):**

Nurses roles throughout vaccination session		Number	Percent %
1- What is role of nurse before vaccination session?	Complete	33	38.4
	Incomplete	53	61.6
2- What is role of nurse during vaccination session?	Complete	49	57.0
	Incomplete	37	43.0
3- What is role of nurse after vaccination session?	Complete	54	62.8
	Incomplete	30	34.9
	Wrong	2	5.8
4- If there is amount of vaccine after session end, what you are doing?	Complete	5	27.9
	Incomplete	57	66.3
	Wrong	24	27.9
5- If nurse gets out the bottle and she doesn't use it, what is she doing?	Complete	70	81.4
	Incomplete	16	18.8
6- Where is vaccine document?	Complete	84	97.7
	Incomplete	2	2.3

**Figure (2): Distribution of studied nurses according to their practice regarding vaccination session (n=86):**





**Table (5): Association between socio-demographic characteristics and studied nurse's knowledge about vaccination (n=86):**

characteristics			KN		Total	X <sup>2</sup>	P
			Not	Adequate			
Education	Diploma	N	48	34	82	5.29	0.021*
		%	100.0%	89.5%	95.3%		
	Bachelors	N	0	4	4		
		%	0.0%	10.5%	4.7%		
Marital	Yes	N	44	38	82	3.32	0.068
		%	91.7%	100.0%	95.3%		
	No	N	4	0	4		
		%	8.3%	0.0%	4.7%		
Train	Yes	N	29	38	67	19.3	0.00**
		%	60.4%	100.0%	77.9%		
	No	N	19	0	19		
		%	39.6%	0.0%	22.1%		
Total		N	48	38	86		
		%	100.0%	100.0%	100.0%		

**Table (6) Association between socio-demographic characteristic and nursing practice in vaccination session (n=86):**

characteristics			Practice		Total	X <sup>2</sup>	P
			Not	Adequate			
Education	Diploma	N	52	30	82	6.41	0.011**
		%	100.0%	88.2%	95.3%		
	Bachelors	N	0	4	4		
		%	0.0%	11.8%	4.7%		
Marital	Yes	N	52	30	82	4.41	0.041*
		%	100.0%	88.2%	95.3%		
	No	N	0	4	4		
		%	0.0%	11.8%	4.7%		
Train	Yes	N	44	23	67	3.43	0.064
		%	84.6%	67.6%	77.9%		
	No	N	8	11	19		
		%	15.4%	32.4%	22.1%		
Total		N	52	34	86		
		%	100.0%	100.0%	100.0%		

**Table (7): correlation between total nurse's knowledge and total nurse's practice.**

		Total practice
Total knowledge	R	0.239
	P	0.103
	N	86

## Discussion

The current study shows that 59.3% from studied sample their age ranged between 30 to 35 years old all studied sample their age above thirty years old. This result agreed with Saad (10) in Zagazig city who reported that the majority of studied sample their age above thirty years old. This result agreed with Abd Al-wahid and Nagi (11) were reported that 54.3% from studied sample their age ranged from 40-49 years old. Also this result agreed with Masika et al (12) in Nairobi who reported that 30.7% from studied sample their age ranged from 40 – 49 years old. Regarding level of education, the current study shows that the majority of studied sample 95.3% had nursing diploma from secondary school of nursing. This result agreed with Saad (10) who reported that three fourth of studied sample had nursing diploma. This result also was in agreement with Masika et al (12) who found that 58.0% from studied sample were nursing diploma. This result disagreed with Abd Al-wahid and Nagi, (11) they reported that 58.6% from their studied sample had nursing technician institute. The current study shows that approximately more than three quarter 77.9% of studied sample had training program about vaccination. This result agreed with Abd Al-wahid and Nagi, (11) who found that 63.3% from studied sample had training program. This result also agreed with Taha,

