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Assessment of Knowledge, Attitude and Practice of Nursing staff about Infection Prevention in Governmental Hospital at Mukalla City, Hadhramout

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Abstract: The objective of this study is to assess the knowledge, attitude, and practice of nursing staff among nursing staff working in governmental hospital in Mukalla city, Yemen. The study was conducted from November 13 to December 31, 2019, and involved a total of 519 nursing staff participants. The study found that a significant majority of nurses demonstrated good levels of knowledge in infection prevention, with 54.3% in general knowledge, 86.5% in knowledge of attitudes, and 62.5% in knowledge of practices related to policies, procedures, and principles. Participants in this research had strong infection prevention knowledge, attitudes, and practices. Government hospitals in Mukalla must undertake continuous and periodic training and work on a health education guide dedicated to the subject of infection prevention if they are to stay up-to-date on the latest research and best practices in this area.

Key words: Attitude; Knowledge; Practice; Governmental Hospitals; Nurses

1. Introduction

Infection prevention is the main healthcare agenda nationwide [1]. Infection Prevention, which also called ―hospital-acquired or health care associated infection (HCAI) ‖, is a serious public health issue affecting hundreds of millions of people every year worldwide [2]. Infection appears in a patient under medical care in the hospital or other healthcare facility, which was absent at the time of admission. These infections can occur during healthcare delivery for other diseases and even after the discharge of the patients. Additionally, they comprise occupational infections among the medical staff [3]. Infection Prevention an important health problem throughout the world and affects both developed and developing countries, it results in high morbidity and mortality, greater use of antibiotics, prolonged stays in the hospital and consequently increases hospital costs.

The effective knowledge about infection prevention can reduce the rate of infection and its consequences [4]. Infection Prevention affects huge number of patient's globally, elevating mortality rate and financial losses significantly. According to estimate reported of WHO, approximately 15% of all hospitalized patients suffer from these infections [5]. These infections are responsible for 4%–56% of all death causes in neonates, with incidence rate of 75% in South-East Asia and Sub-Saharan Africa [6]. The incidence is low enough in high-income countries i.e. between 3.5% and 12% where as it varies between 5.7% and 19.1% in Middle-and low-income countries. The frequency of overall infections in low-income countries is three times higher than in high-income countries whereas this incidence is 3–20 times higher in neonates [7]. Yemen has an over 60% infection incidence, and some studies show that 80% of infected persons die [8]. IC is a key component of practice for all healthcare professionals, not only for their health but also to reduce Infection and thus improve patient safety [9]. Simplest and effective method of infection control is the application of standard precautions for decreasing exposure with infection agents [10]. Standard precautions are including hand hygiene, use of personal protective equipment's, safe injection, health environment, appropriate solid waste management, respiratory health and etiquette of cough [11].

An assessment of the knowledge, attitude and practice (KAP) of standard precautions by healthcare workers is a prerequisite for initiating and implementing a successful infection prevention and control (IPAC) strategy in any health facility. Many studies have shown that HCW display variable KAP of standard precautions according to their professional group and duration of professional experience,

among other factors. Longer duration of professional experience , knowledge and training in standard precautions, and high risk perception have all been associated with improved compliance with standard precautions among health workers[12].

2. Materials and methods

2.1 Design

A descriptive cross-sectional study was conducted from 13 November to 31 December 2019 .The study was conducted to give a description of Knowledge, Attitude and Practice of Nurses about Infection Prevention in Governmental Hospital at Mukalla City, Hadhramout. This study comprises nursing staff working in governmental hospital in Mukalla. This study was conducted in Mukalla governmental hospitals, the hospitals include: (Ibn Seena Hospital-Universal Hospital and Almukalla Hospital for Maternity and Childhood). The period of study during (November to December) 2019. The study include 25% from nurse staff working in Mukalla governmental hospital.

