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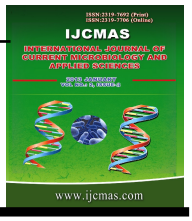

Original Research Article

Assessment of Biomedical waste of various hospitals in Mysore City Karnataka, India

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Keywords

Biomedical waste; Infections; Hospital; waste management; Mysore city

A B S T R A C T

Bio medical Waste in various hospitals of Mysore city was studied. Assessment is carried out in Kamakshi Hospital, K.R Hospital, Vikram Hospital, and JSS Hospital was studied during January 2012 to June 2012. Data were collected with the help of personal observations of the waste and disposal practices as well as assessment of knowledge, attitude and practice of working personnel with help of questionnaires. The result obtains lack of knowledge and awareness regarding legislations on bio medical waste management even among qualified hospitals personnel. Generation and implementation of waste management policy, institutional/ organizational set up, training and motivation must be given to meet the current needs and standards of bio medical waste management in these hospitals.

Introduction

Hospitals are health institutions providing patients care services. It is the duty of hospitals and health care establishments to look after the public health. This may directly be through patients care or indirectly by ensuring a clean, healthy environment for their employees and the community. In the process of health care, waste is generated which usually includes sharps, human tissues or body parts and other infections materials (Baveja *et al.*, 2000) also referred to as 'Hospital Solid Waste' and 'Bio-medical Solid waste' (Manohar, *et al.*, 1998).

The Government of India (Notification 1998) specifies that hospital waste management is part of hospital hygiene and maintenance activities, which are mainly engineering function, such as collection, transportation operation, treatment of processing systems and disposal of waste. However, initial segregation and storage activities are the direct responsibility of

nursing personnel who are engaged in the hospital. If the infectious component gets mixed with the general non-infections waste, the entire mass becomes potentially infections (Info Nugget *et al.,* 2003). Before the notification of Bio-medical solid waste (management and handling) Rules 1998, waste from houses, streets, shops, offices, industries and hospitals was the responsibility of municipal of governmental authorities, but now it has become mandatory for hospitals, clinics, other medical institutions and veterinary institutions to dispose of bio-medical solid waste as per the law.

The actual biomedical waste management situation in the democratic developing country like India is grim. Lakshmi *et al.,* (2003) in the leading national newspaper of the country, reports that even though there are rules stipulating the method of safe disposal of Bio-medical waste (BMW) hospital waste generated by Government hospitals is still largely being dumped in the open, waiting to be collected along with general waste. According to World Health Organization Biomedical wastes 2004 the human element is more important than the technology alone. Bio-medical waste management is a special case wherein in the hazards and risks exist not just for the generators and operators but also for the general community (Sandhu and Singh 2003). There are about 1.6 million health care workers at approximately 27,500 health care facilities in India (Shah *et al.,* 2001). The environment Act 1986 was formed under the ministry of Environment and forests, which is the most comprehensive act on the Indian Stature Book relating to Environment protection (Jaswal, *etal*., 2000) Poor management of Clinical waste exacerbates the risk of infection for those exposed it, compromises hospital hygiene and has infection control implications. Blenkharn *et al.,* (2006) Hazardous wastes have been defined as wastes or a combination of wastes that pose a substantial or potential hazard to humans or other high organizes. Such wastes may have health-related properties such as infectivity, toxicity, radioactivity, carcinogenicity or teratogenicity. Medical wastes are among those hazardous wastes of major concern. Handling and disposal of Medical wastes are associated with great health and environmental results. The dangers from health care wastes may be significantly increased in situations where the wastes are disposed of in conjunction with other municipal solid waste and not either sterilized or incinerated at source. The health hazard potential rises with secondary handling of the waste. For example, when a recycling process such as composting refuse-derived fuel, or sorting for the reclamation of glass, plastics, metal, paper fabrics etc is used within the community, there will always be a risk of infection if medical waste are not disposed of separately.

Borg, (2006) suggest that segregation reduces clinical waste volumes, perhaps reduces the disposal cost. The hospital waste management is one of the major environmental concerns which may significantly increase the exposure of infectious, pollutants (Dodhy *et al*., 2006). Moreover, evaluation of medical waste generation quantities is essential of the establishment of a waste management system of hospitals.

Materials and Methods

During study two procedures is used for collecting the data, such as Individual observation of the waste treatment and disposal practices (Henry *et al*., 1994, Chauhan and Malviya, 2002) and another

one is assessment of knowledge, attitude and practices of working personnel with help of questionnaires (Linde 1993; Sharma *et al.*, 1993). Preparation of questionnaire is include question regarding the number of beds, number of patient (both out and in patient) per day, number of waste generated and disposable quantity per day and categories of hospital waste generated and estimate the quality. Waste collection, labeling, transportation, segregation and give a awareness as well as control measures of bi medical hazards in hospitals.

