KNOWLEDGE, ATTITUDE AND PRACTICE OF BIO-MEDICAL WASTE MANAGEMENT AMONG PUBLIC HOSPITALS IN HUBLI- DHARWAD CITY

Written by ***Dr. Shivakumar M.A***

Assistant Professor, P.G. Department of Studies in Law, Karnatak University, Dharwad, India

INTRODUCTION

Improper disposal Bio-Medical Waste can be infectious to both people and environment causing high contamination, this needs responsibility from various persons including, occupiers, Government authorities, operators, and persons who are involved in the segregation process, while segregation of waste at generation level in more important and needs to be focused it. Improper management of hospital waste has more potential to patients, staff, and human beings and environment, even it may cause to various health issues including tuberculosis, typhoid, cholera, hepatitis, AIDS, respiratory and abdominal infections. Additionally, the hazardous biomedical waste can also affect the natural water reservoirs and aquatic life when it is directly discharged into the streams without prior treatment with reduced toxic effects. Hence its one the crucial aspect needs to take precautions and handling is required as per the guidelines, rules and regulations issued by the government.

RESEARCH PROBLEM

Improper disposal of health care waste management at health care institutions leads to many health risks and hazardous to environment and its harmful impact on various living creature including human beings, wildlife, microorganism, forest and Bio-diversity. Hence its special care and precautions are needed to segregate, transport and disposal of Bio-Medical Waste.

This study to ascertain the prevailing rules, regulations and assessing the existing the knowledge, practices, and attitude of the Bio-Medical Waste Management among selected public hospitals in Hubli- Dharwad. The researcher have framed the questionnaire based the following research problems

(a) How the Health Care Facilities (HCF) have adopted the practice, attitude and knowledge towards handling of Bio-Medical Waste Management in the selected area; and
(b) What is the role of Health Care Facilities (HCF) in providing training programmes and creative awareness among health care workers;

OBJECTIVE OF THE STUDY

The main objective of the study as follows,

(a) To discover the knowledge, practice, and attitude of the health care personnel with relating to segregation, storage, transport, and disposal of health care waste management in the selected hospital in Hubli-Dharwad; and
(b) To find out the cooperation between practice and awareness of Health Care Waste among the nurses, doctors, and staff including persons who are handling the Bio-Medical Waste Management.

METHODOLOGY

This study is adopted the methodology based on both doctrinal and non-doctrinal and various tools are used for study i.e., Sample Survey, Sample Size, Questionnaire Method, Research design, and sample technique are used to inference the research relating to health care waste management among public hospital in Hubli-Dharwad

(a) Sample Survey

Sample Survey is selected based on selected specific geographical area and study pertaining to only public run hospitals in Hubli –Dharwad

(b) Sample Size,

Sample are collected on specified respondents from the Doctors, Nurses, and Staff among selected hospital only.

(c) Questionnaire Method

The relevant data has been collected by Researcher through questionnaire method by disturbing questionnaire which contain 20 questions to assess the knowledge and practice of health waste management in the selected hospital.

(d) Research Design

Descriptive, Tables, and Pie Charts methods have adopted to design the present study to demonstrate the data collected by the Researcher.

(e) Sample technique

Systematic sampling technique are used to collected the data

SIGNIFICANCE OF THE STUDY

The Stockholm Declaration[i] was the first international convention which was focused on various environmental issues and urged to safeguarding the global environment, Mrs. Indira Gandhi, the then Prime Minister of India, who was participated in the Stockholm Conference and she had been inspired the principles adopted in the said conference and later the Government of India urged to enact the environmental legislations in India. Consequent of this Conference the Government of India enacted the Environment (Protection) Act, 1986, the Environment (Protection) Rules, 1986, with the following purposes,

(a) The Standards to maintain good quality Air, Water and Soil and other aspects of environmental concerns;

(b) The Standards to know about the limits need to fixed by the Government authorities on environmental pollutants;

(c) The procedures and safeguards needed for prevention and control of environmental pollution and compensating the environmental damages in case of environmental disasters;

(d) To lays down rules and regulations by the Government authorities for the prevention and control of Environment Pollution;

(e) To lays the rules and regulations to regulating of environmental discharges includes emissions, waste from the industries and operations;

(f) Examinations of manufacturing, inspecting industries, entering industries or operations, collecting samples for the purpose of maintaining quality environment; and

(g) Prohibition of restriction of industries and operations carrying of business/s in certain places/areas;

Therefore, the Central Government by exercising the powers confirm upon under the section 3[ii], 5[iii], 6[iv], and 25[v] of the Environment (Protection) Act, 196, under Rule 5[vi], and 13[vii], of the Environment (Protection) Rules, 1986, for prevention, control and abatement of environmental pollution, the Central Government framed the rules relating to health care management and published in its Official Gazette 1998, as the Bio-Medical Waste (Management and Handling) Rules, 1998. With the following objectives,

(a) Fixing the Duties of Occupier;

(b) Procedure of segregation of health care waste at the point of generation;

(c) Disposal of hospital waste as per the colour coding;

(d) Classified the waste according the their nature and level of infection;

(e) Limitations of storing of Bio-Medical Waste at the hospital premises;

(f) Procedure for collection and transportation of waste from hospitals; and

(g) Methods of treatments of hospital waste with environment sound management.