Table 3.1 Numbers of nursing staff working in Mukalla governmental hospitals

Hospital	**Total Number of Nurses**	**25%**
Ibinseena general hospital	255	56,25=57
Universal hospital	93	23,25=24
Almukalla hospital for maternity and child hood	171	42,75=43
Total number	519	124

Table 3.1 shows the total number of nursing staff working in Mukalla governmental hospital are (519), the sample size (n =124) 25%. The sampling method used in this study is convenience-sampling technique. The reliability using alpha Cronbach (α) test was =0.812 and Validity = 0.901.

2.2 Data collection methods &Tool

The data was collected by structured self- administered questionnaire to achieve the purpose of the study, which consists of three tools: Tool 1: Part 1: Contain 8 questions regarding the personnel and demographic data. Tool 2: Part 1: Contain 8 questions regarding nurse's knowledge about infection control. Part 2: Contain 11questions regarding nurse's attitude about infection control. Part 3: Contain 12 questions regarding practice of nurses about infection control. Part 4.

2.3 Ethical Consideration

Ethical reviewing and approval were obtained from Hadhramout University College of nursing to work on this research. The permission was obtained from the dean of Nursing Collage, after that the leader of nursing department in the hospital and then the head of the nursing department in each department in hospital. Where information was collected from nurses explaining to them that the information was saved in strictest confidentiality and would be used for the benefit of society and for scientific purpose.

3. Results

Table 3.2 indicates that observed frequencies and percentages of demographical characteristics variables in the sample which age group more than half of them were between (20-30) years old (62.9%). Majority of nurses are female (55.6%). (45%) of sample was Diploma in educational level. (20.2%) of the selected sample work in an emergency and (19.4%) in ICU. For the year of experience while (47.6%) of the participating nurses had working experience less than five years. Most of majority of the nurses (71.0%) had no training courses regarding infection control. The majority of nurses working at Ibn Sina Hospital make up (46.0%) of the total sample.

Table 3.2 Distribution of study participants according to socio demographic characteristics (n=124).

Characteristics	**Frequency**	**Percent**
	Gender	
Male	55	44.4
Female	69	55.6
Total	124	100.0
	Age	
20-30	78	62.9
	Education level	
Diploma	79	63.7
BSC	37	29.8
Master	8	6.5
Total	124	100.0
	Hospital	
Ibnsina general hospital	57	46.0
Universal hospital	24	19.4
Al-Mukalla Hospital for Maternity and Childhood	43	34.7
Total	124	100.0
	Department	
Emergency	25	20.2
Surgical ward	12	9.7
Medical ward	11	8.9
Orthopedic ward	2	1.6
Dialysis department	3	2.4
ICU	24	19.4
Diarrhea	4	3.2
Pediatric ward	23	18.5
Gyn. & Obs	20	16.1
Total	124	100.0
	Experience	
Less than 5 years	59	47.6
5-10 years	40	32.3
More than 10 years	25	20.2
Total	124	100.0
	Courses in infection control	
Yes	36	29.0
No	88	71.0
Total	124	100.0

Table 3.3: Knowledge of study participants about nosocomial infection.

No	Question	Subject	Frequency	%
1	Infection mean is.	An infection that a patient brings from home.	22	17.7
		An infection that the patient acquires from the hospital within 24 hours.	36	29.0
		An infection that the patient acquires from the hospital within 48 hours or more.	66	53.2
2	The most common pathogens that cause infection is?	Bacteria	80	64.5
		Virus	43	34.7
		Fungi	1	0.8
3	The most common	Respiratory system	115	92.7
	system in the human body that is exposed to infection is	Digestive system	3	2.5
		Urinary system	6	4.8
4	the most department in the hospital that the infection rate increases is	Pediatric	78	62.9
		Intensive care	20	16.1
		Surgical department	26	21.0
5	The phenomenon of hospital infection is considered:	Common	80	64.5
		Medium	39	31.5
		Rare	5	4.0
6	Using personal protective equipment when dealing with patients:	It prevents cross infection	26	21.0
		It reduces transmission infection	96	77.4
		It does not reduce the risk of transmission infection	2	1.6
7	Hospital pathogens are distinguished by:	Its ability to resist antibiotics	84	67.7
		Not able to resist antibiotics	21	16.9
		Simple and easy to treat	19	15.3
8	The sources of infection transmission are:	Patients and employees inside the hospital	11	8.9
		The surrounding environment	28	22.6
		Patients, employees and the surrounding environment	85	68.5
9	Are the exit of purulent fluids or the appearance of an abscess after about a month in surgeries a sign of infection?	Yes	61	49.2
		No	41	33.1
		Don't know	22	17.7
10	The use of antibiotics for hospitalized patients prevents the chance of infection?	Yes	96	77.4
		No	16	12.9
		Don't know	12	9.7

