

## Nurses' Knowledge Regarding Ebola Virus Disease in Erbil City Hospitals

### معارف الممرضين المتعلقة بمرض الايبولا الفيروسي في مستشفيات مدينة أربيل

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#### الخلاصة

**الهدف:** تهدف الدراسة إلى تقييم معارف الممرضين المتعلقة بفيروس مرض الايبولا في مستشفيات مدينة أربيل. **المنهجية:** أجريت دراسة مقطعية على جميع الممرضين (40 ممرض) في مستشفيات مدينة أربيل في إقليم كردستان العراق من شهر تشرين الأول 2014 الى شهر نيسان 2015 والتي تمثلت بإعداد الإستبانة الإستبائية المتكونة من جزأين: فالجزء الأول تضمن المعلومات الديموغرافية والإجتماعية للممرضين، والجزء الثاني يحتوي على مجموعة من الأسئلة المتعلقة بفيروس مرض الايبولا. وقد تم تحليل النتائج باستخدام البرنامج الإحصائي (SPSS V.20) كوسيلة إحصائية لتحليل البيانات تم استعمال الاحصاء الوصفي الذي تضمن التكرارات، النسب المئوية، الوسط الحسابي والانحراف المعياري. **النتائج:** بينت نتائج الدراسة بأن عُمر غالبية الممرضين ما بين 24-34 سنة و معظمهم كانوا من الذكور، ومتزوجين، وخريجوا معهد التمريض، وهم من سكنة المنطقة الريفية. النسبة الأعلى من الممرضين لديهم من سنين خبرة ما يقارب 3-8 سنة من مستوى الخبرة. **الإستنتاج:** أستنتجت الدراسة بأن معظم الممرضين ذو مستوى متوسط للمعارف حول مرض الايبولا حول مرض الايبولا الفيروسي. **التوصيات:** أوصت الدراسة بأعداد برنامج تعليمي عن مرض الايبولا الفيروسي للممرضين في مستشفيات مدينة أربيل. **الكلمات الدالة:** الممرضين، المعلومات، مرض الايبولا الفيروسي، المستشفيات الحكومية التعليمية.

#### Abstract

**Objective:** The study aimed to assess the nurses' knowledge concerning Ebola Virus Disease at governmental hospitals.

**Methodology:** Quantitative, A cross-sectional study was conducted with all nurses (40 nurses) in hospitals of Erbil City in the Kurdistan Region of Iraq from November 2014 to April 2015. A questionnaire contained of two parts, part one include socio-demographic characteristics of nurses, and part two including questions about knowledge of nurses concerning Ebola Virus Disease. The data were analyzed through the SPSS software V.20 application, descriptive data analysis was done through frequency, percentage, mean, and standard deviation.

**Results:** The study results show that most of the study samples were at age group between 24-34 years old, male, married, graduated from nursing institutes from rural area. The highest percentage of the level of experience was between 3-8 years.

**Conclusion:** The study concluded that most of the study sample had middle level of knowledge concerning Ebola Virus Disease.

**Recommendations:** The study recommends preparation of educational programs for all nurses in Erbil City Hospitals.

**Keywords:** Nurses, Knowledge, Ebola Virus Disease, Governmental Teaching Hospitals.

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## INTRODUCTION

Ebola virus disease (formerly known as Ebola haemorrhagic fever) is a severe, often fatal illness, in humans virus is transmitted from wild animals and spreads in the human population through human-to-human transmission with a death rate of up to 90%. Ebola first appeared in 1976 in two simultaneous outbreaks, one in a village near the Ebola River in the Democratic Republic of Congo, and then Sudan (1).

Ebola virus has been found in African monkeys, chimps and other nonhuman primates. A milder strain of Ebola has been discovered in monkeys and a pig in Philippines. Marburg virus has been found in monkeys, chimps and fruit bats in Africa (2).

An outbreak of Ebola virus disease (EVD) in West Africa, with onset in early February 2014, is evolving in Guinea and Liberia. As of April 2014, the Ministry of Health in Guinea reported 151 clinically compatible cases of EVD, 54 of which were laboratory-confirmed by polymerase chain reaction (PCR). Ninety-five of these patients died. Liberia has reported 21 cases clinically compatible with EVD, including ten deaths (3).

Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, but the average is 8 to 10 days. Because the natural reservoir host of Ebola viruses has not yet been identified, the way in which the virus first appears in a human at the start of an outbreak is unknown. However, scientists believe that the first patient becomes infected through contact with an infected animal, such as a fruit bat or primate (apes and monkeys), which is called a spillover event. Person-to-person transmission follows and can lead to large numbers of affected people. In some past Ebola outbreaks, primates were also affected by Ebola, and multiple spillover events occurred when people touched or ate infected primates (4).

