

# Evaluation of the Nurses' Practices Concerning Vaccination at Primary Health Care Centers in Al-Amarah City

تقويم ممارسات الممرضين المتعلقة باللقاحات في مراكز الرعاية الصحية الأولية في مدينة العمارة

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## الخلاصة

**الهدف:** تقويم ممارسات الممرضين المتعلقة باللقاحات وأيجاد علاقة ما بين الممارسة و الخصائص الديموغرافية التي تشمل العمر، الجنس، والمستوى التعليمي و الدورات التدريبية.

**المنهجية:** أجريت دراسة وصفية تقويمية في مراكز الرعاية الصحية الأولية في مدينة العمارة للفترة من 17 تشرين الاول 2013 لغاية 10 آب 2014، وذلك لتقويم ممارسات الممرضين المتعلقة باللقاحات في وحدات التحصين. أختيرت عينة غير احتمالية (غرضيه) مكونه من (70) ممرض وقد تم جمع البيانات خلال الفترة من 9 شباط لغاية 13 أيار. تم تحليل البيانات من خلال تطبيق الوسائل الإحصائية الوصفية التي تتضمن ( تكرارات، النسبة المئوية،..) والاستدلالية ( اختبار مربع كاي).

**النتائج:** وأشارت النتائج التي توصلت اليها الدراسة بأن غالبية افراد العينة هم ضمن الفئة العمرية (40 الى 49) سنة، حيث شكلوا (54.3%). فيما يتعلق بالجنس، تبين ان معظم المشاركين من الذكور حيث شكلوا (70%). فيما يتعلق بالمستوى التعليمي، ظهر ان أعلى نسبة من افراد العينة هم خريجي المعهد الفني الذين مثلوا (58.6%). أما بخصوص عدد الدورات التدريبية في اللقاحات، فإن غالبية افراد العينة (63.3%) لديهم من واحد الى ثلاثة دورات تدريبية.

**الاستنتاج:** وأظهرت نتائج الدراسة بأن الغالبية العظمى من المشاركين كانت لديهم الممارسة الصحيحة فيما يتعلق باللقاحات؛ وأظهرت الدراسة بوجود علاقات ذات دلالة معنوية بين ممارسات الممرضين والخصائص الديموغرافية التي تشمل العمر، الجنس، والمستوى التعليمي و الدورات التدريبية. **التوصيات:** أوصت الدراسة إلى ضرورة تطوير المهارات اللازمة في أداء عملية التلقيح للممرضين بهدف تحسين ممارساتهم ، بالإضافة إلى ذلك أوصت الدراسة بإقامة مؤتمرات علمية ودورات تطويرية للممرضين العاملين في وحدات التحصين.

## Abstract

**Objective:** To evaluate the nurse's practices and to find out association between practices and their demographic characteristics of age, gender, education, and training crosses.

**Methodology:** An evaluative descriptive study was conducted at primary health care centers in Al-Amara city during Nov 17<sup>th</sup>, 2013 to 10<sup>th</sup> August 2014, in order to evaluate the nurse's practices concerning vaccination in immunization units. The sample was selected a non-probability (purposive) consist of (70) nurses and the data collection process has been performed from February 9<sup>th</sup> to the May 13<sup>th</sup> 2014. The data were described analyzed through use of the descriptive (frequencies, percentage,...) and inferential (Chi-square) statistical analysis procedures.

**Results:** The findings of the study indicated that the majority of the sample within (40-49) years-old age group (54.3%). In regard to their gender, most of participants were males (70 %). Concerning to their educational level, the highest percentage of the sample was technician institute graduate who represented (58.6%). Concerning the number of training courses (63.3%) of the subjects had between 1 to 3 training courses regarding to vaccination.

**Conclusion:** Findings of the study had demonstrated that majority of the participants had correct practice concerning vaccination; and showed there were a significant association between the nurse's practices and their demographic characteristics of age, gender, education, and training crosses.