Table 3.3 shows the nurses knowledge about infection .It was (53.2%) of the studied nurses know the complete correct meaning of Infection Prevention. According to study participants, most common system exposed to infection was respiratory system (92.7%) and say the bacteria are most pathogens that causes infection (64.5%).Regarding the sources of transmission, it was noticed patient, employees and surrounding environment (68.5%).

Table 3.4 indicates the relationship between the nurse's knowledge and socio-demographic variable. The statistical tests results not a significant difference between nurses knowledge and gender, age, education level and course of infection control (P value = 0.650, 0.106, 0.589, 0.498 respectively), but there is a significant difference between years of experience and knowledge of nurses toward Infection Prevention (P value=0.046).

Table 3.4 The relationship between the nurse‘s knowledge and socio-demographic variable.

Pearson Chi-Square			
Variable	**Value**	**Df**	**Sig**
Gender	5.974	8	0.650
Age	32.901	24	0.106
Education level	14.130	16	0.589
Years of experience	26.591	16	0.046
Course of infection control	7.364	8	0.498

The attitude towards infection control is seen in Table 3.5. A remarkable 97.6% of nurses are required to strictly follow all protocols and standards pertaining to the prevention of infection. The present study showed, (95.2%) of nurse believe the hand washing is an essential means of controlling infection.

Table 3.5 Attitude of study participants about infection control.

No	Question	Agree		Neutral		Disagree	
		N	%	N	%	N	%
1	You must adhere to the infection control policies and procedures at all times.	121	97.6	2	1.6	1	.8
2	Infection is transmitted through unsterile needles and sharp objects.	103	83.1	11	8.9	10	8.1
3	Body fluids can be handled with bare hands 89if gloves are not available	18	14.6	17	13.7	89	71.8
4	You do not have to wash your hands if you use gloves	28	22.5	14	11.3	82	66.1
5	Hand washing is an essential means of controlling infection.	118	95.2	3	2.4	3	2.4
6	All patients with infectious diseases should be isolated.	117	94.4	6	4.8	1	0.8
7	All patient samples should be treated as contaminated samples.	111	89.5	5	4.0	8	6.4
8	Reducing the number of people at the time of the patient's visit reduces transmission infection.	112	90.3	7	5.6	5	4.0

Among the study participant, (81.5%) disagree for use needles exposed to the air for a long time if it does not touch the ground or any contaminated surface. (71.8%) disagree believe dealing with body fluids with bare hands if gloves are not available.

Table 3.6 illustrates the correlation between the attitudes of nurses and various socio-demographic variables. The statistical tests results not a significant difference between nurses attitude and gender, education level , years of experience and course of infection control (P value = 0.354,0.477,0.291 ,0.527 respectively) ,but there is a significant difference between age and attitude of nurses toward Infection Prevention (P value = 0.036).

Table 3.6. The relationship between the nurse‘s attitude and socio-demographic variable.

