

CHAPTER -V
FINDINGS, SUGESSTIONS AND
CONCLUSION

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CHAPTER-V

FINDING, SUGGESTIONS AND CONCLUSIONS

5.1 Finding related to the management of hospital waste in selected hospitals at Sangli city.

1. Most of hospitals which generate considerable waste in Sangli city follow the segregation practices given in Biomedical waste handling and management rule 1998 uses colour code bins and plastic bags.(Table no. 4.4)
2. Transportation of collected hospital waste in Sangli city is carried out by the private agency Surya Central Treatment Facility
3. All most all the hospitals in Sangli city do not carry the training program for hospital staff. .(Table no. 4.9)
4. Training to the hospital staff of all the hospitals in Sangli city is given by the agency Surya Central treatment Facility. .(Table no. 4.9)
5. There is a drastic difference between collected data from hospitals and the opinion of the agency that is Surya Central treatment Facility
6. The waste collecting agency i.e Surya Central treatment Facility is facing a very serious problem of un segregated waste from different hospitals.
7. There is a positive relationship between number of beds and waste generated in The hospitals. The waste generation rate is depends upon the number of occupied beds in respective hospitals.(Table no. 4.3)
8. Awareness of the hospital waste management is present in each hospital but there is no actual implementation.
9. Municipal corporation is not associated with the hospital waste in Sangli ci.y. It collects the waste from Miraj city and Kupwad city.

5.2 Findings related to waste collecting agency

1. Surya Central treatment Facility is only one private agency which collects the waste from Sangli city and other defined area by MPCB.
2. The agency collects daily waste from 154 hospitals in Sangli city.
3. The agency collects 300Kg to 350 Kg of waste from Sangli city.

4. The agency has own waste treatment plant. For processing of the waste Incineration, autoclaving and shredding techniques are used.
5. The waste collected by the agency from different hospitals is unsegregated so the agency faces serious problem while handling the waste.
6. Agency gives training to hospital staff of each hospital in Sangli city which is free of cost. (Table no. 4.9)

5.3 Finding related to types of Hospitals:

- 1 Waste generation rate is depending on type of hospital and number of occupied beds. Waste generation rate is maximum in surgical hospitals then orthopedic and maternity as compare to the other hospitals. .(Table no. 4.3)
- 2 Bharati hospital and civil hospital which come under the category of surgical hospital has maximum number of beds as compare to other hospitals in strata, that is 700 and 400 respectively and occupancy of the bed is also maximum here. Also Kalloli hospital Vishrambag has 100 beds which are mostly occupied. .(Table no. 4.2)

5.4 Finding related to Quantity of waste generated

- 1 Quantity of waste generation rate per day is maximum in case of surgical hospitals, after that orthopedic and then maternity hospitals. In non bedded hospitals such as dental, skin etc, the waste generation rate is minimum. (Table no. 4.3)
- 2 Surgical hospitals generate 333Kg of waste per day. From which Bharti hospital produces maximum waste approximately 140Kg to 175kg of waste per day. Civil hospital produced approximately 98 to 100 Kg of waste per day.(Table no. 4.3)
- 3 Orthopedic hospitals generate approximately 58 Kg of waste per day. From this strata Kalloli hospital and Ushakal nursing home generates maximum waste approximately 24Kg and 12Kg per day respectively. Remaining hospitals from strata produces 2 to 4 Kg of waste per day.(Table no. 4.3)
- 4 Maternity hospitals generate approximately 35Kg of waste per day. Each hospital in this strata produces hospital waste in between 2Kg to 7Kg per day .(Table no. 4.3)
- 5 Pathological hospitals generates nearly about 10 Kg of waste per day
- 6 Pediatric hospitals generate 8.4 Kg of waste per day. Each hospital in the strata generates waste between 1.3Kg to 4Kg per day

- 7 ENT hospitals generates near about 4Kg to 5.4Kg of waste per day. From these strata Naik hospital generates more waste about 2.5Kg per day.
- 8 Neurological hospitals generate waste 2.5Kg to 3.15Kg per day depending up on the occupancy of the beds.
- 9 Dental, physician and skin-hospitals are mostly non bedded hospitals which produced very negligible waste that is nearly about 0.175Kg to 0.250Kg of waste per day. (Table no. 4.3)