Result and Discussion

The Biomedical waste has always been considered potentially hazardous. The disposal of untreated wastes poses an environmental and public health hazard. It also presents an occupational health hazards to the health care personnel who handle these wastes at the point of generation, and those involved with their management i.e. segregation, storage, transport, treatment and disposal. The indiscriminate disposal of untreated wastes is the causes to spread the infectious diseases. Apart from these, a good amount of bio-medical wastes such as disposable syringes, saline bottles, I.V. fluid bottles etc are picked up by the rag pickers and are recycled back into the market without any disinfection. Chitralekha and Sudhir Agrawal (2011) it is imperative, therefore, to adopt appropriate system for the safe collection, storage, transport, treatment and disposal of the hospital wastes. Managing these wastes is a challenging task due to unpredictable variation in the load on common biomedical waste treatment facility.

Mysore is one of the high density populated city of Karnataka. Hospitalization in area is one of the major responsible for generation of waste i.e. Bio medical waste which are hazards to human health. Four major hospitals is selected for monitoring the bio medical waste generation, segregation, disposal and control the waste generation, The major selected hospitals are Kamakshi hospitals, K. R. Hospital, Vikram Hospital, and JJ Hospital.

Table.1 Number of staff and persons responded to questionnaires at Kamakshi Hospital.

Kamakshi Hospital			
Name of the Position	Number of Position	Number of responded	%
Doctors	150	95	63.3
Nurse	220	150	68.1
Ward boy	80	20	25.0
Aaya	30	12	40.0
Peon	65	15	23.0
Clerk	08	01	12.5
Total	553	293	

Table.2 Number of staff and persons responded to questionnaires at K.R Hospital

Kamakshi Hospital			
Name of the Position	Number of Position	Number of responded	%
Doctors	25	15	60.0
Nurse	70	35	50.0
Ward boy	10	04	40.0
Aaya	05	03	60.0
Peon	02	01	50.0
Clerk	02	01	50.0
Total	114	59	

Table.3 Number of staff and persons responded to questionnaires at Vikram Hospital

Vikram Hospital			
Name of the Position	Number of Position	Number of responded	%
Doctors	30	18	60.0
Nurse	55	34	61.8
Ward boy	07	03	42.8
Aaya	03	01	33.3
Peon	01	01	100.0
Clerk	01	01	100.0
Total	97	58	

Table 4 Number of staff and persons responded to questionnaires at JSS Hospital.

JSS Hospital			
Name of the Position	Number of Position	Number of responded	%
Doctors	10	05	50.0
Nurse	25	10	40.0
Ward boy	05	02	40.0
Aaya	01	01	100.0
Peon	04	02	50.0
Clerk	01	01	100.0
Total	46	21	

Table.5 Types of Personal protective clothing worn by waste handlers in selected four hospitals of Mysore city.

Personal protective clothing	Kamakshi Hospital		K.R Hospital		Vikram Hospital		JSS Hospital	
	No. of users	%	No. of users	%	No. of users	%	No. of users	%
Gloves	35	29.1	15	35.7	10	40	04	33.3
Apron	80	66.6	25	59.5	15	60	08	66.6
Mask	05	4.1	02	4.7	0	0.0	0	0.0
Total (n)	n= 120	-	n=42	-	n=25	-	n=12	-

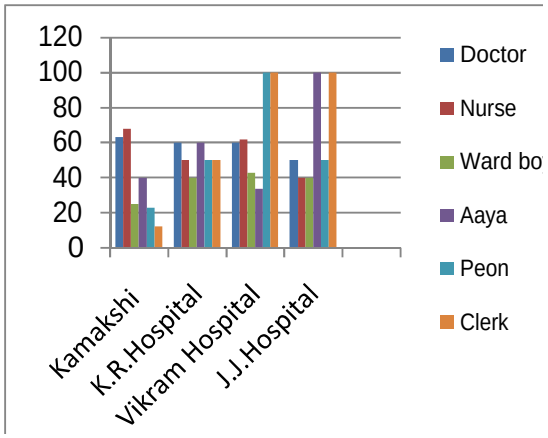
In Kamakshi hospital total number of person in position is 553, out of which 293(52.9%) is responded for questionnaire. The Total employs in K.R. Hospitals is 144 the number of responded are 59(40.9%) (Tables.1-5).

At the vikram Hospital shows the 59% of responded were as J.J. Hospital shows the 45.65% of responded. According to study Vikram hospital shows the most responded compare to other hospitals. K.R. Hospitals shows the least responded. Above result shows that there is a need for awerness regarding waste in health care units of Mysore city.

Usage of personal protective clothing in Kamakshi hospital is more compare to other hospitals and JSS hospitals shows least usage of protective clothing in Mysore city, this is the evidence for

percentage of Awarness and education among Hospital employs in Mysore city.

Figure. 1 Shows Total number of staff and persons responded to questionnaires at Kamakshi Hospital, K.R Hospital, Vikram Hospital, and JSS Hospital.



Wastes should be classified according to their source, typology and risk factors associated with their handling, storage and ultimate disposal. The segregation of waste at source is the key step and reduction, reuse and recycling should be considered in proper perspectives. In Mysore Health care units produce large amount of waste in the process of providing services to mankind. So there is an urgent need for raising awareness and education on medical waste issues. This study has made an attempt to identify various challenges faced by health care units for managing their waste properly and ensuring health and environmental safety. Information especially useful for improving and developing the health care related waste management standard criteria in Mysore. This may be also useful for resolving problems with the said waste management process in Karnataka and provide basis for recommendations to the government, healthcare authorities, and private healthcare.

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