Pearson Chi-Square			
Variable	**Value**	**Df**	**Sig**
Gender	19.631	18	0.354
Age	74.188	54	0.036
Education level	35.815	36	0.477
Years of experience	40.154	36	0.291
Course of infection control	16.940	18	0.527

Table 3.7 shows practice of study participant about infection control. It was (59.7 %) of nurses always wash their hands before direct contact with the patient and (75.8%) always wash their hands after direct contact with the patient. (30.6%) sometimes change the gloves after every use and every patient .According to study participants, (75.8%) always wear gloves before exposure to blood or body fluids. It was (87.1%) of nurses never wear protective glasses for the eyes to protect them of pollution resulting from the spray blood or any liquid outside the human body.

Table 3.8 indicates the relationship between the nurse's practice and socio-demographic variable. The statistical tests results not a significant difference between knowledge and gender , age , years of experience and course of infection control (P value = 0.354 ,0.477,0.291 ,0.527 respectively) ,but there is a significant difference between education level and practice of nurses toward Infection Prevention (P value = 0.006).

Table 3.9 shows the correlation coefficient between knowledge, attitude and practice about infection control among studied nurses. This figures illustrate that the positive correlation between knowledge and attitude (r=0.098).It was revealed that there was not statistically significant (p=0.279) and negative correlation between knowledge and practice (r= - 0.096 -). It was revealed that there was not statistical significant (p=0.288) and positive correlation between attitude and practice (r=0.098). It was revealed that there was statistical significant (p=0.000) among studied nurses about infection control.

Table 3.10 gives causes preventing nurses from practicing standard precautions of infection control. The main causes are the absence of regular training on infection control (84.7%), affecting the burden of work on my ability in the application of guidance prevention to infection prevention (79.8%), and the lack of an infection control committee in the hospital (77.4%).

4. Discussion

Infection is one of the most common problems and difficulties faced by health institutions in developing and developed countries as well. Protecting patients from acquiring infection is one of the main professional responsibilities for nurses. For this purpose, the present study was conducted. The finding of present study revealed the age group more than half of them were between (20-30)year old (62.9%) , Similar to the study done in Yemen were major participant (63.3%) age between (20-30) year (12).

Table 3.7. Practice of study participants about infection control.

No	**Question**	**Always**		**Sometimes**		**Rarely**	
		N	**%**	**N**	**%**	**N**	**%**
1	I wash my hands before direct contact with the patient.	74	59.7	37	29.8	13	10.5
2	I wash my hands after direct contact with the patient	94	75.8	21	16.9	9	7.3
3	I wear sterile gloves before installing the venous catheter.	71	57.3	32	25.8	21	16.9
4	I wear gloves before exposure to blood or body fluids.	102	79.3	14	11.3	8	6.4
5	Change the gloves after every use and every patient.	61	49.2	38	30.6	25	20.1
6	I wash my hands after removing gloves.	82	66.2	29	23.4	13	10.5
7	Adhere to wearing hospital-specific clothing.	102	82.3	18	14.5	4	3.2
8	I cleanse and disinfect the mask before using to patient.	93	75.0	17	13.7	14	11.3
9	I wear protective glasses for the eyes to protect them of pollution resulting from the spray blood or any liquid outside the human body.	7	5.6	9	7.3	108	87.1
10	I wear a mask when dealing with patient chest disease	65	52.4	28	22.6	31	25.0
11	Dispose of the injection immediately and use and put it in a special box.	117	94.4	6	4.8	1	.8
12	Ventilate the ward by opening windows and doors.	66	53.2	34	27.4	24	19.4

Majority of nurses are female (55.6%).Similar study done in Kosovo [13] (82.8%) are female, but different study done in Yemen [14] sex participation the majority in male (64.8%). In our study majority of study was diploma in

educational level (63.7%). Different study done in Iran (89%), also study done in Palestine (55.4%) were majority of participation bachelors in education level [15].

Table 3.8. The relationship between the nurse‘s practice and socio-demographic variable.