Later, the Central Government amended the said rules in the year 2016, 2018 and 2019 by inserting the various required provisions to the said rules. Hence, it is responsibility of the each occupier or operators to take necessary measures to ensure the hospital waste should be handled without any adverse impact on human beings and environment at any circumstances, the major duties of occupier[viii] and various authorities are especially focused under Bio-Medical Waste Management Rules, 2016. Therefore, the Researcher have the selected the specified hospitals within Hubli-Dharward, to investigate the practice and attitude in implementing the above said rules in the concern hospitals.

NEED OF THE STUDY

The World Health Organization (WHO) estimated in its report stated more than 16 billion injections are used per year in the world, all needle, sharps and other health care waste which are generated during diagnosis of patient, labs, and research are not safely disposed. Due to which unsafe and improper disposal or handling of hospital waste causes to various infections including, HIV infections, Hepatitis B Infections, Hepatitis C Infections and adversely impact on human beings, and environment.[ix]

The Central Pollution Control Board, in its annual report[x] stated the total generation of Bio-Medical Waste is about 619 tonnes per day out of which 544 tonnes per day are treated in Common Bio Medical Waste Treatment Facilities and about 55 tonnes per day are treated by captive treatment facilities and about 489 tonnes per day are treated by CBWTF. As reported, 29,062 no. of HCFs/CBWTFs observed to be violating the provisions of the said Rules. Hence its urge and need to take measures against the hospital authorities for violating the said rules as well as protect and safeguard and health and environment from the infectious caused due to improper disposal and handling of hospital waste in India Therefore the researcher have selected specific area to find out the methods adopted by hospital authorities.

REGULATORY FRAMEWORK ON MANAGEMENT OF BIO-MEDICAL WASTE IN INDIA

In exercise the powers confirmed upon the Central Government under Section, 6 8 and 25 of the Environment (Protection) Act, 1986, makes the rules, these rules called as "Bio-Medical Waste Management Rules, 2016, (hereinafter called as said rules), the rules have elaborative powers confirmed to Central Government, State Government/s Central Pollution Control Board, State Pollution Board/s, to make rules regarding measures required to safe disposal of hospital waste.

These rules main covers on duties of occupier, duties of common bio-medical waste treatment and disposal facility, duties of authorities, methods for segregation, storage, packaging, transportation, authorization, establishment of monitoring committees, Schedules I to IV, and submission of annual reports. The main duties of certain authorities as follows,

Table:-I, List of Authorities and their Duties[xi]

SL. No	Name of Authority	Duties of Authorities
1	Occupier/Hospital Authorities [xii]	(a) Take all necessary steps to ensure hospital waste disposed safely without adverse impact on environment and human beings; (b) Ensure Bio-Medical Waste generated at hospital should be segregated at the point of generation and stored as per Schedule I of the said rules; (c) Ensure pre-treat of the laboratory waste, blood sample, microbiological waste as per guidelines of World Health Organisation and National Aids Control Organisation; (d) Ensure the segregated waster as per applying the color code; (e) Ensure hospital waste not to mix with municipal waste; (f) Provide training the workers who are handling and managing the Bio-Medical Waste Management; (g) Immunize all health care workers who are involved and handling Bio-Medical Waste in the hospital; (h) Ensure the Bar Code system established for bags and containers; (i) Ensure occupational safety and conduct health checkup periodically for all health care workers; (j) Maintain register for up to date about Bio-Medical Waste; (k) Report in case major accidents in case of fire, blasting etc., (l) Prepare annual report and publish it their hospital websites or notice board; and (m) Maintain records of transportation, and treatment as per the Schedule II of said rules.
2	Duties of Operator (CBWTF)	(a) Take all necessary steps to ensure that Bio-Medical Waste collected from the occupier is segregated. Stored, transported as per Schedule I and II of the said of the rules; (b) Ensure waste is collected timely; (c) Provide training and health checkupsregularlyto who are involved in the handling of Bio-Medical Waste; (d) Maintain log books and register for transportation, incineration, autoclaving and microwaving; and (e) Ensure waste collected during holidays also.
3	Ministry of Environment, Forest, and Climate Change,	(a) Making required policies, rules and regulations for safely handling and management of Bio-Medical Waste in the country;

