

## HOSPITAL INFECTION AND RELATED FACTORS IN IMAM KHOMEINI HOSPITAL JIROFT CITY

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### ABSTRACT

Nosocomial infections common and important causes of mortality, morbidity, increased length of hospital stay, and increased hospital costs and impose health problems are Although efforts have been made in the field of hospital infections has been associated with success, But recent advances in medical science and frequent medical procedures, including extensive use drugs suppress the immune system and antibiotics to increase vulnerable people Which with transferable resistance in pathogens to antibiotics has intensified Given the existence of these microorganisms and other pathogens that cause infections in hospital wards and ICU infections as well as various other sections Bacterial resistance to antibiotics is one of the main problems The aim of this study was to determine the incidence of nosocomial infections and related factors in patients hospitalized in Imam Khomeini hospital in Jiroft was during the years 1394-1391.

Methods: This study is a retrospective cross-sectional study in which the date April 1391to March 1394 were in Jiroft city hospital The sample size of this study by the researcher census so that all patients with a diagnosis of nosocomial infection cases were admitted in hospital Refer to archive research data by researchers designed a questionnaire based on the patients' hospital records system NNIS (National Nosocomial Infection Surveillance) were collected. The data collected were analyzed by software SPSS20.

Results: During the years 1391to 1394, 861patients with nosocomial infections Jiroft Imam Khomeini hospital that most of them were men hospital highest rate of infections in neonatal age group 30-20 years. Most effective pathogen *Pseudomonas* nosocomial infections, *E.coli*, *had aureus* and *Acinetobacter*. In the NICU, ICU, medical and orthopedic surgery highest rates of infection were observed. Bloodstream infections, respiratory infections, surgical site infection and urinary tract infection was the highest infections in patients.

Conclusion: Due to the growing frequency of nosocomial infections as well as increased bacterial resistance to existing antibiotics, Faced with patients in a hospital hygiene is of utmost importance.

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### Introduction

Bacterial infections and community-acquired infections are one of the major challenges facing non-indigenous communities. [1] All issues affecting developing countries are considered in developing countries. [2] Infectious disease is an infectious agent that has been or has been reported to occur in the course of an infectious or contagious course of the disease, provided that at least 41 hours or 22 hours have elapsed since the birth of the same family member.

Although efforts to control hospital infections have been successful, recent advances in medical science and frequent medical interventions, including the widespread use of immunosuppressive drugs and antibiotics, have led to an increase in vulnerable individuals, which has been exacerbated by the creation of resistance to pathogens in relation to antibiotics (4)

The problem is that you have been severely affected by severe ill-treatment and the risk of ill-health is that those who have been diagnosed with a severe illness are at risk. [5]

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Treatment of hospital infections is very costly due to the resistance of most microbial strains due to the prolonged hospitalization period, so it is very costly and, given the health of hospitals and the microbiological diagnosis, infections can be greatly increased. Control the hospital and prevent its spread [6]

More than 2 million people are suffering from nosocomial infections, and nearly 100,000 people die of the infection, according to data provided annually. In developed industrial countries, the incidence of infections in hospitals is about 5-11%, in developing countries is variable and in developing countries is about 21% to 25%. [7]

Worldwide, studies have reported the incidence of hospital infection between 4% and 42%. In a 2007 to 2008 study, the most commonly reported nosocomial infection was urinary tract infections (32%) and infections (16.3%), with the highest rate of hospital infection in the ICU and in the surgical ward [8].

The three main sites for hospital infections are: urinary system (31%), respiratory system (24%) and blood flow (16%) and skin and other organs. Common diagnoses for infection in the places mentioned include pneumonia, urinary tract infection, and septicemia. [9]

**Pneumonia** The most commonly reported infectious disease in ICU and the second most commonly reported nosocomial infection is chest infection, the most commonly reported risk factor for the spread of pneumonia. [10]

**Urinary tract infections** have been reported as the second most commonly reported hospital infection in the ICU. The catabolism of microbial biofilms, in particular biofilms of the *Staphylococcus aureus*, is responsible for administering the tools in the urinary system 80% of the infection rate. The long-term survival of the catheter in the urinary tract is the greatest risk factor for infection. [11] Also, since the biofilm formation phenomenon is an important factor in drug resistance

It is important to consider the complexity of the use of the caps used in the homes of the hospital and the need for users to monitor the incidence of such diseases. It should be noted that many types of diseases of the immune system can be classified as immunosuppressive [12].