The high risk exposure are percutaneous (e.g., needle stick) or mucous membrane contact with blood or other bodily fluids or secretions (stool, urine, saliva, semen) of infected people from an Ebola patient, direct skin contact, direct contact with a dead body (including during funeral rites) in a country with wide-spread Ebola transmission (5).

The majority of cases in humans have occurred as a result of human-to-human transmission. More than 100 health-care workers have been exposed to the virus while caring for Ebola patients. This happens because they may not have been wearing Personal Protection Equipment (PPE) or were not properly applying infection prevention and control measures when caring for the patients (1).

Now a days the Kurdistan Region of Iraq is one of the opened areas for business, trade, travel, tourism, and overcrowded with emigrants people from outside of the country. For the above reasons the researcher intended to study the nurses' knowledge regarding the Ebola Virus Disease and then educated them through the education program regarding knowledge and prevention methods of transmission from patients to health care providers.

### **Methodology:**

**Research design:** A quantitative, cross-sectional study design.

**Setting:** The study conducted in Medical and Surgical wards in both governmental hospitals of Hawler Teaching Hospital and Rizgary Teaching Hospital in Erbil City of Kurdistan Region of Iraq.

**Duration of the study:** This study was carried out from November 2014 to April 2015.

**Study sample:** The participants included of all nurse who working at Medical and Surgical Wards in both governmental hospitals of Hawler Teaching Hospital (19 nurses) and Rizgary Teaching Hospital (21 nurses) according to the inclusion criteria: as nurses

who actually working in Medical and Surgical wards for providing nursing care, more than one year of experience in nursing care, both genders, with good communication.

**Tools and methods of data collection:** The aims of this study are to assess nurses' knowledge concerning Ebola Virus Disease. A questionnaire was consisted of two main parts, part one included socio-demographic characteristics of nurses, and part two included questions regarding knowledge of nurses regarding Ebola Virus Disease which consisted of definition, historical background, epidemiology, causes and risk factors, sign and symptoms, transmission ways, management, complications, prevention methods and wearing PPE. The responds of the questions after correction divided in to two groups 0 for not-correctly answered and 1 for correctly answered. The overall nurses' knowledge concerning EVD is the summation of all answers (0-20) then categorized in to three categories as 0-6 Poor, 7-13 Fair, and 14-20 Good knowledge. The data was collected through using of self-report technique.

**Ethical considerations:** The ethical considerations obtained before collecting the data, through the formal permission from the ethical committee at the college of nursing, Ministry of Health in Kurdistan Region of Iraq, Erbil Directorate of Health, and the administrative of both Hawler and Rizgary Teaching Hospitals. The informal consent obtained from nurses. The researcher explained the purpose of the study clearly and promised to keep the nurses' information confidential. In addition to above the researcher told each participant that this is an involuntary work, and can they leave any time even the process is not completed.

**Statistical analysis:** The data were analyzed using statistical package for social sciences (SPSS, version 22). Descriptive statistical analysis was used to find out frequencies, percentage, mean, and standard deviation.

**Results:**

**Table 1: Socio-demographic characteristics of 40 nurses**

Socio-demographic characteristics		F	%
Age group (Years)	24-34	22	55
	35-45	14	35
	46-56	4	10
$M \pm SD = 35 \pm 8$			
Gender	Male	23	57.5
	Female	17	42.5
Marital status	Single	6	15
	Married	34	85
Level of education	Nursing preparatory	1	2.5
	Nursing institute	29	72.5
	Nursing college	10	25
Years of experience	3-8	18	45
	9-14	14	35
	15-20	8	20
Residential area	Urban	38	95
	Rural	2	5

Table 1 shows that more than half of the study sample (55%) was in the age group between 24-34 years old, and the mean  $\pm$  standard deviation of age were  $35 \pm 8$ . Most of the study sample was male (57%). Regarding the marital state the highest of the study sample was married (85%) and others were single (15%). The highest percentage of the

study sample was graduated from nursing institute (72.5%) and the lowest were graduated from preparatory (1%). The years of experience of the study sample was divided as following 3-8 years, 9-14 years, and 15-20 years were 45%, 35%, and 20%. In regards with the residential area most of the study sample was from urban area 95%.

