

## Knowledge of Intensive Care Nurses' Regarding Ventilator Association Pneumonia at Kirkuk City Hospitals

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### ABSTRACT

**Background:** Known knowledge level for intensive care Nurses' regarding Ventilator Association Pneumonia (VAP) to improve knowledge toward patient safety and improvement nursing care.

**Objectives:** To assess knowledge of intensive care Nurses' regarding Ventilator Association Pneumonia (VAP) in Kirkuk city Hospitals.

**Methodology:** A descriptive study was conducted in Kirkuk city hospitals. From the September 1<sup>st</sup> 2017 until of September 1<sup>st</sup>, 2018. A convenience (non-probability) sample of (30) nurses' working in intensive care units in Kirkuk city hospitals was utilized. The instrument used in the current study was a self-administered structured questionnaire developed by researcher from a comprehensive review of relevant literature a questionnaire was created for the aim of the study. It consisted of two parts. Self reporting technique was used for data collects. Data was analysis by utilizing inferential statistical and descriptive statistical.

**Results:-** The results of the study showed that (56.7%) of the samples were within the age group (24-29) years, also (53.3%) were female of study sample, the results show also (83.3%) of the sample study were nursing college graduate, (66.7%) of them were married, (50%) of them having Less than (1) years of Years of service, (56.7%) of the sample having (1-2) training courses in intensive care unit.

**Conclusion:** The study concluded that The Knowledge of Intensive Care Nurses' was unsatisfactory knowledge; also there is no relationship between Knowledge Regarding Ventilator Associated Pneumonia (VAP) with Educational level and Years of service. There is moderate relationship between the remaining variables this mean that Knowledge Regarding Ventilator Associated Pneumonia (VAP) are present with all variables.

**Recommendation:** Establishment educational training programs must be applied for nurses that working in intensive care units(ICUs) regarding Ventilator- Associated Pneumonia (VAP). Developing self-instruction module and manuals, booklets in intensive care units(ICUs) to the prevention of Ventilator -Associated Pneumonia (VAP).

**Keywords:** Knowledge; Intensive Care Nurses'; Ventilator Association Pneumonia

### 1. Introduction

Ventilator-related pneumonia (VAP) is a standout amongst the most usually gained diseases in the intensive care units(ICU), Second just to catheter-related urinary tract contaminations. It is the more deadly of the clinic procured diseases, with higher death rates than either focal line

contaminations or sepsis. Ventilated patients who create ventilator-related pneumonia (VAP) have death rates of 45 percent, contrasted with 28 percent for patients' with ventilation who don't create ventilator-related pneumonia (VAP) [1]. A precise survey found that ventilator related pneumonia (VAP) occurs in (10-20%) of all patients mechanically ventilated for over 48 hours [2]. Unrefined death rates in patients, with ventilator-associated pneumonia go from (24-50%), expanding to 76%, if the causes of infection by multi-safe, organisms [3]. Patient's who create ventilator-associated pneumonia are twice as likely to pass on as those without ventilator-associated pneumonia [2]. The precise utilization of instructive intercessions has been appeared to diminish rates of rates of human services related contamination [4]. Staff nurse instruction programs particularly tending to ventilator-associated pneumonia have essentially decreased the frequency of ventilator-related pneumonia [5], [6]. Yearning About oropharyngeal secretions under that bronchial tree is. the main consideration in the advancement of ventilator-associated pneumonia, [7]. Consequently, strategies to save you aspiration, are essential within the prevention., of ventilator-associated pneumonia. The orderly achievement of ventilator-associated pneumonia care bundles, within the intensive care units ICU, have been proven to diminish the occurrence of ventilator-associated pneumonia) [8], [9].

## OBJECTIVES OF STUDY

1. To assess knowledge of intensive care Nurses' regarding Ventilator-Association Pneumonia (VAP) in Kirkuk city Hospitals.
2. To find out the association between nurses demographic data and knowledge of intensive care Nurses' regarding Ventilator-Association Pneumonia (VAP).

## 2. Methodology

**Design of the study:** A descriptive study,(quantitative design).

**Sampling:** A convenience (non-probability) was used for sample of (30) nurses' that working in Kirkuk city hospitals.

**Setting of the study:** Kirkuk city Hospitals; Azadi Teaching Hospital and Kirkuk General Hospital, and collected data from the period September 1<sup>st</sup>, 2017 until of September 1<sup>st</sup>, 2018.

