



RESEARCH ARTICLE

OCCUPATIONAL NOSOCOMIAL SKIN INFECTIONS AMONG NURSING STAFF IN BAQUBAH TEACHING HOSPITALS.

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Manuscript Info

Manuscript History

Received: 11 December 2016

Final Accepted: 05 January 2017

Published: February 2017

Key words:-

Occupational, Nosocomial skin infections, Prevalence, Nursing staff

Abstract

Background: Health care workers especially nursing staff are at risk of acquiring nosocomial skin infections through occupational exposure. Nosocomial skin infections (NCSI) can be caused by viruses, bacteria, fungi and parasite.

Aims: To determine the prevalence of occupational nosocomial skin infections among the nursing staff in Baqubah teaching hospitals and to assess the factors responsible for non-compliance of infection control measures amongst nursing staff.

Patients and Methods: A cross sectional study was conducted among nurses in two teaching hospitals in Baqubah city from 1st September 2015 to 31th of March 2016. Special questionnaires were used to determine the prevalence of nosocomial skin infections among 200 nurses who worked at the two hospitals were chosen randomly, and dermatological examination was performed by dermatological specialist. $p < 0.05$ was considered statistically significant.

Results: The prevalence of occupational nosocomial skin infections was (53/200) (26.5%) and it was most common in Baqubah teaching hospital; (68%) in medical ICU and (64%) in surgical departments. The majority of cases were infected with scabies (73.5%), other infections; fungal infection (15%), while pediculosis, warts, molluscum contagiosum each one compose (4%) of infections. High prevalence was among males (62%), with age group more than 35 years old (47%), with bad hand hygiene (41%).

Conclusions: We conclude that scabies were the most common occupational nosocomial skin infections among the male nursing staff with age group more than 35 years old, with bad hand hygiene, working in Baqubah teaching hospital.

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Introduction:-

Nosocomial infections, or hospital-acquired infections are those infections acquired in hospital or healthcare service unit, that first appear 48 hours or more after hospital admission or within 30 days after discharge following inpatient care. The Nosocomial infection transmitted by five main routes which includes; contact, droplet, airborne, common vehicle and vectorborne. [1].

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Medical staff move from patient to patient thus providing a way for pathogens to spread, inadequate sanitation protocols regarding uniforms, equipment sterilization, washing and other preventive measures that may either be unheeded by hospital personnel or too lax to sufficiently isolate patients from infectious agents and lastly the routine use of anti-microbial agents in hospitals creates selection pressure for the emergence of the resistant strains of microorganisms. They are unrelated to the original illness that brings patients to the hospital and neither present nor incubating at the time of admission. [2, 3].

Nosocomial infections are classified as infections that are associated with the delivery of health care services in a health care facility. Nosocomial microorganisms may also be acquired by health personnel working in the facility and can cause significant illness and time loss from work [4].

Nosocomial infection continues to be a burden to the world health care system through increased risk to patients and employees. These infections have tremendous health and financial costs with an estimate incidence of 2,000,000 infection per year, 20,000 death per year and added costs of billion dollars per year. Effective infection control programs are essential to controlling and preventing Nosocomial infection [5,6].

Aims:-

To determine the prevalence of occupational nosocomial skin infections among the nursing staff in Baqubah teaching hospitals and to assess the factors responsible for non-compliance of infection control measures among nursing staff.

Patients and Methods:-

A cross-sectional study was carried out at two teaching hospitals in Baqubah city (Baqubah and Al – Batool teaching hospitals) over a period from 1st September 2015 to 31st of March 2016. Special questionnaires were used to determine the prevalence of nosocomial skin infections among 200 nurses who worked at the two hospitals were chosen randomly. The questionnaires were administered by using face-to-face interviews. The questionnaires were designed and constructed by the researcher including (occupational and demographic variables; age, gender, departments, uses of personal protective measures, hand hygiene, risk factors of nosocomial skin infections) and dermatological examination was performed by dermatological specialist. To describe and analyze the findings of the study, the statistical means used were: Mean, Frequency and percentage as descriptive statistics and Chi-square as inferential statistics. All data were recorded and analyzed using SPSS 20, and $p < 0.05$ was considered statistically significant.

