

HOSPITAL WASTE MANAGEMENT PRACTICES IN TWO TERTIARY CARE TEACHING HOSPITALS AT MYSORE

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ABSTRACT

Background: Biomedical waste management is an important area in hospital safety and sanitation. Despite the presence of legislation there are many concerns and deficiencies in the optimum practice of the guidelines prescribed. Hospital waste produced is hazardous and carries variety of health risks, if not handled and disposed properly. The target group affected is vast, starting from doctors, patients, general public and waste handlers. Teaching hospitals should act as leaders in following the right practices and should also involve themselves in training other health professionals in the appropriate hospital waste management. So it becomes imperative for the teaching hospitals to adopt the best practices in this area.

Method: The study was undertaken to study the current practices of hospital waste management at K.R. Hospital & Cheluvamba Hospital, attached to Mysore Medical College, Mysore. It was a cross sectional study done using a checklist. Thirteen major departments in the two hospitals were selected for the study. The questionnaire was administered to the staff nurses in these locations to know their knowledge and attitude regarding safe hospital waste management.

Results: 48.7% of Staff nurses were trained but showing poor level of knowledge regarding color coding used for different categories and their method of disposal. Majority were not using protective devices provided to them showing lack of attitude. From the observation made we could see that basic facilities like colour buckets, bags, needle burners were missing in many locations and in most of the locations waste produced was not being properly processed in the next stage, showing that none of them could ensure for safe waste management without break in the series.

Conclusions: Periodic training, supervision and monitoring by staff and strengthening of the infrastructure are required.

Keywords: Bio medical waste, teaching hospital, segregation, colour coding.

INTRODUCTION

“Bio-Medical waste” means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals and including categories mentioned in Schedule I of Bio-Medical Waste Management and Handling) Rules, 1998 of India like human anatomical waste, micro biology and biotechnology wastes, waste, sharps, discarded medicine and cytotoxic drugs, soiled waste, solid waste, liquid waste, incineration ash, chemical waste. Between 75-90% of the waste produced by the health-care providers is non-risk or “general” health care waste. The remaining 10-25% is regarded as hazardous and may create a variety of health risks (1).

The indiscriminate and unregulated dumping of hospital waste exposes the most underprivileged and informal sector like rag pickers and municipal corporation waste handlers to injury and infection (2). Hospital waste also has direct impact on spreading of infectious diseases like tetanus, hepatitis and AIDS. Waste handlers in Bangalore Municipal Corporation area have a hepatitis B prevalence of 5 % (3). Nosocomial infections in many hospitals are largely due to poor management hospital waste generated (4).

Teaching hospitals should act as leaders in following the right practices and should also involve

themselves in training other health professionals in the appropriate hospital waste management. So it becomes imperative for the teaching hospitals to adopt the best practices in this area.

K. R. Hospital with an average outpatient strength of 3,78,000 per year and an inpatient every day occupancy of 680 patients, is a 1050 bedded multi-specialty hospital. Cheluvamba Hospital for both Obstetrics and Gynecology and Pediatrics has an average outpatient number of 94,000 per year an average inpatient everyday occupancy of 300 patients, has 410 beds strength. Both are tertiary care government teaching institutions attached to Mysore Medical College and Research institute, Mysore and also referral centers. Since no study on waste management practices have been done in these institutions, present study was under taken to assess the current situation in hospital waste management.

OBJECTIVE

To study waste management practices at Krishna Rajendra Hospital and Cheluvamba Hospital, Mysore.

MATERIALS AND METHODS

Thirteen departments were selected for the study: 1) Medicine 2) Surgery 3) Obstetrics & Gynaecology 4) Pediatrics 5) Orthopedics, 6) ENT, 7) Ophthalmology 8) Dermatology, 9) Plastic Surgery, 10) Pediatric Surgery, 11) Bio Chemistry, 12) Pathology and 13) Microbiology. The prior permission was taken from the superintendents of respective hospitals and from the Director and Dean of Mysore Medical College and Research Institute.

The data collection was done between December 2012 and February 2013. A pretested observation checklist was used to collect the data. Concerned health care personnel were enquired about facilities available for waste treatment, the various stages of waste management practice in the same location for different categories of wastes like lab waste, incinerable waste, waste sharps, food waste, plastics and paper which ever was generated at that location, same was thoroughly observed and was filed in the observation checklist.

RESULTS

1. Only 38 out of 85 locations (44.8%) observed had colour coded containers.
2. Only 28 out of 85 locations (32.94%) had colour coded chart.
3. Only in 28 out of 85 locations (32.94%) needle shredding and hub cutting practice was followed.
4. Only at 27 out of 85 locations (31.76%) segregation is done.
5. Among the total nurses interviewed, only 39 out of 80 staff nurses (48.75%) were trained about BMW Management and handling.