	Government of India	(b) Provide financial assistance if required to conduct training, awareness programmes, and seminars, conferences on Bio-Medical Waste Management (c) Ensure Bio-Medical Waste Management Rules are properly implemented; and (d) Notify the any updates in terms of new technology or software, scientific experimentation or any other information required to safe disposal and proper handling and management of hospital waste.
4	Central Pollution Control Board/ State Pollution Control Boards	(a) Prepare guidelines for safe and proper disposal of Bio-Medical Waste Management; (b) Coordination activities between State and Central Pollution Control Board/s; (c) Conduct training activities among health care personnel; (d) Review data submitted by the State Pollution Control Board/s; and (e) Undertake research and Conduct awareness programmes.
5	Municipalities/ Corporations	(a) Provide suitable place or locations and land for operations of Bio-Medical Waste Management.
6	The Central/ State Ministry of Health and Family Welfare	(a) Advise the hospitals and State Pollution Control Board for effective implementation of Bio-Medical Waste Management; (b) Allocation of proper funds to Government Health Care Hospitals for handling hospital waste; and (c) Constitute district level advisory committee to oversee the proper implementation of said rules.

Above duties to be followed by the said authorities for safe and effective implementation of Bio-Medical Waste Management in the hospitals, and mainly hospital authorities understand the concept of colour coding for disposal of Bio-Medical Waste Management, methods have been demonstrates as follows,

Table-II, Color Coding[xiii]

SL No	Category	Type of Waste
1	Yellow	(a) Human Anatomical Waste; (b) Animal Anatomical Waste; (c) Soiled Waste; (d) Expired Discarded Medicines;

		(e) Chemical Waste; (f) Chemical Liquid Waste; and (g) Microbiology Waste.
2	Red	(a) Contaminated Waste
3	White (Translucent)	(a) Waste Sharps; and (b) Metals.
4	Blue	(a) Glassware; and (b) Metallic Body Implants.

Segregation of Bio-Medical Waste at the point of generation is the best practice and after collected said waste from the hospitals, finally treatment takes as per the Schedule I and in the rules the standards for treatment and disposal of Bio-Medical Waste have been mentioned in the Schedule-II, (Standards for microwaving, autoclaving, deep burial, incineration, emission standards, stack height, air emission, spore testing, heat sterilization and chemical disinfection). Schedule-III explains about list of Authorities, and their corresponding duties, Schedule-IV covers Label for Bio-Medical Waste Containers or Bags.

CONSTITUTIONAL PROVISIONS AND JUDICIAL IMPLICATIONS ON BIO-MEDICAL WASTE MANAGEMENT

(a) Protection of Environment and Sustainable Development

The concept of Sustainable Development has been developed at national and international applied in terms of environmental protection, the World Commission on Environment and Development (WCED) Bruntland report, 1987 developed the concept first time at global level, which defines, "Sustainable Development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs." Main principles of Sustainable Development involved as follows,

(i). Precautionary Principle

The Precautionary Principle adopted by the courts in interpreting the Article, 21,[xiv] Article, 48(A)[xv] and Article (51) (a) (g)[xvi] with respect to conservation, and protection of environment, precautionary actions ultimately aim at continuously reducing and if possible removing exposures to potentially harmful substances to the health and environment and minimize

significant adverse impacts, in *Almitra H.Patel and others V/s Union of India and others,*[xvii]the Court observed all authorities are adhered to Bio-Medical Waste Management Rules, 2016 in case failed to adhere to and or have violated these precautionary and preventive measures in any form whatsoever, should have punitive action against them by the concern authorities. *In Nagrik Upbhokta Margdarshak Manch and Ors. Vs. Respondent: State of M.P. and Ors.*[xviii] NGT Central Zone Bhopal, observed that the Bio-Medical Waste generated during the treatment of COVID positive patients is required to be handled, managed and disposed off as per the guidelines issued by the Central Pollution Control Board on 18.03.2020. The environmental law principle, which this tribunal is mandated to apply the concept of precautionary principle under the sustainable development.