**Instruments:** The tool used in the study was a self-administered structured questionnaire developed by the researcher from comprehensive review of relevant literature a questionnaire was created for the aim of the study. The Instruments

Consisted two parts:-

**Part I:** Socio-demographic data, which includes (6) items (Age, Gender, Level of Education, Marital status, Years of service and Number of training courses in intensive care unit).

**Part II:** Self-prepared structured questionnaire was developed to assess the knowledge of nurses who are working in intensive care units at Kirkuk city hospitals. This questionnaire was developed and translated to Arabic language; the questionnaire was consisted 21-items, which consist of general knowledge, prevention, route of separation and microorganisms that lead to (VAP). These items were measured, scored and rated on 2-level rating scale; Yes (1), correctly answered, No (0), incorrectly answered items or that unanswered. The data was collected by self-reporting technique.

**The instrument Validity and Reliability:** - content validity was determine through a panel from Nursing and medical specialties of (14) experts. The questionnaire was translated from English to Arabic and opposite under language supervision. Reliability of questionnaire was determined during (test re-test) of pilot study( $r = 0.78$ ).

**Statistical methods:** Descriptive statistics (Frequency, Percentage, Mean, S.D), and Inferential statistical analysis (Correlation coefficient) was used for data analysis.

### 3. Results and Calculations

**Table 1: Demographic Characteristics of Nurses.**

No.	Age (years)	Frequency	Percentage	Cumulative Percent
1	18-23	5	16.7%	16.7
2	<b>24-29</b>	<b>17</b>	<b>56.7%</b>	73.3
3	30-35	4	13.3%	86.7
4	36-41	4	13.3%	100.0
5	42 and more	0	0%	
<b>Total</b>		30	100	
No.	Gender	Frequency	Percentage	Cumulative Percent
1	Male	14	46.7	46.7
2	Female	<b>16</b>	<b>53.3</b>	100.0
<b>Total</b>		30	100	
No.	Level of Education	Frequency	Percentage	Cumulative Percent
1	Secondary School Graduate	2	6.7%	6.7
2	High Institute Graduate	3	10.0%	16.7
3	College Graduate	<b>25</b>	<b>83.3%</b>	100.0
<b>Total</b>		30	100	
No.	Marital status	Frequency	Percentage	Cumulative Percent
	Single	10	33.3%	33.3
	Married	<b>20</b>	<b>66.7%</b>	100.0
<b>Total</b>		30	100	
No.	Years of service	Frequency	Percentage	Cumulative Percent
1	<b>Less than 1 years</b>	<b>15</b>	<b>50%</b>	50.0
2	1-3 years	7	23.3%	73.3
3	4-6 years	2	6.7%	80.0
4	7 years and more	6	20.0%	100.0

Total		30	100	
No.	Number of training courses in intensive care unit	Frequency	%	Cumulative Percent
1	no training courses	2	6.7%	6.7
2	1-2 training courses	17	56.7%	63.3
3	3-4 training courses	5	16.7	80.0
4	5 and more training courses	6	20.0	100.0
total		30	100	

Table (1) revealed that the highest percentage (56.7%) of sample data were within age group (24-29 years), (53.3%) was female of the study sample, (83.3%) of sample were Nursing College Graduated, (66.7%) of study sample were married, (50%) of study sample have Less than 1 years of service, and (56.7%) of study sample were 1-2 training courses in intensive care unit.

**Table 2: Frequencies and Percentages Distribution of Knowledge Regarding Ventilator Associated Pneumonia (VAP) (21 questions)**

No	Items of Knowledge Regarding Ventilator Associated Pneumonia (VAP)	Yes		No	
		F	%	F	%
1	Ventilator-associated pneumonia is a bacterial pneumonia infection which occurs after intubation about 48 to 72 hours	16	53.3	14	46.7
2	The second most common nosocomial infection is Pneumonia in patients with critically ill.	23	76.7	7	23.3
3	40% of nosocomial pneumonias are associated with mechanical ventilation and are termed ventilator-associated pneumonia (VAP).	21	70.0	9	30.0
4	Ventilator associated pneumonia is a hospital-acquired infection (HAI) that occurs primarily in intubated and mechanically ventilated patients.	22	73.3	8	26.7
5	Ventilator-associated pneumonia (VAP) is accompanied by spectrum of bacteria, pathogenic, which are mostly aerobic, bacilli (Gram-negative), and to a low extent Staphylococcus aureus.	18	60.0	12	40.0
6	Early-Onset Ventilator-associated pneumonia (within first 7 days of admission) late-Onset Ventilator-associated pneumonia (after day 8).	18	60.0	12	40.0