Infectious diseases are a common habitat, which is 3 to 7 percent more than that in the early part of the population. The ICU is used to increase the rate of infiltration of the central hemorrhoids in the environment. The skin's specificity of moisture and heat in the abdomen may affect the difference in the symptoms [13]

**Epidemiological studies** The factors associated with increasing the likelihood of infection of the hospital are the age of the patient, the presence of underlying diseases, the length of hospitalization, the weakness of the immune system, invasive diagnostic treatments such as urinary catheter, central venous catheter, ventilator. Reduced the risk of infection with the country. [14]

#### **A review of the studies done:**

The most commonly reported nosocomial infections, including urinary tract infections and pneumonia, have been reported in CDC's 1991-2002 reports. The Singh study showed that the urinary system had the highest incidence of 51% and the cerebrospinal fluid with 2% less involvement [15].

The most common microorganisms that cause a hospital infection are different according to the location of the infection, and various factors such as viral, bacterial and fungal agents contribute to it [16]. In the study, Bienve nido is the most common microorganism that causes infections in the urethra and bladder tubes. *Escherichia coli*, in the trachea and the knee penal respiratory tract, on the wound caused by cytokine germs, in hepatitis B virus, on the *Candida albinos* catheter and found in the cerebrospinal fluid of the spinal cord of the hepatitis virus. [17]

In the study of Sohrabi et al., The incidence rate of infections in the ICU was 17.5% and then the NICU was 8.06%. In other studies, the incidence rate in the intensive care unit is higher than in other areas. These studies have shown that common factors in ICU patients who increase the risk of acquiring hospital infections in the intensive care unit include: illness severity, response to physiological stress and pain, anxiety, age, inappropriate use departing from the antidepressants is sleep deprivation and malnutrition. [18]

In the study of Berenholtz et al., The most common type of infection among the subjects was pneumonia (43%), followed by urinary tract infections (15.1%), clinical sepsis (11.7%), infections (9.2%), and septicemia (7%). The lowest type of infection was bronchitis and arthritis and infections of burn wounds and infant pustules (0.03%). [19]

Considering the high percentage of patients with endotracheal endotracheal infections with suction and ventilation, these invasive interventions are more prone to the patient [20]. According to the results of the study, Emilia et al. were the result of negative culture (33%) in the majority of cases and infectious pathogens were respectively *Klebsiella* (12.8%), *Pseudomonas aeruginosa* (9.8%), and *Escherichia coli* (9.5%) *Staphylococcus aureus* (6.1 %) Was. In other studies, the most common microorganisms in *Escherichia coli*, Gram-negative cocci and *Pseudomonas* in Qom [21] and *Acinetobacter* and *Escherichia coli* were in Mustafa Khomeini Hospital [22].

In Constantine et al., The highest number of patients with urinary catheter risk factor (70.4%), suction (66.8%), tracheal tube (54.2%), ventilator (51.4), surgical history (45.8%), tracheostomy (11.5%). [23]

In the study of Lari pour et al. In one of the Qom hospitals was the most commonly associated concomitant urinary catheter. [24]

A study by Bradley found that 19% of patients with urinary tract infections had urinary tract infections. In patients with nosocomial infections, which had the underlying cause of surgery. 16.6% had wound infection. Pneumonia with tracheal tube was 64.4%, pneumonia with suction in 58.2%, and pneumonia with VAP ventilator in 63.6% of patients [25].

In the study of victim Berigani in 2011, 10% of patients admitted to the intensive care unit had signs and symptoms of hospital infection: the highest incidence was in the age group above 60 years. For the type of infection, 41% had urinary tract infections, 28% had respiratory infections, 20.5% had surgical infection and 10.5 had blood infections [26]

In a study by Sharifi et al. In the ICU in Imam Reza Hospital in 2010, Kermanshah showed that among 198 patients, 37.37 had respiratory infections and 27.2 had urinary tract infections, and respiratory and urinary tract infections were the most commonly reported infection Of the intensive care unit [27]

The Ghiyoswandian study, conducted in 2002, also states that about 70% of hospital infections are caused by specific pathogens: gram positive organisms, golden staphylococci, coagulase staphylococci, enterococci and gram negative organisms, Escherichia coli, Pseudomonas Aeruginosa, Klebsiella pneumoniae [28]