(ii). Polluter Pays Principle

The Principle is assessing and collection of compensation is another important aspect of environmental governance, its scientific management, including enforcement of polluter pays principle, requires study of level of pollution and contributors thereto and cost of restoration to be recovered by an efficient machinery. Such steps will advance the environmental rule of law and lead to sustainable development. [xix] The Tribunal directed the State Pollution Control Board to take necessary action for enforcement of law by closing the polluting activity and recover compensation on "polluter pays principle" and report to this Tribunal.[xx]

(iii). Public Trust Doctrine

Protection of the environment, open spaces for recreation and fresh air, play grounds for children, promenade for the residents, and other conveniences or amenities are matters of great public concern and of vital interest to be taken care of in a development scheme. The public interest in the reservation and preservation of open spaces for parks and play grounds cannot be sacrificed by leasing or selling such sites to private persons for conversion to some other user. Any such act would be contrary to the legislative intent and inconsistent with the statutory requirements[xxi]

(iv). Inter-generational equity

While applying principle of sustainable development one must bear in mind that development which meets the needs of the present without compromising the ability of future generations to

meet their own needs is sustainable development--it is the duty of the State under our Constitution to devise and implement a coherent and coordinated programme to meet its obligation of sustainable development based on inter-generational equity.[xxii]

In case of *Vellore Citizens Welfare Forum V/s U.O.I*[xxiii]observed by the Supreme Court of India and is directed against the pollution which is caused by enormous discharges of untreated effluents from the tanneries, industries directly into water sources and caused serious environmental hazardous in Vellore locality, which results violation of Article, 21 of Constitution of India and in this case the Supreme Court of India have adopted the concept of Sustainable Development.

The National Green Tribunal (NGT) observed in the case of *JitendraBairagi V/s Hotech Eco Management Pvt. Ltd,* and others, that the Environmental Law principle which is mandated to apply under section 20 and 21 of National Green Tribunal Act, 2010, are significance of environmental rule of law has been highlighted to achieve sustainable development goals for prosperity, health and wellbeing. This requires fill gap between law and enforcement. Article 21 protects right to life as a fundamental right. Enjoyment of life and its attainment including the right to life with human dignity encompasses within its ambit, the protection and preservation of environment, ecological balance free from pollution of air and water, sanitation without which life cannot be enjoyed.

Therefore, hygienic environment is an integral facet of right to healthy life and it would be impossible to live with human dignity without a humane and healthy environment. Environmental protection, therefore, has now become a matter of grave concern for human existence. Promoting environmental protection implies maintenance of the environment as a whole comprising the man-made and the natural environment. Therefore, there is constitutional imperative on the Central Government, State Governments and bodies like municipalities, not only to ensure and safeguard proper environment but also an imperative duty to take adequate measures to promote, protect and improve the man-made environment and natural environment.[xxiv]

(b) Duties of Health Care Facilities (HCF's)

In case *D. Swamy V/s The Karnataka State Pollution Control Board and Ors.,*[xxv] the National Green Tribunal Southern Zone Bench, Chennai, observed that, The bio-medical waste shall be treated and disposed of in accordance with Schedule I and in compliance with the standards under Schedule II. It is indicated in the Rules that no occupier shall establish on-site treatment and disposal facility, if service of common biomedical waste treatment facility is available at a distance of 75 km.

Shailesh Singh and Ors. Vs. Sheela Hospital and Trauma Centre, Shahjahanpur and Ors.[xxvi] Healthcare Facilities including Veterinary Hospitals, AYUSH hospitals, Animal Houses etc. also come under the purview of Bio-Medical Waste Management Rules, 2016 and are responsible for ensuring scientific disposal of biomedical waste. Central Pollution Control Board (CPCB) has advised the State Boards and Pollution Control Committees, for carrying out monitoring of such Health Care Facilities (HCFs) and also to ensure their authorization, observations and Recommendations by National Green Tribunal, Principal Bench, New Delhi as follows,

(i) Every HCF's required to brought under the process of authorization Bio-Medical Waste Management Rules, 2016, this would result in improvement in management of biomedical waste;

(ii) It is observed that out of 3,19,907 no. of HCFs, about 75 % of them utilising services of CBWTFs, while 18,552 No. of HCFs, that is 5.8% of HCFs are having captive bio-medical waste treatment and disposal facilities. Since most of the captive facilities utilize deep burial method of disposal, the objective of the States should be to extent possible minimize disposal of biomedical waste through captive facilities and facilitate availability of Common Bio-Medical Waste Treatment Facility (CBWTFs) for final disposal;

(iii) Only few States have achieved more than 80% authorization of inventoried HCFs. The overall efficiency of authorizations in the country is far from satisfactory at 48%. Therefore, all SPCBs/PCCs should expedite the process of authorizing healthcare facilities, so that waste generated from facilities can be verified for proper collection and disposal;

(iv) The present generation of 615 MT/day of biomedical waste may look adequate at national perspective, however, at individual State's level availability of CBWTFs may vary. It

is evident from the fact that despite having CBWTFs, few States are still use deep burial pits for disposal of BMW as the existing CBWTFs fail to cover entire State;