Results:-

The prevalence of occupational nosocomial skin infections was (53/200) (26.5%) and it was most common in Baqubah teaching hospital (68%) in medical ICU and (64%) in surgical departments. The majority of cases were infected with scabies (73.5%), other infections; fungal infection (15%), while pediculosis, warts, molluscum contagiosum each one compose (4%) of infections. High prevalence was among males (62%), with age group more than 35 years old (47%), with bad hand hygiene (41%).

Table 1 shows that the higher percentage of nosocomial skin infections were among males (62%) and (85%) of them in Baqubah teaching hospital and (15%) of them were in Al- Batool teaching hospital, while the female compose (38%). This result was statically highly significant ($p < 0.001$).

Table 1:- Distribution of Nosocomial skin infections (NCSI) in the two hospitals according to the gender.

Gender	Name of hospital				Total		P-value
	Al-Batool		Baqubah				
	No	%	No	%	No	%	
Male	5	15%	28	85%	33	62%	<i>p</i> <0.001(HS)
Female	12	60%	8	40%	20	38%	
Total	17	32%	36	68%	53	100%	

$df=1, \chi^2=37.72, \text{tab}\chi^2=3.841, P < 0.001$, which is highly significant

Table 2 shows that the percentage of NCSI is higher in the age group more than 35 years old(47%), the result was statically highly significant ($p < 0.001$).

Table 2:- Distribution of Nosocomial skin infections (NCSI) according to the age.

Age	NCSI				Total		p-value
	Yes		NO				
	No	%	No	%	No	%	
<25 yrs	5	10%	47	90%	52	26%	
26-30	18	35%	33	65%	51	25.5%	
31-35	8	16%	42	84%	50	25%	
>35	22	47%	25	53%	47	23.5%	p<0.001(HS)
Total	53	26.5%	147	73.5%	200	100%	

$df=3$, cal $\chi^2 = 20.485$, tab $\chi^2 = 3.815$, $P < 0.001$, which is highly significant

Table 3 show that the prevalence of nosocomial skin infections (53/200) was (26.5%) with high prevalence of scabies (39/53) was (73.5%) and more in medical ICU(68%) and surgery (64%) departments; other infections (15%) fungal infection, while pediculosis, warts, mollusum contagiosum each one compose (4%).

Table 3 : Distribution of Nosocomial skin infections (NCSI) according to the departments.

Types of NCSI												
Department	Scabies		Fungal infection		Pediculosis		Warts		Mollusum Contagiosum		Total	
Medicine ICU	No	%	No	%	No	%	No	%	No	%	No	%
	11	68%	2	12.5	1	6	/	/	2	12.5	16	30
Surgery	11	64%	4	24	/	/	2	2	/	/	17	32
Gynecology	5	100%									5	10
Pediatric	9	75%	2	17	1	8	/	/	/	/	12	23
Orthopedic	3	100%									3	5
Total	39	73.5%	8	15%	2	4%	2	4%	2	4%	53	100%

Table 4 shows that the distribution of NCSI was (28%) among those not using personal protective measures, the result was statically of no significant ($p > 0.05$).

Table 4: Distribution of Nosocomial skin infections (NCSI) according to the use of personal protective measures.

Use of personal protective measures	NCSI				Total		p-value
	YES		NO				
	No	%	No	%	No	%	
USE	3	15%	17	85%	20	10%	p>0.05(NS)
NO USE	50	28%	130	72%	180	90%	
Total	53	26.5%	147	73.5%	200	100%	

$df=1$, cal $\chi^2 = 1.1$, tab $\chi^2 = 3.841$, $P > 0.05$, which is of no significant

Table 5 shows that the distribution of NCSI was (41%) in those with bad hand hygiene and this result was statically of high significant $p < 0.0001$.