Wiest and colleagues in Germany in 2002 found the bacterium Pseudomonas, Acinetobacter, E.coli, Staphylococcus and Enter in patients with extensive wounds such as burns and surgeries [29]

A September 2006 study by the United States Department of the Intensive Care, Rhine Pyfagan and colleagues found that 17.8% were infected with enterococcus, 16.6 g negative and 13.5% were candida,

In another study in 2013 in the intensive care unit that was conducted in Korea by Yang-Hyun at St. Mary's Hospital in South Korea, the purpose of determining the factors affecting urinary catheter infections in intensive care was to conclude that the most common cause of infection is dependent on the E. coli catheter. [13] The percentage of several cases of Acinetobacter infection indicates that environmental reservoirs such as mattresses and blankets can be a growing problem of nosocomial infections [31].

Given that the presence of these microorganisms and other pathogens present in the hospital is the cause of hospital infections in infectious diseases and ICUs and various other sectors, the microbial resistance, which is one of the main problems in the use of antibiotics, is also due to the imposition of costs The aim of this study was to determine the frequency of hospital infection and its related factors in the hospitalized patients in Imam Khomeini Hospital in Jiroft during 2013-2016, in the treatment of both the treatment system and the effects of disease complications such as prolonging the duration of hospitalization.

#### Procedure

This study was a descriptive cross-sectional study in Imam Hospital in Jiroft. The study population was all patients admitted to Imam Khomeini Hospital. The sample size of this study was census. By obtaining the consent of the Ethics Committee of Jiroft University of Medical Sciences and observing the ethical or informal obligations of the investigator were documented from all patients who were hospitalized for diagnosis of infection in Imam Hospital from April 2012 to March 2012.

The criteria for entering the study for at least 72 hours in the hospital and the criteria for leaving the study were the presence of signs of infection at the time of entering the department and having underlying illnesses.

Data collection was done by a researcher based on the National Nosocomial Infection Surveillance (NNIS) questionnaire and according to the Hospital Diagnosis Diagnostic Algorithm, a national guide to the hospital care system, whose reliability and validity have already been proven and standardized. According to this questionnaire, the required information (age, sex, hospitalization, NNIS diagnostic code, surgery, location of culture, location of infection, type of pathogen, invasive measures and underlying illness) in different samples from patients with definite diagnosis They were hospitalized for infection. Data were analyzed by SPSS statistical software.

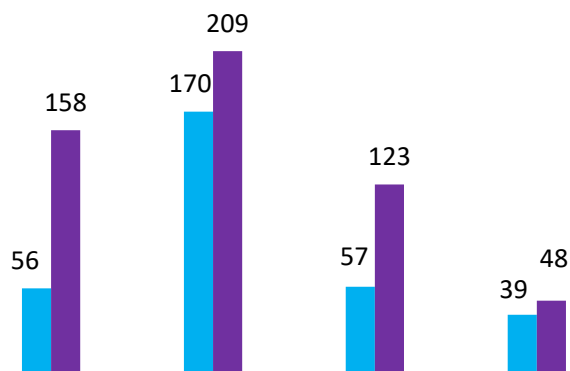
#### Findings

Of the 861 patients with nosocomial infections, the most cases were males, with a frequency of 539 (62.6%). Infants and the age group of 20 to 30 years old had the highest incidence of infection among pathogens, pseudomonas (12.1%) and Ecoli (9.1%) respectively. Also, the sections with the highest and lowest incidence of infection were infants (285 cases) and eyes (1 case). (Table 1)

**Table 1.** Frequency distribution of demographic indicators studied

Percentage	Number	Variable	
37.4	322	Women	Sex
62.6	539	Men	
34.6	298	infants	Age
6	52	1-10 years	
6.9	59	10-20 years	
11.7	101	20-30 years	
10.6	91	30-40 years	
7	60	40-50 years	
6.3	54	50-60 years	
4.9	42	60-70 years	
5.3	46	70-80 years	
3.5	30	80-90 years	