(v) SPCBs/PCCs should relook at the available infrastructure and facilitate establishing new CBWTFs outside 75 km range from the residential population and State's geographical area so as to minimize usage of deep burial pits to the extent possible to avoid impact on residence and environment;

(vi) States namely A&N, Arunachal, Goa, Lakshadweep, Mizoram, Meghalaya, Nagaland, Sikkim and Tripura do not have common facilities for treatment & disposal of biomedical waste, should facilitate setting up of new facilities of appropriate capacities in consultation with State Governments;

(viii) SPCBs/PCCs may now act strictly against non-complying HCFs. They may consider imposition of fine as per the guidelines issued by CPCB in compliance with Orders of Hon'ble NGT;

(ix) CPCB has to prepared separate guidelines for "Monitoring Compliance of Common Biomedical Waste Treatment Facilities by State Pollution Control Boards/Pollution Control Committees" which provide check-lists for monitoring CBWTFs specially to monitor illegal handling of biomedical waste;

(x) Non-Complying by the Common Bio-Medical Waste Management Treatment Facility are subject to cancellation of authorization by SPCB/PCC and SPCBs should also treat non treat non-complying facilities as inadequate and allow new compliant facilities in same coverage areas;

(xi) As per Rules, implementation of barcode system is mandatory to track movement of BMW, While there is some improvement implementing barcoding system, it is reported that HCFs are not joining the system. This indicates that SPCBs have failed to implement this provision effectively; and

(xii) There has been improvement in submission of Annual compliance status reports by SPCBs. SPCBs/PCCS shall continue the same and they may prepare State specific Annual reports and upload the same in respective websites.

SUMMARY OF REPORT ON KNOWLEDGE, ATTITUDE, AND PRACTICE OF BIO-MEDICAL WASTE MANAGEMENT AMONG PUBLIC HOSPITALS IN HUBLI - DHARWAD CITY"

(a) About Dharwad

Dharwad is one of the district in Karantaka State, it is famous for education and preparing for all India competitive exams, are presently Dharwad consisting private and public run hospital, private hospital including, Shreeya Hospital, Spandana Hospital, German Hospital, Dr. Ramanagoudar super specialty hospital, and Sri Darmshtala Manjunath Hospital (SDM) under the public run hospitals including District Civil Hospital, (Civil Hospital) Dharwad is main hospital except Primary Health Centre (PHC) is running under the Government of Karnataka. The civil hospital providing various facilities with more than 500 beds with well equipped.

(b) About Hubli

Hubli is a major city in North Karnataka, consisting more than 1,098,000 pollution, its famous business for cotton, and iron, in Hubli there are many hospital established and working since long back and many hospital are run under private ownership which are including Suchirayu Hospital, Hebsur Hospital, ESI Hospital, Shri Bhunji D Khimji Lifeline Hospital, Manvi Hospital, KH Jituri Hospital, Hosur Hospital, Jayriya Hospital, Chaitnya Hospital, Nalwadi Hospital, Shankuntala Hospital, and Shifa mental health hospital. Public run hospital are including Karnataka Institute of Medical Science (KIMS) it was started in the year 1957 at presently KIMS offering MBBS, MD and MS in all specialties, and Super Specialty in areas of Neurology, Neurosurgery, Paediatric surgery, plastic surgery, surgical gastroenterology, Urology, Nephrology, and surgical oncology, this hospital have more than 5000 beds (General Ward), ICU, special wards, ventilator wards have providing best service to the patients and providing teaching and research in medical education.

(c) Operational Definition

For the purpose of clarity of terms used in the entire research, the following words have defined to understand the nature and concept of various definitions,

Knowledge:

Skills acquired through experience, training, studying, education, practice and theoretical knowledge gained.

Attitude:

A settled way of thinking about something that is very much needed towards presentation of certain things,

Practice:

Application of ideas, practice, belief and methods which are used to practice in one area or habitual way of doing something

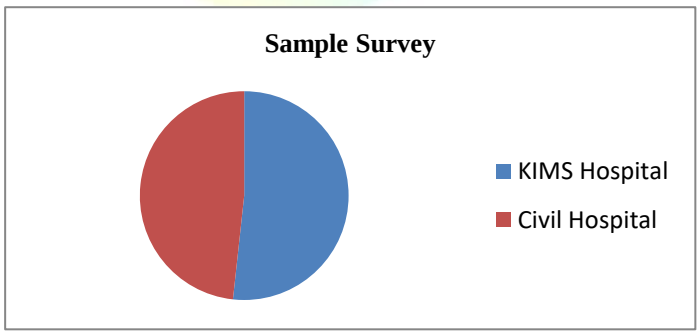
Bio-Medical Waste:

