Introduction:
By definition, Biomedical waste is waste generated during diagnosis, treatment or immunization of human beings or animals or research pertaining thereto, or in the production of testing and biological and is contaminated with body fluids. WHO stated that 85% of hospital wastes are actually non-hazardous, around 10% are infectious and around 5% are non-infectious and categorised as hazardous wastes. Poor waste management practices pose a huge risk to the health of the public, patients, professionals and threat to the environment. If both these types are mixed together then the whole waste becomes harmful. Therefore, segregation, collection, treatment and disposal of BMW in an appropriate manner has become a matter of concern. All Biomedical waste generated in the hospital should be disposed off strictly in accordance with Bio-medical waste management & handling rule 1998.

Keeping in view the importance of the biomedical waste management, the present study was conducted to evaluate Biomedical Waste management at Government Psychiatric hospital, Srinagar.

Objective:
1) To assess the existence of Biomedical waste management policy.
2) Evaluate the awareness in hospital personnel regarding biomedical waste management
3) Assessment of health and safety practices for the health care personnel involved in Bio-Medical Waste handling.
4) To assess the quantum of waste generated on daily basis.

Material and Method:
It was a crosssectional study. Prior permission was obtained from Principal government medical college, Srinagar. Study material consisted of WHO health care waste management rapid assessment tool and pre designed semi-structured combination of open and close ended questionnaire. Data was collected through primary and secondary sources by interviewing administrator, health care workers, observation and record review. The questionnaire comprised of subheadings like BMW segregation and handling, BMW collection, BMW storage and on-site transport, BMW off site transport, Final disposal site, BMW rules and regulations pertaining thereto, or in the production of testing and biological and is contaminated with body fluids. WHO stated that 85% of hospital wastes are actually non-hazardous, around 10% are infectious and around 5% are non-infectious and categorised as hazardous wastes.

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ABSTRACT
The present study was conducted with the objective of Evaluation Of Biomedical Waste Management at Government Psychiatric Disease Hospital, Srinagar. It was a Crosssectional Study. Study material consisted of WHO health care waste management rapid assessment tool and pre designed semi-structured combination of open and close ended questionnaire. Data was collected through primary and secondary sources by interviewing administrator, health care workers, observation and record review. The questionnaire comprised of subheadings like BMW segregation and handling, BMW collection, BMW storage and on-site transport, BMW off site transport, Final disposal site, BMW rules and regulations pertaining thereto, or in the production of testing and biological and is contaminated with body fluids.

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Results:
Different subheadings for data collection include BMW segregation and handling, BMW storage, BMW collection and on-site transport, BMW off site transport, Final disposal site, BMW rules and regulations, Policy and budgeting.

BMW segregation and handling: Small colour coded bins was available and segregation is not practised as per the guidelines. Only needle and hub cutter was used for segregation and 10% sodium hypochlorite was used for disinfection purpose. There was no labelling of biohazard symbol and IEC material in any section of the hospital. In accordance with Bio-medical waste management & handling rule 1998, there was no provision of Personal protective clothing and vaccination to the staff handling the waste. The quantum of infectious waste generation was found to be less. There was no constitution of waste management committee and team. Lack of monitoring, reporting and documents related to waste management were the other findings in our study. There is need for strict compliance to the existing guidelines. Each and every shortcomings should be dealt seriously.

Data was collected through primary and secondary sources by interviewing administrator, health care workers, by observation and through record review.

Primary data was collected through interview and observation of Biomedical waste management practices in every section of the hospital, starting from source of generation of waste, handling, transportation, storage, treatment of liquid waste and spills and final disposal, availability of logistics, display of IEC material and usage of personal protective clothing by waste handlers. Awareness and practices of health care workers regarding biomedical waste hazards, the colour coding for segregation, and quantum of waste generated per day (approximately), waste segregation, collection and financial resources was also assessed through interview.

