

COMPARING RATE OF AWARENESS AND PERFORMANCE OF PERSONNEL FROM THE PROCESS OF MANAGEMENT RELATED TO NOSOCOMIAL WASTES BEFORE AND AFTER EDUCATION AND THEIR EFFECTS ON INDICATOR OF CONTROLLING THE INFECTION IN DR. ALI SHARIATI HOSPITAL IN FASA, 2015

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ABSTRACT

Nowadays in most countries, health of society and presentation of hygienic cares are considered as fundamental issues. Hospital is the most important organization in presenting hygienic-medical services. Hygienic-medical centers as the first governmental presenter related to services in the city, are responsible for presenting services to people in P.H.C system. So, obeying hygiene of the environment such as proper excretion of wastes and sewage can have an important role in preventing contamination of diseases for personnel and referred people. According to the importance of issue, this study was done with the aim of comparing rate of awareness and performance of personnel from the process of management related to nosocomial wastes before and after education and their effects on indicator of controlling the

infection in Dr. Ali Shariati hospital in Fasa, 2015 and is a descriptive-practical research.

Methodology: Statistical universe of present study are personnel of in Dr. Ali Shariati hospital in Fasa and according to performed assessment of need ,yet they have not participated in the educational course related to management of nosocomial wastes and their

number were estimated 100 and because of low amounts of society, their amounts are equal to the numbers of sample. The device of collecting data is questionnaire which has required validity and stability (0.820) and for analyzing data, SPSS software was used and for investigating assumptions, two-sample T-test was regarded. **Findings of the study:** According to obtained results, there is meaningful relation between awareness of personnel in management of nosocomial wastes before and after education. Also there is meaningful relation between amounts of execution related to management of nosocomial wastes before and after education and the rate of indicator related to controlling the infection before and after education. **Results:** Training people in process related to management of nosocomial wastes, is effective on rate of awareness, performance and also the indicator related to controlling the infection.

KEYWORDS: Management of waste, education of employees, controlling the infection.

INTRODUCTION

Nowadays in most countries, health of society and presentation of hygienic cares are considered as fundamental issues. Hospital is the most important organization in presenting hygienic-medical services (Rahmani and colleagues, 2016). Hygienic-medical centers as the first governmental presenter related to services in the city, are responsible for presenting services to people in P.H.C system. So, obeying hygiene of the environment such as proper excretion of wastes and sewage can have an important role in preventing contamination of diseases for personnel and referred people (Johari and colleagues). The main mission of hospital is increasing health. Executing this mission is effected by different factors including obeying criteria of environmental health and lack of sufficient attention to it can create problems in performing the prophecy of the hospital (Golbaz and colleagues, 2013).

Rapid increase in population, development and progress in technology and tendency of people on increasing consumable materials and as a result proliferation of wastes and also improper management of collecting wastes system in human societies have created many hygienic dangers and environmental interactions for residents of these societies. About this issue presenting public and environmental educations can play special roles in participation of urban residents in order to proper correction of management (Norouzian and colleagues, 2013). Increase in urbanization has led to some changes in production and parts of nosocomial wastes and proper management of excreting solid nosocomial wastes is an issue

that has a direct relation with health and controlling the infection in society (Armaki and Sadat, 2013).

Management of nosocomial wastes is parts of plan in controlling the nosocomial in infections. Nosocomial wastes are resources full of pestiferous microorganisms that can create pollution and increase in nosocomial infections. If these wastes don't be properly controlled, these microorganisms can be transferred through direct contact, transmission by air, carriers or indirectly (pollution of water and so on.). Infectious wastes can dispose employees and patients in infectious diseases.

Increasing and correcting proper ways in collecting and excreting nosocomial wastes are important in hygiene of all society and each member of the society should have this right which be aware of about potential dangers of nosocomial wastes.

Lack of sufficient attention to management of wastes is regarded as one of the critical problems of environment in developing and developed countries. In order to proper managing the wastes, being aware of effective factors on this issue is inevitable and this awareness lead to more proper performance and efficient of the system (Rezayi and colleagues, 2013). Lack of controlling nosocomial wastes and their proper ignorance the collecting, maintaining, shipping and excreting create special problems that their reflections critically threat health and environment. These types of materials which are called as dangerous in classification of wastes, have unique rules and should be gathered and excreted by special care (Raygan Shirazi and colleagues, 2008).