**Recommendation:** The study recommended the need to develop the skills necessary to perform the process of vaccination for nurses in order to improve their practices; in addition, the study recommended the establishment of scientific conferences and development courses for nurses working in immunization units.

**Key words:** Primary health care nurses; Practices; Childhood vaccination.

## **INTRODUCTION:**

The vaccines means stimulate the body's immunity to protect the human against subsequent disease or infection. Immunization is the process whereby a human is made resistant or immune to an infectious disease, typically by the administration of a vaccine <sup>(1)</sup>. Vaccination for children currently saves 3 million lives a year globally and among the cost-effective and most successful public health interventions of the 20<sup>th</sup> century <sup>(2)</sup>.

Nurses or others who administer vaccination should be knowledgeable and receive continuing education in vaccine storage and handling, the recommended vaccine schedule, contraindications, and precautions prior to administering vaccines and administration techniques, reporting of adverse events, and vaccine benefit <sup>(3)</sup>.

Immunization programs are one of most successful public health measures, the nurse's efficiency is critical to the success of these programs and the incidence of infectious diseases to be declines. Nurses need to high level of practices in vaccination unit is consider important in achieving and maintaining high vaccine coverage <sup>(4)</sup>. Globally, nurses play a fundamental role in vaccination practice, whether in mass community vaccination programs or child health centre based programs, all programs must aim to safely and effectively immunize (100%) of a country's population. However, to control vaccine preventable diseases a rate of (95%) vaccination coverage is necessary <sup>(5)</sup>. Generally, high level of knowledge and appropriate standards of vaccination practices among nurses must be sustained to achieve a high level of vaccine coverage <sup>(6)</sup>.

**Objective:** To evaluate the nurse's practices and to find out association between practices and their demographic characteristics of age, gender, education, and training crosses.

## **METHODOLOGY**

Quantitative design (a descriptive study) was carried out to evaluate the nurse's practices concerning the vaccination in primary health care centers, from November 17<sup>th</sup>, 2013 to 10<sup>th</sup> August, 2014. A non-probability (Purposive sample) of (70) nurses who worked in immunization units for giving vaccines for children who under (six or five years). The data were collected through the use of constructed questionnaires, which consist of two parts. Part one; demographic characteristics. Part two which consist of two parts: nurses' practices during vaccination process and nurses' practices at the end of vaccination process. The nurses practices parts (observational checklist) were applied by using grand mean of score, through intervals (1-1.67) low, (1.68-2.33) moderate, and (2.34-3) high, as well as (L), (M), and (H) respectively.

These items were rated according to the liker scale (always (3); sometimes (2) and never (1)). The data collection process has been performed from February 9<sup>th</sup> until the May 13<sup>th</sup> 2014.

The data of present study were analyzed through the application of two statistical approaches. (1) Descriptive statistical approach that includes Frequency, Percentage, and Mean of Score. (2) Inferential statistical approach that includes Chi-Square test. Results were determined as significant at ( $P < 0.05$ ) and not significant at ( $P < 0.05$ ).

## RESULTS:

**Table (1): Distribution of the nurses' by demographic characteristics**

<b>Variables</b>	<b>(N=70)</b>	<b>F</b>	<b>%</b>
<b>Age (year)</b>	20-29	16	22.9
	30-39	12	17.1
	40-49	38	54.3
	≥ 50	4	5.7
	<b>Total</b>	<b>70</b>	<b>100.0</b>
<b>Gender</b>	Male	49	70.0
	Female	21	30.0
	<b>Total</b>	<b>70</b>	<b>100.0</b>
<b>Level of education</b>	Technician institute graduate	41	58.6
	Nursing junior graduate	20	28.6
	Nursing school graduate	9	12.9
	<b>Total</b>	<b>70</b>	<b>100.0</b>
<b>Training courses</b>	None	7	10.0
	1-3	45	64.3
	4-6	6	8.6
	7 and more	12	17.1
	<b>Total</b>	<b>70</b>	<b>100.0</b>

**n = number of sample, F=frequencies, %= Percentages, ≥ = equal and more.**

The finding of table (1) revealed most of the nurses were male (70.0 %), (40-49) years old (54.3 %), technician institute graduates (58.6 %). Finally, in the above table the results show that majority of the study sample (63.3%) was a participated between 1 to 3 training courses related to vaccination.