7	Pneumonia (Early-onset) is usually caused by one of the following bacteria; gram-negative Haemophilus influenzae, gram-positive Staphylococcus aureus, Streptococci pneumoniae (gm positive).	23	76. 7	7	23. 3
8	Ventilator-associated pneumonia (VAP) is frequently viruses in origin, especially in the immunocompromised patient.	17	56. 7	13	43. 3
9	For Ventilator-associated pneumonia selected proper treatment including, patterns of local resistance inside the intensive care unit, knowledge of microorganisms that present likely, a rational antibiotic regimen, and an underlying principle for antibiotic de-escalation or stoppage.	19	63. 3	11	36. 7
10	Signs and Symptoms of Ventilator-associated pneumonia (VAP), fever greater than 38.5°C, Leukocytosis.	20	66. 7	10	33. 3
11	Ventilator-associated pneumonia occurs in patients receiving mechanical ventilation when there is a viral invasion of the pulmonary system.	23	76. 7	7	23. 3
12	The endotracheal tube itself considered primary risk factor– it will give an instantaneous passageway for mobile pathogens into the lungs, or act as a reservoir for pathogens.	17	56. 7	13	43. 3
13	Elderly Patients or immunocompromised are in high risk of Ventilator-associated pneumonia, as are those with a pulmonary illness that existing; Chronic obstructive pulmonary disease, asthma, and emphysema.	24	80. 0	6	20. 0
14	Prolonged duration of ventilation not considering risk factors for ventilator associated pneumonia.	15	50. 0	15	50. 0
15	Maintaining patients in a supine position, feeding by nasogastric tube, and non-compliance with hand-washing for the nursing staff and infection control protocols considering not risk factors for ventilator associated pneumonia.	12	40. 0	18	60. 0
16	Diagnosing ventilator-related pneumonia requires a high clinical doubt accompanied by bedside examination, radiographic examination, and microbiological investigation of respiratory discharges.	18	60. 0	12	40. 0
17	Effectively treatment (Early), for ventilator-associated pneumonia, is accompanied by reduced	22	73.	8	26.



	mortality.		3		7
18	Uses of personal protective equipment when appropriate to protect the patient; e.g. suctioning from the mouth or endotracheal tube, will not reduce Ventilator-associated pneumonia (VAP).	16	53.3	14	46.7
19	Using orotracheal, rather than naso-tracheal intubation, unless contra-indicated reduce Ventilator-associated pneumonia (VAP).	17	56.7	13	43.3
20	Write policies, educate nursing staff and monitor compliance —absolutely necessary for reduction of Ventilator-associated pneumonia (VAP).	22	73.3	8	26.7
21	In Ventilator-associated pneumonia (VAP) uses of antacids and histamine type-2 antagonists.	16	53.3	14	46.7

n= number of samples, F= frequency, %=percentage.

Tables (2) shows that the highest percentages of most correct answers were for items (13, 2, 7, and 11) related to elderly or immunocompromised are at high risk of ventilator-associated pneumonia (VAP), as are those with a pulmonary illness that existing; Chronic obstructive pulmonary disease, asthma, and emphysema, The second most common nosocomial infection is Pneumonia in patients with critically ill, Early-onset pneumonia and Ventilator-associated pneumonia occurs in patients receiving mechanical ventilation when there is a viral invasion of the pulmonary system (80%, 76.7%, 76.7%, and 76.7%) consequently. are high scores more than 70%. Among the 38 items surveyed.