Table 5:- Distribution of Nosocomial skin infections (NCSI) according to hand hygiene.

Hand Hygiene	NCSI				Total		p-value
	Yes		NO				
	No	%	No	%	No	%	
Good	6	7%	79	93%	85	43%	p<0.0001(HS)
Bad	47	41%	68	59%	115	57%	
Total	53	26.5%	147	73.5%	200	100%	

$df=1$, cal $\chi^2 = 111.07$, tab $\chi^2 = 3.841$, $P < 0.0001$, which is highly significant

Table 6 shows that (84%) of cases of NCSI are among those working overtime. This result was statically of no significant ($p > 0.05$).

Table 6 : Distribution of Nosocomial skin infections (NCSI) according to the risk factors.

NCSI	Presence of risk factor						Total		P-value
	Chronic diseases		working overtime		Obesity				
	No	%	No	%	No	%	No	%	
YES	1	2%	36	84%	6	14%	43	36%	P>0.05(NS)
NO	4	5%	55	71%	18	24%	77	64%	
Total	5	4%	91	76%	24	20%	120	100%	

df=2, cal $\chi^2 = 2.186$, tab $\chi^2 = 5.991$, $P > 0.05$, which is of no significant

Discussion:-

This study showed that, The prevalence of nosocomial skin infections was (26.5%) and it was most common in Baqubah teaching hospital (68%). High percentage of cases were infected with scabies (73.5%), mostly among males (62%) and (47%) of them were (>35) years old, with bad hand hygiene (41%). This reflects obviously low awareness of health care, inappropriate and inadequate health services, bad sanitation of hospital environment and bad nursing staff hygiene and not using personal protective measures.

The result of this study shows that the prevalence of scabies (73.5%) was high, which agree with other studies done in Canada, 25% reported cases of scabies among their residents during a 1-year period [7]. Over a 1-year period, 17% of Michigan's nursing homes reported scabies in the facility. In Oslo, Norway three scabies outbreaks occurred in three nursing homes over a period of 6 months [8]. The close contact between staff and residents and between visitors and residents in nursing homes may contribute to a repetitive and prolonged duration of scabies outbreaks. [9–10].

In relation to gender, most of nurses in this study (62%) were male; as the number of nursing staff (mainly of male gender) especially in the night shift, taking care of the patient unit or environment as an important aspect of patient care. This finding comes along with result obtained from study done in Baghdad [11].

The present study explores that high prevalence of hospital acquired skin infections were in medical ICU and surgical department more than other departments. This study agree with studies done in India, Serbia, Switzerland and Spain [12-15].

This study show that the prevalence of nosocomial skin infections was higher among the nursing staff not using the personal protective measures, disagree with the findings of a study done by Okechuku, in Nigeria which revealed that health care workers always used gloves when they anticipated contact with body fluids, non-intact skin and mucus membranes [16].

The result on lack of knowledge of hand washing among nurses for the prevention of nosocomial skin infections. The above result agree with study conducted by Idang N. Ojonget al in Nigeria [17].

This study shows the risk factors of nosocomial skin infection was not statistically significant, disagree with study done in Kampala, Uganda [18].

Conclusions:-

We conclude that scabies were the most common occupational nosocomial skin infections among the male nursing staff with age group more than 35 years old, with bad hand hygiene, those working in Baqubah teaching hospital.

Recommendations:-

1. Training and re-training is necessary to increase nurses' knowledge toward nosocomial skin infections, immunization, improved hygiene, particularly hand washing.

2. *Infection control should be incorporated into the curriculum of medical/dental students, student nurses and other paramedical. Enhance or develop the qualification of nursing staff.*
3. *further research in the health care providing especially nursing staff are directed to prevent and control the acquisition of nosocomial skin infections.*

Acknowledgment:-

Author acknowledge the cooperation of the nursing staff and thank Dr Nadhim Khazal Noaman for data management support, quality check and analysis of data.

Conflicts of Interest: None.

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