"Bio-Medical Waste" means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps, including the categories mentioned in Schedule I appended to these rules[xxvii]

(d) Distribution of samples among health care workers in public health hospitals i.e. Karnakatak Institute of Medical Sciences (KIMS) Hubli, and District Civil Hospitals, Dhawrad as follows:

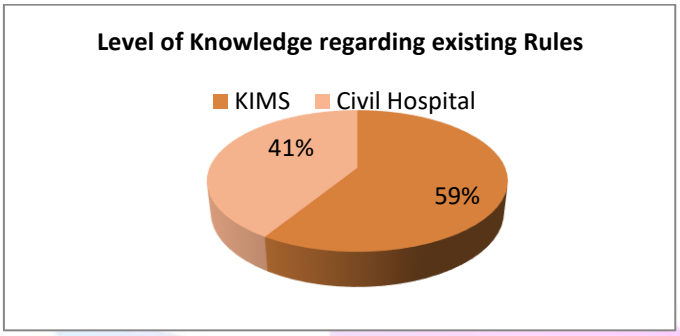
(1) Distribution of sample among health care workers in public health care hospitals including Karnataka Institute of Medical Science (KIMS) Hubli, and District Civil Hospital Dharwad the response from the hospitals has been demonstrated below,

Pie Chart-I



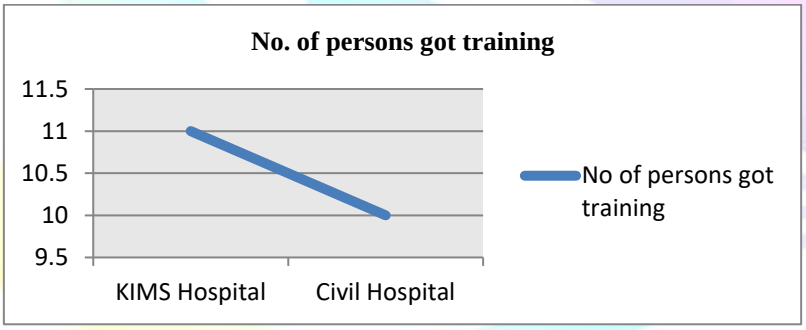
(2) Percentage based on the level of knowledge regarding existing law/rules/regulations relating to handling of biomedical waste in selected hospital, same has been indicating below,

Pie Chart-II



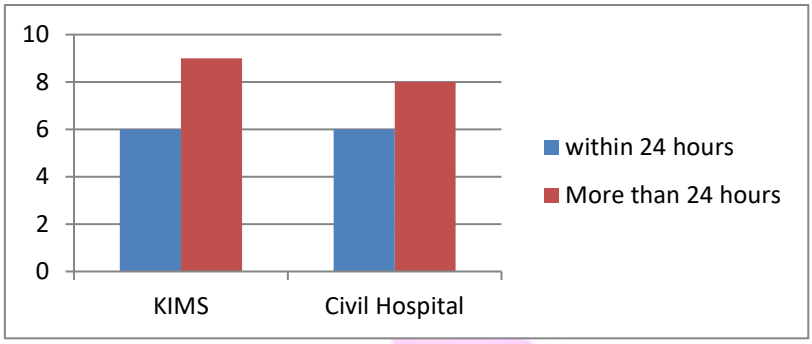
(3) It is responsibility of every occupier to provide adequate and proper training to all health care workers including, doctors, nurses, staff, peon, and other persons who are involving in handling of Bio-Medical Waste Management, and percentage of samples distribution relating to no. of staff are trained effectively to handle in the selected hospital and same has been illustrated below,

Line Chart-III



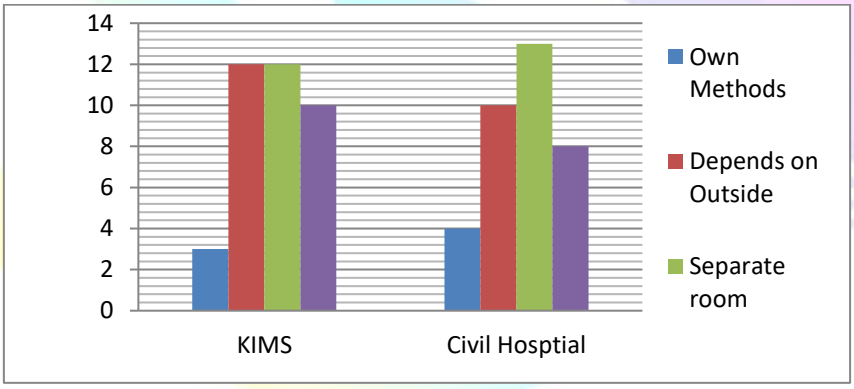
(4) The main duties of the hospital authorities is to ensure the hospital waste is disposed within stipulated time without any adverse effect on patients, environment and human beings as per the said rules, and percentage of the distribution of sample based on how many hours hospital waste is retained within 24 hours and more than 24 hours, same has been displayed below,