Secondary data was obtained through record review for existence of waste management plan and policies, constitution of biomedical waste management committee and team. Authorization from concerned authority and outsourcing for final disposal and treatment.

Study respondents included Medical Superintendent, Resident Medical Officer (RMO), Sanitary Inspector and randomly selected interview of healthcare personnel which included doctors, nurses, and housekeeping staffs.

Keywords: Waste, Management, Evaluation, Guidelines.
daily basis. No puncture proof container was provided for collection and transportation of sharps.

**Final Disposal:** Sharp pit was available at the facility itself. Rest all other waste generated was picked up by CBMWTF.

**BMW Off -site transport:** The hospital had tie up with Common Biomedical waste treatment facility (CBMWTF) with M/S Kashmir Health Care Services Pvt. Ltd. It is located at Lassipora in district Pulwama, Kashmir: They use to pick up waste on daily basis.

**BMW Rules and regulations:** As per the record review and observation. There was neither any manual nor any written instructions or IEC material displayed for waste management. Staff were not aware about rules and regulation pertaining to waste management.

**Policy and Budgeting:** There was no constitution of biomedical waste management team or committee. Furthermore, logistics and budgeting for maintenance of waste was inadequate.

**Records Review:** Only documents available was contract papers for outsourcing and records of waste collection.

### Table 1: Quantity of waste generated per day

<table>
<thead>
<tr>
<th>Types of waste</th>
<th>Quantum (per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-hazardous waste</td>
<td>40 kgs</td>
</tr>
<tr>
<td>Sharps</td>
<td>500 gms</td>
</tr>
<tr>
<td>Infectious waste</td>
<td>2 kgs</td>
</tr>
<tr>
<td>Anatomical waste</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Pharmaceutical waste</td>
<td>500 gms</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Data not available</td>
</tr>
<tr>
<td>Radioactive waste</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Municipal solid waste</td>
<td>Data not available</td>
</tr>
</tbody>
</table>

The hospital had tie up with Health Care Services Pvt Ltd. It is located at Lassipora in district Pulwama, Kashmir. They use to pick up waste on daily basis.

**Implementation:**

- **Provision for vaccination against Tetanus and Hepatitis for all the staff:**
- **Management of spillage of blood and body fluids:**
- **Management of sharps:**
- **Infectious waste:**
- **Non-hazardous waste:**
- **Sharps:**
- **Anatomical waste:**
- **Pharmaceutical waste:**
- **Chemicals:**
- **Radioactive waste:**
- **Municipal solid waste:**

**Awareness among all the staff was found to be very low expect for the management team or committee.** Furthermore, logistics and budgeting for maintenance of waste was inadequate.

**Discussion:** The present study revealed lack of basic awareness among health care workers. This can be attributed to lack of training among health care workers. Similarly, Vishal Bathma et al 1 in their study found that knowledge about disease spread by improper waste management was more in doctors (92.1%) as compared to nurses (94%) and Lab technicians (52.3%). The findings contradict the findings by Verma Ramesh et al 3 where majority of the paramedical workers were quite aware about transmission of disease and predominant source of infection.

**Recommendations:** Based on our study findings, the recommendations are:

1. Streamlining waste management by Constitution of waste management committee and team.
4. Provision of logistics, personal protective clothing and vaccination to all the staff involved in waste handling.
5. Sensitization of all the staff by imparting training.
6. Recording and reporting on prescribed format about accidental injury and vaccination of health care workers should be emphasized.
7. Inter sectoral coordination between health and other sector for proper management.
9. Record keeping and creation of website about waste management as per guidelines.

**Conflicts of interest:** None

**Source of Funding:** None

**Authors Contribution:** Dr SM Salim Khan conceived the idea, study design and prepared the questionnaire. Dr Ambrine helped in Data collection and compilation. Myself drafted the manuscript, data collection and analyses.

**Acknowledgement:** The authors would like to thank the Medical Superintendent and all the staff of Government Psychiatric Disease Hospital for their cooperation.

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