6. None of the major OT in K.R.Hospital had Colour coded containers and none of them did segregation of waste or shredding of needles.
7. Even in ICTC Centre in K.R. Hospital, neither segregation nor shredding of needles is done.
8. The biomedical liquid waste was not treated in both K.R.Hospital & Chevalamba Hospital. Many of the liquid waste treatment units are not functioning and remaining are not used.
9. Red colour containers are not used in Cheluvamba Hospital.
10. White colour containers are used for general waste in Cheluvamba Hospital
11. The waste segregation is not done properly wherever interns and PGs involvement is more regarding the segregation of waste.
12. The Microbiology waste is disposed once in 2-3 days. The sharps are disposed once in 15-20 days. The remaining categories of waste are disposed daily.
13. In K.R. Hospital, needle shredding is not done at most of the locations, even though the needle shredding machine are available.
14. Majority of health-care personnel (55) did not use boots while handling hospital waste where as 40% did not use gloves because of various reasons (emergency, no time to wear gloves, inconvenience, fed up of using gloves very often).
15. In most of the depts. green, brown and grey colored containers are used for BMW.
16. Only 23% of the containers have lids.
17. Majority of the wastes were disposed daily. But disposal of waste sharps was variable with most of the locations disposing it once in 15 days, which is not favorable.

Table 1: Availability of facilities for waste processing

Facilities of waste processing	Medicine	Surgery	OBG	Pediatrics	Orthopedics	ENT	Ophthalmolog y	Dermatology	Plastic surgery	Ped. Surgery	Biochemistry	Pathology	Microbiology	TOTAL
n (=Total number of locations observed)	13	14	18	7	6	3	3	2	4	3	3	5	4	85
Segregation	2	0	16	3	0	0	0	0	1	2	1	2	0	27
Containment	2	0	16	5	1	1	0	0	1	2	1	2	0	31
Incineration	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autoclaving	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microwaving	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Needle burning	2	0	16	6	1	0	0	0	0	2	0	1	0	28
Deep burial	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour Coded bins	4	1	18	6	2	0	0	0	2	3	0	2	0	38
Colour coded chart	2	0	15	4	0	0	1	0	1	1	1	0	3	28

Table 2: Availability of Colour Coded Buckets

Colour of bucket	Availability
White	100%
Blue	77.64%
Red	43.52%
Yellow	43.52%

Table 3: Frequency of disposal of different categories of waste

Categories of waste(N=no. of locations producing)	(Frequency of disposal)			
	Daily	Once in 2-3 days	Once in 15 days	Once in a month
Category I (n-7)	7	-	-	-
Category 3 (n-1)	-	1	-	-
Category 4 (n-78)	3	-	73	2
Category 6 (n-85)	85	-	-	-
Category 7 (n-85)	85	-	-	-

DISCUSSION

Including both the hospital, 48.75% of the staff nurses were trained regarding hospital waste management. In a study conducted by Chithra et al anivilas hospital Bangalore, only 9% of the staff nurses were trained (5). But still many of them had poor level of knowledge. Peons, cleaning servants and waste handlers were not trained regarding Hospital Waste Management and they were not having proper knowledge about it.

Only 44.8% locations studied had colour coded bins and 33% had charts. This is far less than the observations made by Ramakrishna B G et al in 2002(6)

The segregation was not done in the locations where the post graduates and house surgeons involvement was more regarding Hospital waste segregation. It shows the requirement of the training to PGs and interns regarding Hospital Waste Management. This is similar to the observations made by Environmental Management and policy Research Institute, Bangalore and health care waste management cell (7, 8).

Majority of health personnel including waste handlers did not wear boots and others protective's like gloves although they were provided with it because of various reasons.

LIMITATIONS OF THE STUDY

Since the study was cross sectional one, it may not reflect the regular and routine practices

RECOMMENDATIONS

1. Hospital waste management committee should be formed and it should supervise the activities regularly.
2. Basic facilities like color coded chart color coded containers, colour coded covers, needle shredder and cutter etc., should be provided

3. Protective equipments like gloves, aprons, boots etc., should be provided to waste handlers and other health personnel.
4. Periodic training should be given to all health care providers from, doctors to waste handlers.
5. Bio medial Liquid waste treatment units should be maintained properly.

CONCLUSIONS

The majority of health care personnel including waste handlers have not received any training in this aspect. Their knowledge and attitude is not favorable. The necessary infrastructure is not in place as it was observed that proper colour coded bins were not present in many departments.

The hospital waste management was satisfactory in Cheluvamba Hospital (Obstetrics & Gynaecology & Pediatrics departments).

No procedure or treatment is followed for infectious liquid waste in both the hospitals. All the waste generated is handed over to the private contractor (Shree Consultants) for final treatment and disposal

Competing interests: None.

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