In most of developing countries including Iran, during past decades attention to proper management of nosocomial wastes and hygienic-medical was low. Dangerous and infectious wastes resulted from hospitals and hygienic-medical centers are excreted with urban wastes in areas for gathering waste or are clarified and excreted in an improper way by using defective equipment in hospitals. So, planning for proper management of nosocomial wastes and also in hygienic centers is one of the important hygienic and environmental needs. Having documented plan for aims and planning in reaching them and in correcting management of wastes related to hygienic-medical centers about national, regional and local aspects are important (Taghi pour, 2009).

Wastes are regarded as threats for survival of people, other creatures and environment and they have created worries about management of waste and problems related to them in about three decades. Hospitals and hygienic institutions are presenters of services related to cares for patients which have caused production of nosocomial wastes with increase in industry of hygiene and care, correction of hygienic services and high usage of disposable medical equipment during recent years. Between 75%-90% of produced wastes by hospitals are household wastes and other 10%-25% are regarded as dangerous wastes (Bagheri and Shahbazi, 2013).

Although great parts of wastes in hygienic-medical centers are public wastes and small parts of them are dangerous and infectious wastes, their improper management can have irreparable effects on public hygiene and environment (Taghi pour, 2009).

Planning in management of nosocomial wastes is one of the needs of society and education of employees is one of the factors its successful execution (Taghi pour and colleagues, 2012).

Paying attention to management of solid nosocomial wastes is so important because of high potential of pathogenesis and existence of dangerous materials. Ignorance to it has critical damages in health of people and environment and proper execution of nosocomial wastes has very important role in controlling nosocomial infections (Fadaye and Khorram, 2007).

Literature Review

History of collecting and excreting solid wastes

All solid wastes should be immediately transferred out of residential areas and regions of people's lives and be such excreted that don't create dangers for human and environment. This basic order has been created in 19th century after awareness about this issue that solid wastes are dangerous for health of people. Because existence of each city is completely depended on hygiene as health water and urban cleaning and so from pastes, obeying criteria of urban hygiene has been regarded as main obligation in public services and cleaning the environment and its contents have been planned on the basis of increase in environment and progress in technology from the year 1900 till now.

Collecting data which in recent years has been proposed as a main necessity in issues of excreting the wastes, firstly was important for all people in the world by wheel, cart and then motorized machines and has been progressed along with other progresses in technology (Omrani, 1998).

Hygienic-medical centers and hospitals along with their executing obligations that are treatment of patients, presentation of hygienic services, increasing the hygiene and public health, cause producing nosocomial wastes that is a critical problem related to hygiene and environment. These wastes during the process of admission, diagnosis and treatment of patients, vaccination, research affair and etc. are produced.

Totally nosocomial wastes categorized to two groups of dangerous-infectious and public wastes or semi-household. Major parts of produced wastes in hospital and hygienic-medical centers are safe wastes or public (semi-household) and have features like household wastes. This part of wastes should be gathered and excreted like urban wastes. The remaining nosocomial wastes according to the definition of organizations related to protection of environment and WHO are categorized as dangerous infectious wastes because they have infectious factors, pathologic, geo toxic, chemical and toxic materials, carcinogen, materials with high contents of heavy metals, radioactive materials and etc. improper management of infectious and dangerous wastes can lead to improper hygienic and environmental effects as pollution of environment, resources of water, soil, air, creating ugly views, increasing carriers and the most important of all it may transmit and increase infectious diseases including cholera, kinds of diarrhea, HIV AND hepatitis B and C (Taghi pour, 2008).

Wastes and the technique of their management in societies

Investigating the histories indicated that management of waste is an engineering function, this issue is related to increasing and completing societies and with its benefits creates many problems that makes more attention to wastes as inevitable.

Management of wastes is a complicated process because it involves various principles and processes. These agents include activities and technologies related to production, maintenance, store, shipping, transmission, processing and excretion of waste. All these processes should be according to legal and social normative framework and support public hygiene and environment and be acceptable on the basis of beauty and economy. For this issue that excretion of waste be respondents of public needs, it should be included principles of executive, economic, legal, architecture, planning and engineering. All these principles should be interacted as an internal positive relations for success in unique and consolidated management of waste.

In resources of producing nosocomial wastes we can refer to wastes resulted from hospitals, clinics, clinics of doctors, medical research centers, drug stores, laboratories and old people's home. Solid produced wastes in these places are introduced as total name of hygienic-medical solid wastes. Hygienic-medical centers in in other cities are sporadic, so these wastes are produced in all urban areas, even in houses and residential houses. Collecting these materials with other urban wastes are dangerous for citizen on the basis of hygiene and also contaminate environment of the place related to excretion and make processing and recycling the materials as impossible.