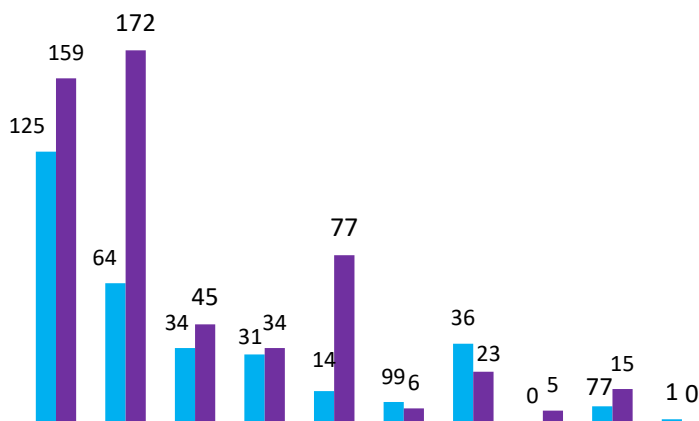
Diagram 1 shows the frequency of the location of hospital infections in women and men. The highest infection rate is related to men with circulatory infection and also chi-square test results show a significant relationship between these two variables (P <0.05).



**Diagram 1.** Frequency distribution of hospitalized infections in the studied population by sex

P-Value	Degrees of releasing	QI value	Place of infection				Sex
			Genitourinary system	Skin	Blood	Respiratory System	
<0/001	3	25/1	44/8) 39	57 (31/7)	170 (44/9)	(26/2) 56	Women
			(55/2) 48	123 (68/3)	209 (55/1)	(73/8) 158	Men

In the hospital section, the NICU and ICU sections had the highest rates of infection, respectively. In all areas except infants and children, the incidence of men was higher than that of men (Diagram 2).



**Diagram 2.** Frequency distribution of the admitted patients by sex

**Discussion and Conclusion**

In the present study, 861 patients suffered from hospital infection during the period 1391 to 1394, of which 62.6% were male and 37.4% were female. According to the collected data, neonates (34.6%) formed the most cases of infections in the hospital. Hospital infections were also higher in other age groups of 20-30 years old (11.7%) and 30-40 years old (10.6%). Out of 861 cases of hospital infection, only 434 cases of pathogens were identified as infectious agents, and in the remaining cases, cases were not reported in patients. According to these results, the most pathogens involved in infections in the hospital were pseudomonas (12.1%), E.coli (9.5%) and Staphylococcus (9.1%).

Among hospitalized patients in different parts of the hospital, infants admitted to NICU (33.1%) formed the most cases of hospital infections. Patients with ICU (27.4%), orthopedics (10.6%) and surgery (9.2%) were the most frequent cases of nosocomial infections.

The location of the infection was different in patients with nosocomial infections, 44.1% had circulatory infection, 24.9% had respiratory infections, 20.9% had surgical infection and 10.1% had urinary tract infection and genital tract infection.

Measures were taken to treat the patients in hospital in different parts of the hospital. In 96.1% of patients with venous catheter, 39.4% of patients had UTI, 32.6% of patients had airway suction and 30.5% of patients had ventilator.

In the study of victim Berigani in 2011, 10% of patients admitted to the intensive care unit had signs and symptoms of hospital infection: the highest incidence was in the age group above 60 years. In terms of the type of infection, 41% had urinary tract infections, 28% had respiratory infections, 20.5% had surgical infection and 10.5 had blood infections (26%). The results of our study showed that the prevalence of nosocomial infections in the ICU segment was 27.4%, which after NICU had the most cases of hospital infection. Patients seem to be more likely to get hospital infections in the intensive care unit because of the length of hospitalization and the aggressive actions they carry out. The reasons for the high rates of infections in the infant and the NICU sector were low. Care was taken during and after pregnancy.

Conclusion: Considering the increasing prevalence of nosocomial infections and the increased resistance of bacteria to existing antibiotics, it is important to observe the health issues in dealing with hospitalized patients. The results of this study showed that the most frequent NICU hospital infection is the need for prenatal care and about better delivery and control of other factors affecting the development of childhood infections, such as patient education, nursing staff, and health regulations in the maternity setting.

Also, because of the high prevalence of hospital infections in patients admitted to intensive care units, it seems that there is a need to review the treatment of patients admitted to these sectors, as well as the aggressive actions that are performed on patients to be done more carefully. To the extent that the incidence of hospital infections is minimal, considering that the highest percentage of infection in males and the age group 20-30 years after infants and the ICU section and orthopedics and surgery in the second to fourth grade of the frequency of hospital infection It seems that educating the community to reduce the number of traumatic accidents and care for these patients is better It is effective in reducing the rate of hospital infection in this hospital.

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