Pearson Chi-Square			
Variable	**Value**	**Df**	**Sig**
Gender	24.011	30	0.772
Age	79.666	90	0.774
Education level	90.686	60	0.006
Years of experience	60.787	60	0.447
Course of infection control	32.630	30	0.339

Regarding the nurse's knowledge related to Infection Prevention, the majority of the samples (54.3%) have good knowledge toward infection control. This finding similar with the results obtained from a previous study done in Iran the majority of sample (69.5%) had good knowledge [16].

Table 3.9. Correlation coefficient between knowledge, attitude and practice about infection control among studied nurses.

Correlation				
		Knowledge	**Attitude**	**Practice**
Knowledge	Pearson Correlation	1	.098	.096
	Sig. (2-tailed)		.279	.288
	N	124	124	124
Attitude	Pearson Correlation	.098	1	.312**
	Sig. (2-tailed)	279		.000
	N	124	124	124
Practice	Pearson Correlation	-.096-	.312**	1
	Sig. (2-tailed)	.288	.000	
	N	124	124	124

**Correlation is significant at the 0.01 level (2-tailed).

Our study indicates that there is no correlation between the gender and age of nurses and their knowledge regarding the control of nosocomial infections (NIs).This is comparable to the research conducted in Yemen [17, 18, 19]. Relative to years of experience there is significant association between nurse's years of experience and their knowledge toward infection control. This finding disagree with results obtain from other studies done in Baghdad, Iran [20, 21] which indicated that there is no significant association between nurse's years of experience and their knowledge. In relation to training course, the findings showed that there is no significant association between the nurse's training courses about IC and their knowledge. Similar study done in Palestine [22]. Regarding the nurse's attitude related to infection control, the majority of the samples (86.5%) have good attitude toward infection control. This finding disagree with the results obtained from study done in Iran, which revealed (36.5%), of the study participants had good attitude [23]. In our study the reflect that there is no relationship between nurse's education level and their attitude. This finding agree with results obtain from studies done in Kosovo [24] and disagree with result obtain from other study in Iran which indicated that there is a significant between nurse's education level and their attitude [25].

Table 3.10. Causes preventing nurses from practicing of standard precautions of infection control.

No	**Question**	**Agree**		**Neutral**		**Disagree**	
		N	**%**	**N**	**%**	**N**	**%**
1	Lack knowledge of standard precautions to infection control	83	67.0	18	14.5	23	18.8
2	Lack of infection control committee in hospital	96	77.4	13	10.5	15	12.1
3	Absence of regular training on the infection control.	105	84.7	9	7.3	10	8.0
4	Personal protective equipment are not available when the need.	85	68.6	23	18.5	16	12.9
5	Affect the burden of work on my ability in the application of guidance prevention to infection	99	79.8	13	10.5	12	9.7
6	patient feel uncomfortable when using the personal protective equipment	57	45.9	22	17.7	45	36.3
7	Affect long working hours on my attention practices of the work	91	75.0	12	9.7	19	15.3

Relative to age there is significant association between nurse's age and their attitude. This finding also different with results obtain from studies done in Iran [26]. Regarding the nurse's practice related to NIs control, the majority of the samples (62.5%) have good practice toward NIs control. This finding disagree with the results obtained from a previous study done in Yemen which revealed (53.9%) of the study participants had poor practice [27] .The results showed that there is not a significant difference between practice and age ,gender ,education level. Different study done in Palestine is significant between gender and practice [28]. In our study not significant difference between practice with knowledge. The results of the present study was not according to the studies done in Iran [29]. our study participants reported absence of regular training on the infection control and lack of infection control committee in hospital as the major causes preventing routine practice of standard precautions of infection control in the hospital setting Similar to study done in Nigeria [30].

5. Conclusion

The study concluded that the overall the majority of nurses (54.3%) in knowledge, (86.5%) in attitude and (62.5%) in practice at a good level regarding infection control and prevention policies procedures and principles. There were

significant variation among nurses knowledge and years of experience , nurses attitude and their age, also there were variations among the respondents according to practice and their level of education .There is positive correlation between knowledge with Attitude and Attitude with practice and negative correlation between knowledge with practice about infections control.