Qualities and quantities of nosocomial wastes are different in each section hospital according to type of work and duty and totally are categorized into threes following classifications:

1. Problematic wastes: include biologic and anatomic wastes that should be gathered by special care and attention and be burned in area of hospital and by incineration devices or according to special instructions with protecting complete safety transfer to the area of excretion and be excreted.
2. Unproblematic wastes: include wastes in the kitchen of hospital that correspond to household wastes according to quantity, composition and also origin of production.
3. Special nosocomial wastes: include medical, chemical and radioactive materials that their collection and excretion need dedicated ways.

Totally hospitals and hygienic-medical centers are centers that patients and vulnerable people who need special hygienic-medical care refer to them, so obeying hygienic issues and preventing spread of contamination of these centers are important. In hospitals, for treatment of some patients or diagnosis of the disease, different chemical materials and radioisotopes are used. So in these centers, dangerous wastes are also produced. On the other hand, various care methods including chemotherapy, dialysis, reconstructive surgeries, cutting and bringing out organs of the body, cobalt therapy, various chemical experiments and so on are performed in these centers. So protecting hygiene of hospital's environment and proper management of excreting wastes are very important in order to preventing from transmission of disease to urban environment.

The issue of separation, collection, transmission and hygienic excretion of nosocomial wastes are important on the basis of three following views that in other sections it is proceeded to them:

1. Assurance in being healthy of services and lack of affection of people to nosocomial infections.
2. Protecting hygiene and health of people who doing their duties in these centers.
3. Prevention from outbreak of environmental dangers originated from unsafe collection and excretion of wastes.

Dangers of nosocomial wastes

Systems of excreting nosocomial wastes are different from common systems in excreting household wastes. These wastes which are regarded as dedicated wastes, are different from aspects with household wastes and as a result lead to creating more contamination in environment and threaten health of human societies. With this assumption that nosocomial wastes separately are collected and excreted from other urban wastes, also this concept exists that these wastes act as microbial bombs before unsafety and the possibility of permeating latex and spreading polluters from them to the environment and society are remained.

Nosocomial wastes are categorized to two classifications on the basis of possibility related to creation of peril (potential of creating risk):

1. Semi-household safe wastes
2. Dangerous wastes

Environmental and aesthetic dangers

Lack of proper obeying the principles of management related to nosocomial wastes causes its penetration of latex to underground waters and disspread of all kinds of parasitic and infectious diseases in the society and its dispersion in the environment causes harms to alive creatures and disorder in stability of ecological system. Sometimes it causes admission of dangerous and toxic gas polluters to atmosphere (by incineration) and effect on aesthetic agents as producing disagreeable odors and ugly views in environment. Meantime, infectious wastes and medical-chemical wastes that have all types of bacteria, toxins, parasites and funguses are regarded as the most dangerous nosocomial wastes. Totally, environmental dangers of nosocomial wastes include:

Contamination of water, air and soil.

Production and quantity of nosocomial wastes

Production of nosocomial wastes is predicated to activities of ways that lead to formation and production of wastes. In environment of hospitals, almost in all sections biological wastes are

produced. Actually producing wastes is formed the first stage in system of managing nosocomial wastes. Quantity of nosocomial wastes depends on different factors as extent of hospital, rate of usage related to disposable devices, level of social income, numbers of nosocomial beds and days of hospitalization, type of presented services, social and economic condition of the patient, geographical situation and so on (Copanoglos and colleagues, 2012).

Nosocomial wastes and hygienic-medical centers

Nosocomial wastes and hygienic-medical centers include all solid wastes that are produced during processes of hygienic cares, medical, vaccination, research actions and so on by hospitals, hygienic-medical centers, research centers, laboratories or other similar centers. In addition to them they are also included wastes that are produced in low amounts and as sporadic during hygienic-medical cares and in houses (dialysis, injection of insulin and so in.).

About 75-90% of produced wastes in hygienic-medical centers are categorized as parts of safe or public wastes (semi-household) and have features like household wastes. These parts of wastes generally are produced by administrative units, kitchen, units of maintaining repairs and building and so on.

Classification of medical wastes

Infectious wastes

Pathologic wastes

Sharp and winner wastes

Medicinal wastes

Geo toxic wastes

Required actions for protecting hygiene of employees of hygienic-medical centers and occupied employees in management of wastes

The plan of managing wastes in hygienic-medical centers should include continuous instability of employees on the basis of hygiene and safety to be sure about collecting, making safe, storing and excreting wastes in a proper way. Necessary actions required for protection of occupational hygiene and safety of employees include:

*Proper training of employees

*Preparing proper and protective clothes and equipment for employees

*Presenting and executing an effective plan in occupational hygiene which include immunization (vaccination), preventing diseases, treatment and regular medical examinations Required educations according to hygiene and safety should be in a way that employees understand potential dangers in wastes of hygienic-medical centers and also know the value and importance of vaccination against hepatitis B virus and the importance of using protective and safe devices.