**Table (3) :Correlation coefficient between (age, gender, educational level, marital status, Years of service, Number of training courses in intensive care unit) with Knowledge Regarding Ventilator Associated Pneumonia (VAP).**

Correlation	Age	Gender	Education	Marital	Service	training in ICU	Knowledge (VAP)
Age	1	-	-	-	-	-	-
Gender	-.358	1	-	-	-	-	-
Educational level	.178	-.032	1	-	-	-	-
Marital status	.267	-.094	-.169	1	-	-	-
Years of service	.460*	.088	-.216	.282	1	-	-
No. of training courses in ICU	.576**	-.151	-.034	.479**	.467**	1	-
Knowledge (VAP)	-.300	.253	-.007	-.349	-.007	-.234	1

Table (3) shows there is strong positive, relationship between Number of training courses in intensive care unit with [age( $r=.576^{**}$ ), Marital status ( $r=.479^{**}$ ), Years of service( $r=.467^{**}$ )].

There is no relationship between Knowledge Regarding Ventilator Associated Pneumonia (VAP) with [Educational level ( $r =-.007$ ), Years of service ( $r=-.007$ )]. There is moderate relationship between the remaining variables this mean that Knowledge Regarding Ventilator Associated Pneumonia (VAP) is present with all variables.

#### 4. Discussion

The result of current study samples shows that the majority (56.7%) of the age groups were (24-29) years old. Most of the study samples (53.3%) were Female. The majority of the study samples (83.3%) were College Graduate. Most of them (66.7%) were married. Most of the study samples (50%) were Less than 1 years of services .The majority of study samples (56.7%) were 1-2 training courses in intensive care unit, this results agree with a study conducted by Kapucu S. et al.(2017), "that show most of participated nurses (40.3%), were (25–29) years old, of the sample, also (86.6%) of sample were female, (53.4%) were single, (45.9%) were nursing college graduates, and (71.7%) had been working in an ICU for 1–5 years"[10].

The findings of the study samples shows that the high percentages of most correct answers were for items (13, 2, 7, and 11) related to elderly or immunocompromised are at high risk of ventilator-associated pneumonia (VAP), as are those with a pulmonary illness that existing; Chronic obstructive pulmonary disease, asthma, and emphysema, The second most common nosocomial infection is Pneumonia in patients with critically ill, Early-onset pneumonia and Ventilator-associated pneumonia occurs in patients receiving mechanical ventilation when there is a viral invasion of the pulmonary system (80%, 76.7%, 76.7%, and 76.7%) consequently, this results agree with a study conducted by Abo Elseoud et. al.(2016) [11]. The findings of the study sample revealed that there is strong-positive, relationship between Number of training courses in intensive care unit with [age( $r=.576^{**}$ ), Marital status ( $r=.479^{**}$ ), Years of service( $r=.467^{**}$ )].

There is no relationship between Knowledge Regarding Ventilator Associated Pneumonia (VAP) with [Educational level ( $r =-.007$ ), Years of service ( $r=-.007$ )]. There is moderate relationship between the remaining variables this mean that Knowledge Regarding Ventilator Associated Pneumonia (VAP) is present with all variables. This was due to the difficult security conditions in our country in some last years and affected the work of nurses working in intensive care units as well as the lack of training and educational courses for nurses led to a lack of knowledge. This results agree with a study reported by Amina I. Badawy (2014) [12].

#### 5. Conclusions

- 1- In view of the finding of the study, the researcher concluded that the majority of the ages of the Nurses were (24-29) year and most of the Nurses were female. In addition, it concluded that most of the Nurses were College Graduate; also most of them were married.
- 2-The Knowledge of Intensive Care Nurses' Regarding Ventilator Association Pneumonia was inadequate knowledge.
- 3-The findings of the study samples revealed that there is strong-positive, relationship between Number, of training courses in intensive care unit with age, marital status and Years of service.
- 4-There is no relationship between Knowledge Regarding Ventilator Associated Pneumonia (VAP) with Educational level and Years of service.
- 5-There is moderate relationship between the remaining variables this mean that Knowledge Regarding Ventilator Associated Pneumonia (VAP) is present with all variables.

## 6. Recommendations

1. Establishment educational training programs must be applied for nurses that working in intensive care units, (ICUs) regarding ventilator-associated pneumonia.
2. Must be activated care protocols and clinical guidelines for the prevention of infections, in intensive care units(ICUs).
3. Faculty nursing staff should pay more attention for Ventilator Associated Pneumonia (VAP) and patient's safety before and after intubation process.
4. More postgraduate studies for nursing specialized in Ventilator-Associated Pneumonia (VAP) in intensive care units.
5. Developing self-instruction module and manuals, booklets in intensive care units to the prevention of Ventilator Associated Pneumonia (VAP).

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