**Table (2): Observational Checklist for Nurses Practices during Vaccination Process**

No	Items	Always		Sometimes		Never		M.S	Ass.
		F	%	F	%	F	%		
1	Makes sure the child's name, age and address in addition to the history of the dose and type of vaccine to be giving him in vaccination card	69	98.6	1	1.4	0	0.0	2.99	H
2	keeps to be a child in his mother's lap stable to avoid any sudden movement by the child	47	67.1	7	10.0	16	22.9	2.44	H
3	Gives the child the oral polio vaccine prior to other injectable vaccines, if they must be provided in the same session	34	48.6	22	31.4	14	20.0	2.29	M
4	Make sure that oral polio vaccine is swallowed by the child and repeat the	35	50.0	30	42.9	5	7.1	2.43	H
5	Avoids using antiseptics (like alcohol) prior to injecting the dose of BCG vaccine	69	98.6	1	1.4	0	0.0	2.99	H
6	Shakes the vials vaccine that are dissolved prior to their administration so that sediment mixes completely	2	2.9	0	0.0	68	97.1	1.06	L
7	Avoid touching the sterile parts of syringes and needles when to preparing for administration vaccines so as to avoid contamination	46	65.7	18	25.7	6	8.6	2.57	H
8	Injects the tetra vaccine in (right thigh muscle) antero-lateral aspect of mid thigh deeply and 90 degrees for children less than one year	46	65.7	22	31.4	2	2.9	2.63	H
9	Injects the measles vaccine in the upper part of the arm and subcutaneous	48	68.6	20	28.6	2	2.8	2.66	H
<b>Average</b>								<b>2.45</b>	<b>H</b>

No.= number of item, F=frequencies, %= Percentages, M.S.=Mean of Scores, Ass.= Assessment, Bacillus Calmette Guerin=BCG, Cut-off-point (2), Cut-off-point interval (1-1.67) Low-1; (1.68-2.33) Moderate-2; (2.34-3.00) High-3.

In table (2) presents that there were highly assessment in nursing practices during vaccination process for item number (1, 2, 4, 5, and 7). In addition, the study sample practice demonstrates moderate in item number (3), and low practices at the item number (6). However the average means of score were (2.45).

**Table (3): Observational Checklist for Nurses Practices at the end of Vaccination Process**

No	Items	Always		Sometimes		Never		M.S	Ass.
		F	%	F	%	F	%		
10	Advised the mother to give antipyretics such as Antipyrol at high temperature of the child after vaccination	14	20.0	42	60.0	14	20.0	2.00	M
11	Alert the mother next date of vaccination according the child vaccination schedule	26	37.1	34	48.6	10	14.3	2.23	M
12	Marks of remaining and unopened vaccine by "RETURN" vaccine at the end of each session to be used at first in next session	43	61.4	7	10.0	20	28.6	2.33	M
13	Avoids keeping the open vaccine multiple doses to the refrigerator, but discards them at the end of the session	69	98.6	1	1.4	0	0.0	2.99	H
14	Collects the used and opened vaccines, used and unsterile syringes and needles in a special container for the purpose of being sent to the incinerator	69	98.6	1	1.4	0	0.0	2.99	H
<b>Average</b>								<b>2.51</b>	<b>H</b>

This table (3) demonstrates highly assessment for items (13, 14) and moderate mean of score for items (10, 11, and 12) respectively, regarding nurses practices at the end of vaccination process, with average mean score was (2.51).

**Table(4) : Distribution of the participants' level of practices through the Mean score for Observational Checklist related to Nurses practices**

No.	Level of Practices	Frequency	Percent
1.	Low	0	0.0
2.	Moderate	17	24.3
3.	High	53	75.7
<b>Total</b>		70	100.0%

No. = number of level, Cut-off-point (2), Cut-off-point interval (1-1.67) Low-1; (1.68-2.33) Moderate-2; (2.34-3.00) High-3.