Colum Chart-IV



(5) Every occupier needs send the Bio-Medical Waste after proper segregation at source for treatment, the methods of treatment including incineration, autoclaving, microwaving and captive treatment to recognized common bio-medical waste treatment facility, in case of large hospital have permitted to adopt captive treatment within the premises or any place recognized by the hospital authorities. The percentage of distribution of sample regarding no. of hospitals have their own treatment methods/ facilities, hospital depends on outside agency, hospital having the weighing machine Bar code system, the same has been exhibit below,

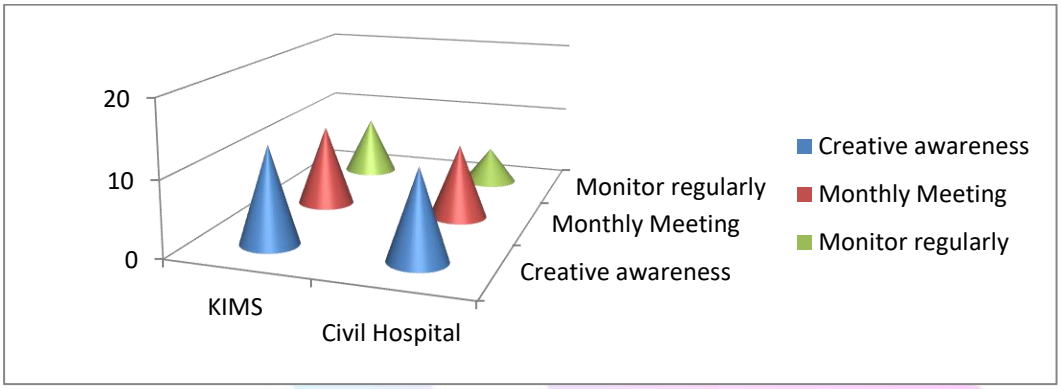
Colum Chart-V



(6) As per the Rule-4 and Schedule-III of the Bio-Medical Waste Management Rules, 2016, concerned authorities and occupier/ hospitals should provide to all health care workers who are involved in the handling of waste at time of induction and thereafter, every once in year conduct training and awareness programs, the percentage of distribution of samples regarding no. of hospitals authorities initiatives to create awareness, conduct monthly

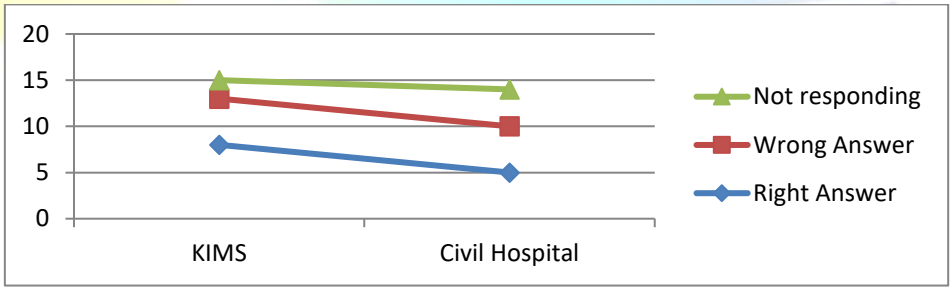
meeting, regularly monitor about hospital waste management, same has been indicating below,