5.5 Finding related Waste segregation, collection, storage and handling

- 1 About 42 hospitals out of 64 hospitals carried out the segregation of waste as per the biomedical Act 1998. Most of these hospitals generates considerable waste. 22 hospitals such as dental, physician and skin hospitals do not follow the segregation practices as the waste generation rate of these hospitals is negligible. (Table no. 4.4)
- 2 About 36 hospitals use separate polythene bags for collection of waste. From which some hospitals uses colour bags. 6 hospitals uses separate container with colour code. (Table no. 4.5)
- 3 In 40 hospitals the staff uses waste handling equipment for handling waste such as hand gloves and mask. The hospitals which generate negligible waste can use handling equipments for waste collection. (Table no. 4.6)

5.6 Finding related to Personnel involved in the management of hospital waste

Maximum 2 to 3 persons are involved in the management of the waste in large hospitals where the beds are more in number. In some hospitals which have less bed as compare to large scale hospitals, only one person is involved in waste management. In non bedded hospital no any special person is involved in waste management. These shows the hospitals are not so serious about the waste of the hospitals. Most of the persons involved in this activity are tenth and twelve passed. (Table no. 4.8)

5.7 Findings related to Hospital waste management policy

- 1 Out of 64 hospitals 62 hospitals does not have any recycling and treatment facility. Only two hospitals that is Bharti hospital and civil hospital has their own waste treatment plant. Among these civil hospital has a plant but from last two years it is not in working condition. Now Bharti hospital has own recycling plant which is in process and nearly about 175 to200 kg of hospital waste is treated here daily. .(Table no. 4.7)
- 2 About 23 hospitals have clearly defined procedure for collection and handling of waste from specified units in the hospital.41 hospitals do not have defined procedure .These are mostly non beded or hospitals having very less beds.(4.12)
- 3 All the hospitals are aware about the biomedical waste handling Act 1998
- 4 No any hospital has a special team for hospital waste management which do not show any positive attitude toward waste. .(Table no. 4.11)
- 5 All the waste from the hospitals in Sangli city is collected by a private agency and transported by tempo by the agency.
- 6 In most of the hospitals training given to the hospital staff by the waste collecting agency that is Surya Central Facility and not by the hospital management. Hardly one or two hospitals are giving training to the hospital staff. There is no awareness of the hospitals towards hospital waste and its bad impact on health. .(Table no. 4.9)
- 7 Maximum number of hospitals that is about 42 out of 64 says it is not possible to reduce the hospitalswaste.18 hospitals do not give any comment and 4hospitals take efforts to reduce the waste if possible. They reuse the hand gloves where possible after disinfecting it and less use of cotton if possible. .(Table no. 4.10)

5.8 Safety Measures of hospital waste management

- 1 According to the 47 of the respondents, there is no any impact of waste on the health of the waste collector if proper precaution is taken . According to 17 hospitals rarely there is a health problem to the waste collector which is not serious. .(Table no. 4.13)
- 2 42 respondent hospitals sometimes arrange a free checkup for the waste collector and in 22 respondent hospitals there is no any Routine checkup for the waste collector. Researcher here found that there is no any hospital which gives routine check up for the waste collector. (Table no. 4.14)
- 3 Researcher here found that all most all the hospitals uses the handling equipment as

hand gloves and mask as a safety measure to maintain the health of the staff. If there is any injury to the concern person the quick treatment is given to the person.

5.9 Findings related to Level of awareness on biomedical waste management

Practice

- 1** For maximum number of hospitals that is about 42 out of 64, it is not possible to reduce the hospitals waste. 18 hospitals do not give any comment and 4 hospitals take efforts to reduce the waste if possible. They reuse the hand gloves where possible after disinfecting it and less use of cotton if possible. (Table no. 4.10)
- 2** About 34 hospitals follow the colour coding for biomedical waste and remaining 30 hospitals do not follow the colour coding. Researcher here found that the hospitals that generate considerable waste follow the colour coding and the hospitals whose waste is negligible do not follow the color coding. (Table no. 4.15)
- 3** Mostly all the hospitals are know about the colour coding segregation of BM waste. According to the Biomedical waste management act 1998, yellow colour container or bags are used to keep hazardous waste like human body part or tissues etc, Blue /white bag is used to keep the waste sharps and needles etc. Generally here puncture proof bags or container is mandatory. Red bags are used to keep the microbiology waste or biotechnology waste. Black bags are used for discarded medicines from the hospitals
- 4** All the hospitals in the sample say that whatever the waste disposal practices are followed by them are correct. All the hospitals in the Sangli city is associated with Surya Central Treatment Facility agency. The agency collects the hospital waste from all the hospitals from Sangli city for further processing.
- 5** Researcher here found that most of the hospitals that is about 48 hospitals say that the infectious waste is negligible as compare to the total waste. About 16 hospitals say the proportion of infectious waste is up to 10% of the total waste. Most of these hospitals are surgical hospitals which having the infectious waste. (Table no. 4.16)
- 6** According to the survey 100% of hospitals are aware of the colour code for disposal for normal waste. The colour code of disposal for normal waste is black

