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Review Article

**AIR POLLUTION AND HOSPITAL INFECTION
- A REVIEW ARTICLE**Leili Rezaie kahkhaie ¹, Khadije Rezaie keikhaie ², Morteza Salarzaei ^{3*}¹ Student of Infection Disease, Student Research Committee, zahedan University of Medical Sciences, Zahedan, Iran² Asistent Professors of Maternal Fetal Medicine, Obstetric and Gynecology, Maternal and Fetal Health Research, Zabol University of Medical Sciences, Zabol, Iran³ Medical Student, Student Research Committee, Zabol University of Medical Sciences, Zabol, Iran**Abstract:**

Introduction: The number of microbes in the air varies based on the extent of industrial activities going on in a specific place; the more industrial a city is, the more susceptible to permanent pollution it is [more than 10000 per mm square]. Hospital operation rooms must be free from any kind of microbe and, even, the number of phytochemicals should not exceed 20; however, each gram of hospital dust contains about 1,200,000 streptococcus pathogens. The densely populated areas of hospitals that are poorly ventilated and lighted are favorable conditions for the transmission of microbes.

Methods: In this review article, the databases Medline, Cochrane, Science Direct, and Google Scholar were thoroughly searched to identify the studies Investigating the incidence and control of Air pollution and hospital infection. In this review, the papers published until early January 2017 that were conducted to study the Investigating the incidence and control of Air pollution and hospital infection were selected.

Findings: It is difficult to determine the main sources of pathogenic flora; but, in general, it can be said that the population density of a specific spot, the presence of patients and the equipment used by them, and, any transport of objects causes the spread of pathogenic flora.

Discussion and conclusion: Air pollution in hospitals is several times as important as other places. It often leads to the deaths of sick patients in hospitals. Therefore, we have to try to prevent the air pollution of hospitals by using air conditioning and health measures.

Key words: Air pollution , hospital infection , control

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INTRODUCTION:

The number of microbes in the air varies based on the extent of industrial activities going on in a specific place; the more industrial a city is, the more susceptible to permanent pollution it is [more than 10000 per mm square][1]. The air microflora varies in different seasons; so, if the total number of germs is assumed to be 1 in winter, this rate will vary to 1.7 in spring, 2 in summer, and 1.3 in autumn[2]. Hospital operation rooms must be free from any kind of microbe and, even, the number of phytochemicals should not exceed 20; however, each gram of hospital dust contains about 1,200,000 streptococcus pathogens. The densely populated areas of hospitals that are poorly ventilated and lighted are favorable conditions for the transmission of microbes[3]. In addition to interfering with primary and secondary allocated sources, these kinds of infections direct management policies towards controlling the spread of infection within health care centers[3]. These kinds of infections are among major health problems within healthcare centers of both developed and developing countries[4]. Hospital infections cause mental stress, disability, paralysis, and considerable reduction of the quality of the life of the patient[5]. Studies have shown that hospital infections are one of the leading causes of death in all countries, resulting in prolonging the length of patient hospitalization and imposing huge costs on, both, patients and healthcare system[6]. These infections cause increased illness and mortality, huge costs, and prolongation of the hospitalization period for the patients[7]. The hospitalization period increases from 1 to 30 days, depending on the kind of the infection; this problem is more serious in countries which are struggling with insufficient space, where a patient might even die due to scarcity of required hospitalization beds and facilities[8]. Since the treatment of a hospital infection imposes huge costs on the healthcare system, it seems that the implementation of an infection control program, or even a small but effective change in the performance of healthcare professionals in controlling hospital infections, can be very useful from the perspective of health economics.

METHODS:

In this review article, the databases Medline, Cochrane, Science Direct, and Google Scholar were thoroughly searched to identify the studies Investigating the incidence and control of Air pollution and hospital infection. In this review, the papers published until early January 2017 that were conducted to study the Investigating the incidence and control of Air pollution and hospital infection were selected.

Findings:

Sources of air pollution in the hospitals

It is difficult to determine the main sources of pathogenic flora; but, in general, it can be said that the population density of a specific spot, the presence of patients and the equipment used by them, and, any transport of objects causes the spread of pathogenic flora[9]. Pasteur's treatise, entitled "Airborne particles", shows the role of microbes in air pollution and mentions subjects who have gotten sick after inhaling the air around a hospitalized patient[10]. Laveran notes that the germs observed on the patient's wound are the ones that are found in the dusty haze of the hospital rooms[11]. An infectious disease that occurs in a person after being admitted to a hospital or after birth in a hospital, in which the person has not been infected before being admitted to hospital during the period of the disease, is called a hospital infection[12]. Since the incubation period is, on average, 2-3 days, hospital infections are reported after 48 hours or the first 72 hours of hospitalization; consequently, patients whose infections appear prior to the passage of 48 hours of hospitalization are not usually categorized in this group[13].

DISCUSSION AND CONCLUSION:

Many experiments have been carried out and various methods have been used to control pollution and infection in the hospitals[14]. In order to prevent airborne infections, there is no better way than natural ventilation and preventing the accumulation of a large number of people in a closed space; if this is not feasible[15], pressure-oriented ventilation and radiation methods should be applied[16]. Due to resource constraints, governments need to identify the most important health needs by monitoring the health of the community and try to increase the quality of provided services through the integration of effective interventions[17]. Based on the analysis of reviewing conducted studies all over the country and considering the prevalence rate of various infections, it can be concluded that the overall prevalence of nosocomial infections is, relatively, high in Iran[18]. In spite of the growing development of health standards and the development of hospitals in recent years, an overview of the outbreaks reveals a relatively uneven trend between this developmental pace and different types of hospital infections in different parts of the country; this issue needs to be anatomized by healthcare section policymakers in order to find an appropriate solution for the development of effective and evidence-based training and control programs to reduce this health problem in Iran[19]. Air pollution in hospitals is several times as important as other places. It often leads to the deaths of sick patients in hospitals. Therefore, we have to try to prevent the air

pollution of hospitals by using air conditioning and health measures[20].

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