Table (4) describes that most of participants had highly practices related to vaccination

(n= 53; 75.7%), followed by quarter of them who had moderate practices (n=17; 24.3%).

**Table (5): Association between the nurse’s practices and their ages**

Age (year)	Always	Sometimes	Never	Total
	F	F	F	F
20-29	99	46	60	205
30-39	148	57	59	264
40-49	289	89	80	458
50 and more	428	103	82	613
<b>Total</b>	<b>964</b>	<b>295</b>	<b>281</b>	<b>1540</b>
<b><math>\chi^2_{obs.} = 41.594</math>      <math>\chi^2_{crit.} = 12.59</math>      <b>df=6</b>      <b><math>P \leq 0.05</math></b></b>				

$\chi^2_{obs.}$  = chi-square observed,  $\chi^2_{crit.}$  = chi-square critical , df= degree of freedom, p = probability value,  $P \leq 0.05$ = significant,  $P \geq 0.05$ = non-significant.

The table (5) demonstrates that there were a significant association between nurse’s practices concerning vaccination and their age groups at ( $P \leq 0.05$ ).

**Table (6): Association between the nurses’ practices and their gender**

Gender	Always	Sometimes	Never	Total
	F	F	F	F
Male	662	197	198	1057
Female	302	98	83	483
<b>Total</b>	<b>964</b>	<b>295</b>	<b>281</b>	<b>1540</b>
<b><math>\chi^2_{obs.} = 0.908</math>      <math>\chi^2_{crit.} = 5.99</math>      <b>df=2</b>      <b><math>P \geq 0.05</math></b></b>				

Table (6) indicated not significant association between nurse’s practices concerning vaccination and their gender at ( $P \geq 0.05$ ).

**Table (7): Association between the nurse’s practices and their educational level**

Level of educational	Always	Sometimes	Never	Total
	F	F	F	F
Technician institute graduate	523	182	197	902
Nursing junior graduate	295	89	56	440
Nursing school graduate	146	24	28	198
<b>Total</b>	<b>964</b>	<b>295</b>	<b>281</b>	<b>1540</b>
<b><math>\chi^2_{obs.} = 29.814</math>      <math>\chi^2_{crit.} = 4.49</math>      <b>df=4</b>      <b><math>P \leq 0.05</math></b></b>				

Table (7) indicates that there were a significant association between nurse’s practices concerning vaccination and their educational level at ( $P \leq 0.05$ ).

**Table (8): Association between the nurse’s practices and their training courses**

Number of training courses	Always	Sometimes	Never	Total
	F	F	F	F
None	154	73	95	322
1-3	117	36	39	192
4-6	143	53	41	237
7 and more	550	133	106	789
<b>Total</b>	<b>964</b>	<b>295</b>	<b>281</b>	<b>1540</b>
$\chi^2_{obs.} = 65.356$ $\chi^2_{crit.} = 12.59$ $df=6$ $P \leq 0.05$				

The table (8) showed that there were a significant association between nurses practices concerning vaccination process and their training courses at ( $P \leq 0.05$ ).

## DISCUSSION

The findings of the present study indicated that the majority of the sample (54.3%) at age group (40-49) years old. This result reveals a fact that the most of the nurses in the immunization units were adult's nurses, because of this type of service needs adults and qualified nurses, which reflects policy of supported the health institution to expanded program on immunization (EPI). This result comes along with another study which reported that most nurses age group was between (40-50) years about (37.2%) of the study sample <sup>(7)</sup>. Relative to the nurse's gender, majority of them were males (70.0%), because of the social situation prevents females from practicing the profession of nursing in the study area according to vision of investigator. These results agree with another study which had founded those males more than females (74%) of the study sample <sup>(8)</sup>. Concerning the nurse's educational level, majority of sample was technician institute graduate who constituted (58.6%). This result supported by another study which reported most of sample was nursing institute graduates 39.5% <sup>(9)</sup>. Regarding of training courses most of the study sample that constitute (63.3%) have participated (1-3) training courses related to vaccination. This result supported by another study which mention that (77.7%) of nurses attend at least one training course on vaccine practices during their work in primary health care centers <sup>(10)</sup> (Table-1).