**Table 2: Knowledge of 40 nurses regarding Ebola Virus Disease**

Table 2 shows that all of study sample was answered correctly of the question

Items of knowledge regarding Ebola Virus Disease	Not correct		Correct	
	F	%	F	%
Ebola is a viral agent	0	0	40	100
Ebola is the sole member of Sudan virus	33	82.5	7	17.5
The first case of Ebola seen in 1976	32	80	8	20
The name of Ebola derived from river	33	82.5	7	17.5
The first case of Ebola seen in Sudan-Zarie	12	30	28	70
Incubation period of Ebola is between 8-10 days	23	57.5	17	42.5
Signs and symptoms of Ebola start from 2-3 weeks	25	62.5	15	37.5
The most common sign and symptom is bleeding	30	75	10	25
Sign and symptoms of Ebola will be like Influenza	11	27.5	29	72.5
To confirm the diagnosis of Ebola will use blood test	18	45	22	55
The Ebola agent seen high levels in the test of serum	27	67.5	13	32.5
The Ebola can be transmitting to human through contact with the animals infected by the virus	19	47.5	21	52.5
The Ebola can be transmitted human to human by infected blood and body fluids	22	55	18	45
Treatment will be used to treat symptoms of the disease	22	55	18	45
No medications for treatment of case with Ebola	30	75	10	25
The disease later complication cause enlargement of liver and spleen	27	67.5	13	32.5
How can you prevent yourself from Ebola through using of PPE	26	65	14	35
Patients with Ebola must be isolated	22	55	18	45
The nearest Fry to Kurdistan of Iraq which detected the positive case before few months is Turkey	31	77.5	9	22.5
The mortality cause in Ebola is due to bleeding	18	45	22	55

regarding what's the Ebola agent. The lowest percentage were answered correctly in the question Ebola is the sole member of what and the name of Ebola derived from what (17.5%).

**Table 3: Overall knowledge of 40 nurses regarding Ebola Virus Disease**

Overall levels of Knowledge	F	%
Poor	3	7.5
Middle	34	85
Good	3	7.5
<b>Total</b>	<b>40</b>	<b>100</b>

Table 3 shows that most of the sample study have middle level of knowledge regarding Ebola Virus Disease (85%) and 7.5% for both of good and poor knowledge.

**Discussion:**

Regarding mean age of the study sample, it was nearly supported by the study which was done by Valerio with others in 2015 who showed that mean age of participants was  $46.7 \pm 8$ . In the present study most of the study sample had fair knowledge regarding Ebola Virus Disease; this result disagreed with the study done by Valerio with others in 2015 which they showed that most of the study participants had poor knowledge regarding the Ebola Virus Disease. This lack of knowledge of nurses will affect them through secondary-transmission of Ebola from patients to nurses who

provide care for such patients. This gap in knowledge should be solve through training courses or many workshops regarding prevention of Ebola transmission by getting enough knowledge about historical background, characteristics of this virus, identify cases, transmission ways, how to dealing with this cases during care, and prevention methods like using of PPE, sharp containers, discard or burning patient's leavings, isolated room, quarantine policy (6).

Early recognition is critical for infection control. Nurses should be alert for positive cases and obtain travel and exposure history in persons presenting with febrile illness. Nurses need extensive training in donning and safely removing PPE that newly released guidelines, from the CDC stress 3 important principles: (1) the use of fluid resistant PPE that covers all exposed skin, (2) the importance of training and demonstrated competency in PPE use, and (3) supervision of the PPE donning and removal process by a trained monitor. All PPE should be disposable. Either alcohol based hand sanitizers or soap and water remain acceptable choices for hand hygiene after PPE removal. The guidelines provide detailed instructions on PPE choices and use. Individual institutions may need to adapt these guidelines based on the physical layout of their facility and on availability of specific PPE. Given the extensive training needs, hospitals should consider training a core team to care for positive patients. Emergency department staff, intensive visit, infectious diseases nurses, respiratory therapists, and environmental services and laboratory staff should be considered for inclusion on this core team (7).

Moreover, vaccination is one of the important prevention methods that should be available in all hospitals even for nurses. Nowadays, the vaccines are available which prepared in a safe mode similar to the rabies vaccine. The VSVΔG-ZEBOV vaccine can be used both as a conventional preventive vaccine and as a post exposure treatment (8).

### **Conclusions**

Most of the study sample had middle level of knowledge concerning Ebola Virus Disease.

### **Recommendations:**

1. Preparing educational programs for all nurses in Erbil City Hospitals to provide adequate information regarding Ebola Virus Disease.
2. Including in curriculum of nursing schools focusing on viruses and prevention methods for transmission of viruses and how to recognize contaminated patients.
3. Developing media education programs via TV, radio, newspaper, journal, seminars, booklets and internet sites to inform all population about Ebola Virus Disease.

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