5.10 finding related to Attitude/behavior assessment towards biomedical waste

- 1 All the respondent hospitals here agree with statement as waste management is team work/no single class of people is responsible for safe management. It is not a work of single person. All the persons that is from doctors, management staff and waste handling staff must be associate with waste management then only the waste management plan can be implemented.
- 2 Most of the hospitals feel that safe management of health care waste is not an extra burden on work. But some hospitals who generate more waste feel extra burden on work. (Table no. 4.20)
- 3 From the available data 43 hospitals does not feel any financial burden on management due to the safe management of the waste. But 14 hospitals feel the financial burden. Here number of the hospitals which having more occupied beds and generates more waste feels the financial burden. (Table no. 4.19)
- 4 Here most of all the hospital staff is not interested in attending the voluntary programs related to hospital waste management. Researcher here found very unenthusiastic attitude towards waste management. (Table no. 4.21)
- 5 Nearly about 42 hospitals are agree that there should be sterilization of infectious waste from infections by autoclaving before shredding and disposal and 22 hospitals didn't give any comment about the statement. But for the sake of safety the sterilization of hospitals waste is very important. (Table no. 4.22)
- 6 Only 29 hospitals out of 64 feels that it is important to report to the Pollution Control Board of India about a particular institution if it is not complying with the guidelines for biomedical waste management but 35 hospitals didn't give any comment they remain neutral. (Table no. 4.23)

5.11 Findings Level of knowledge among nurses, doctors, attendants regarding to needle stick injuries

- 1 Researcher here found that all the hospitals are concerned about needle-stick injury. Needle stick injury is very hazardous to the health which causes the diseases like AIDS, Hepatitis B etc.Used needle sticks are infectious whose injury is very dangerous for waste handling staff. Researcher here found that 100% hospitals are aware about the needle stick injury.

- 2 According to data all the respondent hospitals recap the used needles. But according to the agency Surya Central Treatment Facility who actually collects the waste from different hospitals, most of the hospitals could not recap the used needles, which is a very serious problem.
- 3 Researcher here found that all the respondent hospitals are aware about the consequences of needle-stick injury. If the discarded needle is not re-cap it may cause injury to the waste handling persons. As the discarded needle is infectious it may causes diseases like AIDS, Hepatitis B or other skin diseases to the injured persons. Sometimes surgery is required for injured person.
- 4 Researcher here found that very negligible needle-stick injuries are happened in some orthopedic and surgical hospitals. Few injuries are due to the poor disposal of needles and major injuries are occurs due to the individual carelessness. Awareness of the waste handling staff is very important while handling the waste. (Table no. 4.25)

5.12 Finding related to Agency collecting Hospital waste

- 1 The Surya Central Treatment Facility collect the waste from different hospitals from Sangli city. The agency collects the waste from total 258 hospitals from different area. In Sangli city the agency collect the waste from 154 hospitals.(page no.83)
- 2 The agency Surya Central Treatment Facility collects near about 300kg to 350Kg hospital waste per day excluding the Bharati hospital. In recent years Bharati hospital has own recycling plant. Before this plant Bharati hospital was associated with Surya Central Treatment Facility.
- 3 Total number of staff of Surya Central Treatment Facility is about 30. From which 8 to 9 persons are working in administrative department and remaining are associated with actual handling and treatment of the hospital waste.
- 4 The charges offered by the agency are different for different hospitals depending upon the category of the hospitals. For non bedded hospitals it is ranging from Rs.1200 to Rs.2500 per year.
- 5 For bedded hospitals again there are two categories, For surgical hospitals it is Rs.7.5 per bed per day and for nonsurgical hospitals it is Rs. 7 per bed per day
- 6 It is not possible in all the hospitals that all the beds are occupied every time. As the waste quantity is depends upon the number of occupied beds the agency offered the charges of 70% of total beds.(Page no 83)