6. Recommendations

The results of the investigation indicate the following recommendations:

1-Training course is necessary to increase nurses‘ knowledge toward infection control and should be regularly done and updated in view of changing knowledge and practices.

2- Provide services programs about infection control and establishment of infection control committee in hospitals and promote supervision on health workers when dealing with patients to protect themselves and patients.

3- The administration of nursing at the hospital have to provide cleaning material and sterile, personal protective equipment, vaccination doses, uniforms specific to each department.

4- Reduce work overload on health workers through decreasing working hours and number of patients

5 .In conjunction with the recent rise of pandemics, hospitals should be following latest evidence-based practices of infection control in continuing education / training programs.

6 .The nursing staff have to protect them self by using personal protective equipment.

7. Strict observation of nursing staff during work and continuous evaluation of their practice.

References

[1] Tesfahun,T, et al., Assessment of knowledge and practice of nurses regarding infection prevention and associated factors at Debre Tabor Comprehensive Specialized Hospital, Northwest Ethiopia. Front Public Health.vol 8;11:p122-132. 2024

[2] Haque, M., et al., Health care-associated infections - an overview. Infect Drug Resist, vol 11: p. 2321-2333. 2018.

[3] Khan, H.A., F.K. Baig, and R. Mehboob, Nosocomial infections: Epidemiology, prevention, control and surveillance. Asian Pacific Journal of Tropical Biomedicine,vol 7(5): p. 478-482. 2017

[4] Danchaivijitr, S., et al., Quality of nosocomial infection control in Thailand. J Med Assoc Thai,. 88 Suppl 10: p. S145-9. 2005

[5] Sydnor, E.R. and T.M. Perl, Hospital epidemiology and infection control in acute-care settings. Clinical microbiology reviews,vol 24(1): p. 141-173. 2011

[6] Organization, W.H., The burden of health care-associated infection worldwide: a summary. World Health Organization, Geneva, Switzerland. https://www. who. int/gpsc/country_work/summary_20100430_en. pdf, 2010.

[7] Nejad, S.B., et al., Health-care-associated infection in Africa: a systematic review. Bulletin of the World Health Organization,vol 89: p. 757-765. 2011

[8] El-Hebsh, H., Nurses' Knowledge and Practice about Infection Control In Outpatient Clinics of Governmental Hospitals at Al-Mukalla City–Yemen. Assiut Scientific Nursing Journal,. Vol 6(14): p. 63-71. 2018

[9] Stratton, C.W., Occupationally Acquired Infections A Timely Reminder. Infection Control & Hospital Epidemiology,. Vol 22(1): p. 8-9. 2001

[10] Tavolacci, M.-P., et al., Prevention of nosocomial infection and standard precautions: knowledge and source of information among healthcare students. Infection Control & Hospital Epidemiology, vol 29(7): p. 642-647. 2008.

[11]García-Zapata, M.R.-C., et al., Standard precautions: knowledge and practice among nursing and medical students in a teaching hospital in Brazil. International Journal of Infection Control, vol 6(1) 2010

[12] Kermode, M., et al., Compliance with Universal/Standard Precautions among health care workers in rural north India. American journal of infection control,. Vol 33(1): p. 27-33. 2005

[13] Koenig, S.M. and J.D. Truwit, Ventilator-associated pneumonia: diagnosis, treatment, and prevention. Clin Microbiol Rev,. vol 19(4): p. 637-57. 2006

[14] Revelas, A., Healthcare - associated infections: A public health problem. Nigerian medical journal : journal of the Nigeria Medical Association, vol 2: p. 59-64. 221

[15] Control, C.f.D. and Prevention, Vital signs: central line–associated blood stream infections—United States, 2001, 2008, and 2009. Annals of emergency medicine, vol 58(5): p. 447-450. 2011.

[16] Duesing, L.A., J.A. Fawley, and A.J. Wagner, Central venous access in the pediatric population with emphasis on complications and prevention strategies. Nutrition in Clinical Practice, vol 31(4): p. 490-501. 2016.