Employees who are in danger include occupied people in unit of presenting hygienic-medical services, service employees in cleaning the hospital, employees responsible for maintaining devices and equipment of unsafety and all people who have activities in collecting and excreting wastes out of the hospital.

Protection of employees

The process of producing separation, shipment, unsafety and excretion of hygienic medical wastes are affairs that we involve in potential danger materials on it, so protection against hitting all people who are in danger is necessary. Responsible people in management of wastes should detect all existed dangers and prepare necessary actions in protecting opposite person. Comprehensive evaluation should be done from all dangers during designing the plan of management in wastes and then required educations should be performed about it.

Hygiene of hospitals and controlling nosocomial infections

Management of nosocomial wastes is parts of plan in controlling the nosocomial in infections. Nosocomial wastes are resources full of pestiferous microorganisms that can create pollution and increase in nosocomial infections. If these wastes don't be properly controlled, these microorganisms can be transferred through direct contact, transmission by air, carriers or indirectly (pollution of water and so on.). Infectious wastes can dispose employees and patients in infectious diseases (taghi pour, 2009).

METHODOLOGY

As this paper is about comparing rate of awareness and performance of personnel from the process of management related to nosocomial wastes before and after education and their effects on indicator of controlling the infection in Dr. Ali Shariati hospital in Fasa, it is a descriptive-practical research. Statistical universe of personnel in this hospital who have not been participated in any educational course of management of nosocomial wastes according to poll, are estimated 100 people and as the amounts of universe are low, all people are

regarded as statistical samples. Primary data by using questionnaire of 24 questions that their evaluation are on the basis of Likert scale and their stabilities are 0.820, were collected. Finally, collected data were analyzed by using SPSS software and for investigating accuracy of assumptions of the study, two samples T test was used.

Findings

Two samples student of T from illative statistics has been used for evaluating assumptions of the study and evidences were also used. According to structure of questionnaire, some questions have been designed for investigating assumptions, as it analyzes ideas of respondents in two condition. According to this issue that each respondent two times responds to questions of above assumptions and according to output of Kolmogrov-Smeernof test data are used by normal distributions of student for comparing and investigating gaps among responses in two conditions, for using this test at first we have incorporated responses related to questions of each assumptions according to way of analyzing Likert scale (SPSS of total points) and then we have done mentioned test in level of assumed error (0.05) and by using software which is like this: H_0 و H_1 . For each assumption of the test:

$$\begin{cases} H_0 : \mu_1 - \mu_2 = 0 \\ H_1 : \mu_1 - \mu_2 \neq 0 \end{cases}$$

Results of subsidiary assumptions

*There are meaningful relations between awareness of personnel from process of management related to nosocomial wastes before and after educating employees.

* There are meaningful relations between executing process of management related to nosocomial wastes before and after educating employees.

* There are meaningful relations between the indicator of controlling the infection wastes before and after educating employees.

Table4-6. Results of two samples T test

		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Rate of awareness of after personnel- rate of awareness of before personnel	-.48949	.86425	.08642	-5.664	99	.000
	Rate of executing process by after personnel-rate of executing process by after personnel	-.45194	.80586	.08059	-5.608	99	.000

		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
	Indicator of after controlling infection Indicator of after controlling the infection	.16667	.05774	.03333	5.000	2	.038

Suggestions

*The emphasis on the issue of planning in all levels of management related to nosocomial wastes from production to normative excretion of wastes

*Occupied nurses in medical units are vulnerable in conditions because of natures of their jobs and disposing many factors from nosocomial wastes. Also, except nurses who spend lots of times with patients, doctors and other employees of medical services are also faced with this challenge. Hence, following suggestions are stated in correcting conditions of mentioned workplace:

*Medical services organizations should aware personnel about dangers originated from lack of proper management of wastes and prepare conditions for them to activity in such situations doesn't have destructive effect on their health of bodies and minds

*The main duties of occupied personnel are helping patients and also helping to create a safe environment according to originated dangers from nosocomial wastes for them and customers to by means of this concerns will be reduced

*Continuous audit of process related to management of nosocomial wastes will lead to an increasing way in developing quality of this process and help to awareness of managers about its exact condition.

*Attempting in increasing culture of proper management about wastes from the origin as reduction in wastes production in medical centers

*Continuous education about process related to nosocomial wastes among different groups of personnel and customers and its regular observation

*All employees and patients are obliged to act their duties as effective members in cycle related to management of wastes and organizations should pay their complications of wastes.

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