- 7 According to the agency Surya Central Treatment Facility about 98% of waste collected from different hospitals from Sangli city is unsegregated which is a very serious problem.
- 8 The Surya Central Treatment Facility gives training to each and every hospital staff in Sangli city. Mostly the training is given once per month. The training is given to the hospital staff regarding to collection, segregation and handling of the hospital waste agency has its own incineration plant in MIDC Miraj .Here hazardous waste is
- 9 ncinerated. Most of the time all the unsegregated waste is incinerated in the plant. Also he agency has shredding and autoclaving machines. Recycling material is shredded fter autoclaving. agency not having their own recycling plant but recycling material ike saline bottles is shredded here
- 10 The Surya Central Treatment Facility after autoclaving The agency is associated with one recycling plant that is Sakshi Plas:ics MIDC.(Page no84)
Miraj After shredding the material is send to Sakshi Plastics for recycling.
- 11 With incineration technique the agency adopted autoclaving and shredding techniques. The infected materials disinfected urder high degree temperature primarily about 800to 850 degree Celsius and secondary temperature about 1050 to 1100 degree Celsius.
- 12 The Surya Central Treatment Facility agency has collect the ash which is produced during the incineration process and send it to the company Maharashtra Enviro Power Limited Ranjangaon for further treatment.(Page no.84)
- 13 There is a strong relation between segregation of waste and training of staff. Segregation of the waste must be takes place at the point of generation of the waste. Awareness of the hospitals workers at the point of generation of hospital waste can reduce number of problems
- 14 There are number of problems faced by the agency while collection transportation and segregation of waste. First serious problem is lack of segregation practices at hospital level. The un segregated waste becomes a challenge for agency. There are number of injuries takes place at incineration plant workers. According to agency the second problem is that total 100% hospital waste is not provided to the agency.(Page no.84)

5.13 SUGGESTIONS:

Suggestions for better management of hospital waste in Sangli city.

- 1 Hospitals management and mostly the doctors should take initiative to maintain a discipline regarding to the waste management.
- 2 Hospitals should arrange some training program on hospital waste management to the hospital staff.
- 3 Hospital management should define a special team for hospital waste management.
- 4 Segregation must be carried out at the point of generation of hospital waste so Infectious waste can separate from non infectious waste
- 5 Hospitals which having considerable waste must be think about their own plant for treatment and recycling of waste.

5.14 Suggestions to Hospitals

1. The attitude of the doctors towards the hospital waste management should be improved up to the mark.
2. Only awareness towards the hospitals waste management is not sufficient, the hospitals should take initiative to implement the plan according to the biomedical act 1998.
3. Hospitals should provide all the hospital waste to the agency so that processing of all the waste is possible.
4. As needle stick injury becomes a serious problem hospitals must give attention on recap of needles after use of needles.
5. Hospitals must motivates the hospital staff to attain the voluntary programmes related to hospital waste management
6. Hospitals must take initiative to reduce the hospital waste if possible.
7. Hospitals must provide a routine checkup facility within a certain period of time to the waste handler workers.
8. Hospitals must have a clearly defined procedure for the collection of hospitals waste.

5.15 Suggestions to HW collecting agencies

- 1 Agencies must take strict action against the hospitals which are not following the segregation practices.
- 2 Agency must take efforts to have their own recycling plant.

Conclusions:

Researcher here studies the hospitals waste management in Sangli city. As hospital waste is very important issue and serious problem regarding to health of waste collector and environment .Most of the hospitals in Sangli city don't give the proper attention on segregation of waste. As the segregation practices are not carried out according to the defined procedure it becomes problematic to the waste collecting agency, Surya treatment facility centre .Management of hospital waste includes proper planning of the waste, organizing the waste as per categories is observed in few hospitals. Most of the waste is incinerated and remaining waste is recycled but still the improvement is required. Training regarding handling of hospital waste, collecting of HW, Treatment of hospital waste and disposal of HW is taken by hospital staff. There is only one agency for collection and disposal of hospital waste ie, Surya treatment facility centre, sangli. The level of awareness is not up to the mark .Hospitals dont take initiative for the proper management of hospital waste and role of doctors can be more positive towards the hcspitals waste management.