[17] Othman, A.A. and M.S. Abdelazim, Ventilator-associated pneumonia in adult intensive care unit prevalence and complications. The Egyptian Journal of Critical Care Medicine, vol 5(2): p. 61 - .350. 2017.

[18] Bozorgmehr, R., V. Bahrani, and A. Fatemi, Ventilator-associated pneumonia and its responsible germs; an epidemiological study. Emergency, vol 5(1). 2017

[19] Harper, T.A., et al., Bioaerosol sampling for airborne bacteria in a small animal veterinary teaching hospital. Infection ecology & epidemiology,vol 3(1): p. 20376. 2013

[20] Bowler, P., B. Duerden, and D.G. Armstrong, Wound microbiology and associated approaches to wound management. Clinical microbiology reviews, vol 14(2): p. 244-269. 2001

[21] Polage, C.R., J.V. Solnick, and S.H. Cohen, Nosocomial diarrhea: evaluation and treatment of causes other than Clostridium difficile. Clinical infectious diseases, vol 55(7): p. 982-989. 2012

[22] Kermode, M., et al., Occupational exposure to blood and risk of bloodborne virus infection among health care workers in rural north Indian health care settings. American journal of infection control, vol 33(1): p. 34-41. 2005.

[23] Bloom, B.R., et al., Tuberculosis, in Major Infectious Diseases, rd, et al., Editors. 2017, The International Bank for Reconstruction and Development / The World Bankc) International Bank for Reconstruction and Development / The World Bank.: Washington (DC) 2017 .

[24] Tong, S.Y., et al., Staphylococcus aureus infections: epidemiology, pathophysiology, clinical manifestations, and management. Clinical microbiology reviews, vol 28(3): p. 603-661. 2015

[25] Aitken, C. and D.J. Jeffries, Nosocomial spread of viral disease. Clinical microbiology reviews, vol 14(3): p. 528-546. 2001

[26] Ducel, G., J. Fabry, and L. Nicolle, Prevention of hospital acquired infections: a practical guide. Prevention of hospital acquired infections: a practical guide., (Ed. 2. 2002

]27[Alwabr G.Assessment of Knowledge about Standard Precautions and Nosocomial Infection among Nurses Working in Hospitals of Sana'a City, Yemen. International Journal of Caring Sciences, vol 10(1):173. 2017

[28] Abdullah G, Idriz S. The Knowledge, Attitudes and Practices of Nurses Toward Management of Hospital acquired Infections in

the University Clinical Center of Kosovo. Mater Sociomed.; vol 29(2): 84-87. Jun 2017
[29] Imad F , Ahmad A, Faeda E, Lubna H.Knowledge and Practice of Nursing Staff towards Infection Control Measures in the Palestinian Hospitals. Journal of Education and Practice,vol 6(4): 97-90. 2015
[30] Farid N, Zeinab JM, Abdollah D, Soheila R, Mehdi MN.Knowledge, Attitude and Practice of Nurses Regarding Nosocomial Infections Control in Teaching Hospitals of Kermanshah University of Medical Sciences, Iran(2015).Archives of Hygiene Sciences ;vol 6(4): 314-319.,2017

Biography

Yahia K. Almualm graduated in nursing sciences from Yemen Republic. He has been awarded a scholarship by the Charitable Fund for Outstanding Students of Malaysia to pursue an M.Sc. in Family Health Nursing. He obtained his M.Sc. in Family Health Nursing in 2008 from the Department of Family Health Nursing, University of Sains Malaysia (USM) Kelentan. He has been awarded a scholarship by the government of Egypt to pursue a PhD in Community Health Nursing. He obtained his PhD in Community Health Nursing in 2016 from the Department of Community Health Nursing, University of Assuit, Assuit City, Egypt. Currently he is an associate professor. He is working as Deputy Dean of Nursing College, Hadhramout University.