(12) who found that most studied nurses have got training program about vaccination. This result disagreed with Saad,(10) who reported that more than half of studied sample not participate in training program about vaccination. This result disagreed with Shazly et al, (14) in Mounofia governorate who found that 47.9% from their sample not receiving training program. Also this result disagreed with Ayed and Sheik, (15) who reported that 35% from studied nurses had not participating in training programs. The current study shows that more than half 55.8% from studied nurses had not adequate knowledge about vaccination this result may be due to their educational level the majority of them having nursing diploma from secondary school of nursing or weakness in training program content. This result disagreed with Al-Ayed, (16) in Riyadh city who found that more than 80.0% from their sample have right knowledge about vaccination. This result agreed with Akoh et al, (17) in the Dschang health district west region of Cameroon who found that limited in knowledge about vaccination among health care providers. Also, this result less than Salem et al, (18) in Cairo governorate who reported that knowledge of their studied group about vaccination session was accepted with presence of some weakness are especially vaccines types and its contraindications. Regarding storage of

different types of vaccines in refrigerator, the current study found that all studied nurses had complete knowledge about arrangement of polio, DPT, measles and pentavalent vaccine in refrigerator. While 69.8% of them had incomplete knowledge about arrangement of BCG vaccine in refrigerator. This result agreed with Esa et al, (19) who reported that the majority of studied nurses had complete knowledge about arrangement of vaccine in refrigerator and also incomplete knowledge about BCG vaccine. This result agreed with Shazly et al, (14) who reported that all studied sample had adequate knowledge about storage all types of vaccines. Also, this result agreed with Saad, (10) who found that the majority of studied nurses had wrong knowledge about place of BCG vaccine in refrigerator. This result better than Akoh et al, (17) who found that limited knowledge of their participant about vaccination and cold chain management this is due to 16.7% from health care facilities did not have functional refrigerators and 21.4% from health centers did not have electricity. Also, this result agreed with Malik et al, (20) who reported that the majority of studied sample had complete knowledge about correct placing of cold chain equipment maintenance of stock security, temperature recording and maintenance, but awareness and skill of cold chain maintenance was not satisfactory. This result disagreed with Ogboghodo, (20) who

reported that 64.0% from studied sample had poor knowledge in cold chain management. The current result shows that all studied nurses registered the doses that they give to the child at the end of session but 95.3% from them not disposal of remaining vaccines vials and storage them in refrigerator to next session this result may be due to lack of their knowledge about vaccine storage and handling guide line. Also 89.5% of them not washing their hands after vaccination session this result may be due to lack of knowledge about infection control precaution and important for hand washing or due to shortage in nursing staff and increase work overload and their responsibility. This result agreed with Shazly et al, (14) who reported that poor nurse's practice post vaccination session. This result disagreed with Swarnkar et al, (22) who reported that 97.2% from studied sample discarding reconstitutes vaccines after four hours from used it. The current result shows that more than half 60.5% from studied sample had not adequate practice in vaccination session this result may be due to lack of their knowledge about vaccination. This result disagreed with Salem et al, (18) in Cairo governorate who found that 92.0% from studied sample had adequate practice throughout vaccination session. The current study shows that adequate nurse's practice significantly associated with bachelors and training nurses. This result agreed with

Swarnkar et al, (22) who reported that increase nurses' practice with advancement of their qualifications. The current study shows that, there was statistically significant relation between adequate knowledge and bachelors and training nurses. This result agreed with Widsanugorn et al, (23) who found that trained health care worker had better knowledge than untrained health care worker. This result agreed with Salem et al, (18) who found that knowledge was significantly higher among training nurses but there was difference in higher knowledge significantly higher among who have experience. This result agreed with Shazly et al, (14) who reported that higher knowledge among nursing bachelors.

## Conclusion

The findings of this current study can be concluded as following: There are more than half of studied nurses had inadequate knowledge about their role throughout vaccination session. Meanly two third of them had inadequate practice throughout vaccination session. Only one third of them had good practice. Based on the previous conclusion, this study recommends the following: Health education programs to community health nurses should be offered at regular intervals about vaccines, different types of vaccines and natural of each vaccine. Educate nurses about proper method of cold

chain and it's important for safety of vaccine and keeps its potency. Booklet containing all up-data information about vaccine, vaccination session and nursing roles should be available in primary health care units. Further study should be carried in other place to assess nurse's knowledge and practice throughout vaccination session.

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