The finding of the present study showed that the majority participants have performed these practices properly with adequate mean of scores for most items. In general, these results may be related to that the subjects were (1-3) training courses (64.3%). In regard to item (1) was supported by WHO (2004), recommended the nurses must be looked at the child immunization card to determine the child age and vaccines the infant has received <sup>(11)</sup>. The result of the item (2) was agreed with NHMRC, (2013) stated that necessary those children do not move during injection of vaccines, because the excessive restraint can increase their fear and result in increased muscle tension <sup>(12)</sup>. Concerning item (4) this result agrees with Palihawadana, et. al.;

mention that the nurses must make sure if a child vomits during administration of oral polio vaccine must be repeat the dose is recommended <sup>(13)</sup>. Regarding item (5) this finding was supported by NHMRC, which stated that the nurses not advisable to clean the injection site with an alcohol swab before injection the dose of vaccines, because some of the live components of the vaccine are killed if they come in contact with alcohol <sup>(12)</sup>. The result of item (7) was consistent with Al-Tae, who found (70.9%) of the study participants avoided touching the sterile part of syringe and needle during the injection practices <sup>(9)</sup> (Table-2).

The results of item (13) supported by CDC, (2012) which recommended the opened vaccines must be discarded at the end of each vaccination session <sup>(14)</sup>. Regarding to item (14) this result same opinion with WHO, (2002) which mention that the nurses should put used needles and syringes in safety boxes immediately after each administration of vaccine and sent to the incinerator, because to prevent infecting themselves and community <sup>(15)</sup> (Table-3).

In our study, demonstrates the majority of participants had high practices concerning vaccination (n= 53; 75.7%), this result supported by Al-Tae, who reported vaccinators had high practices through increasing number of years of experience and higher of the educational level <sup>(9)</sup> (Table-4).

Relative to association between nurse's practices and their demographic characteristics, the results of data in (table-5) illustrate that there was a significant association between nurses' practices concerning vaccination and their ages. Considered that an increase in the age of nurses with years of experience leads to increased knowledge and practice and have a positive impact on the process of vaccination. This result agreed with Daboer, et. al.,(2010) who founded the nurse's practices about vaccination against hepatitis (B) infection increased with age of respondents and highly significant association <sup>(16)</sup>. Concerning their gender, the finding (table-6) shows that there were not significant association between nurses' practices concerning vaccination and their gender. This result comes along with another study which reported although more males (24.5%) than female (18.6%) were vaccination against hepatitis B in Nigeria, this difference was not statistically significant between genders <sup>(16)</sup>. The findings agreed with Al-Tae, reported that significant associations between nurses' practices and their level of education, this result may be related to the fact the majority of nurses were technician nursing institute, who were accounted for (58.6%) of the total numbers of study sample, who were the highest educated nurses <sup>(9)</sup> (table-7). Finally, in regarding for training courses the results of study revealed that a significant association between nurses practices concerning vaccination and their training courses. This finding of (table-8) was confirmed by Buxton et. al., (2013) who found that most nurses 98.4% receiving vaccination training outside of the academic setting compared

with 55.6% of physicians, shows nurses provider scored highly significantly than physician on all 3 domain of vaccination practices with  $P < .001$  <sup>(7)</sup>.

## **CONCLUSION:**

Findings of the study had demonstrated that majority of the participants had correct practice concerning vaccination; and showed there were a significant association between the nurse's practices and their demographic characteristics of age, gender, education, and training crosses.

## **RECOMMENDATION:**

1. Educational and training programs should be developed and implemented for nurses in order to improve their practices regarding vaccination process.

2. Preferably the establishment of scientific conferences and development courses for nurses working in the administration of vaccines in immunization units.

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