Colum Chart-VI



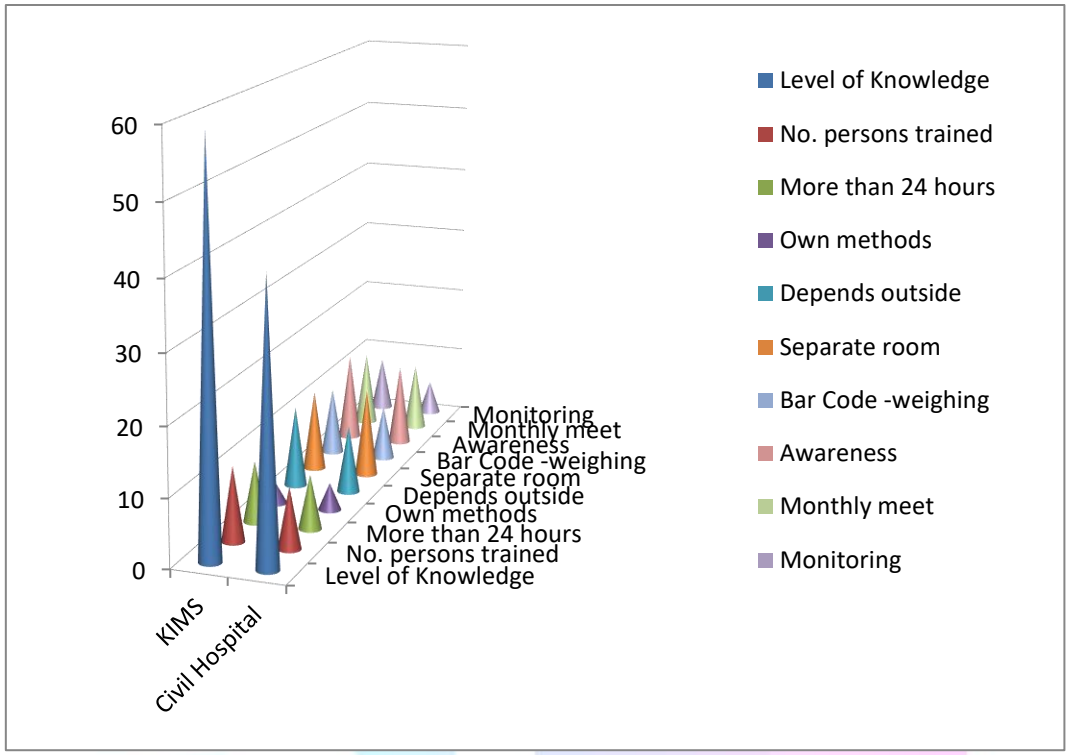
(7) As per the Schedule I of the said rules, every occupier needs to adopt color coding methods to handling of hospital waste which including yellow, red, white and blue container/bins at the point of generation, the waste has been disposed according color coding premises to ensure that it's should not be impact on environment or human beings, the percentage of distribution of sample based on regarding methods of disposal of human anatomical waste, sharp waste, human tissue, organ, body parts, Lab waste, solid waste, disposal of food items, plastic cover, non-infected plaster of pairs, and contaminated medicines, the same has been demonstrated below,

Line Chart-VII



Over all Correlation of Knowledge, Attitude and Practice regarding Biomedical Waste Management among selected hospital in Hubli- Dharwad, as exhibits below,

Colum Chart-VIIII



CONCLUSION AND SUGGESTIONS

There is an urgent global call for hospital waste management from all HFC's medical facilities and toxic waste to be treated as essential one in public service. This will in effect mitigate the potential threats to environmental sustainability and health outcomes. Every hospital need to adopt guidelines issued from time to time by the Central Pollution Control Pollution or State Pollution Control Pollution Board/s or Pollution Control Committee (PCC) , to avoid impact of waste on environment and health every occupier or operator need to adopt sustainable development as discussed above without any compromise to meet the needs of present generation and future generation.

The Government India have participated at many Environmental conferences committing towards protecting and conservation of environment is higher important area in guaranteeing the Rights of the Citizens as mentioned in the Article 21 of India Constitution. While at the time handling and involving of Bio-Medical Waste the following suggestions are need to keep their mind at the time of practicing by the occupiers, operators, and all persons who are involving the said waste-

(a) Avoid mixing Bio-Medical Waste with Municipal Solid Waste;

(b) Segregate Bio-Medical Waste at the point of generation;

(c) Segregate all hospital according to color coding as per Schedule-I of the said Rules;

(d) Comply to the guidelines issued by the competent authorities ;

(e) Install Bar coding and weighing machine and track the waste movement;

(f) Constitute monitoring committee at every hospitals to oversee the management of waste;

(g) Maintain compulsory the records and registrar of the waste;

(h) Undergo health checkup for all the persons who are involving in the waste management;

(i) Provide training and awareness programs to the all health care workers

(j) Display compulsory sign board/s at the point of disposal of waste in the every hospital and

(k) Adopt best scientific methods for treatment of waste without any adverse impact on health and environment.

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ENDNOTES

[i] Declaration of the United Nations Conference on Human Environment held on 5-16 June 1972 at Stockholm, Sweden

[ii] Powers of Central Government to take measures to protect and improve the Environment under the Environment (Protection) Act, 1986

[iii] Powers to give directions to any person, officer or any authority and such person or authority shall bound to comply with such directions

[iv] Rules to regulate environmental pollution

[v] Powers to make rules

[vi] Prohibitions and restrictions on the location of industries and the carrying on processes and operations in different areas

[vii] Prohibition and restriction on the handling of hazardous sustenance in different areas

[viii] Under Section 2(f) of the Environment (Protection) Act, 1986

[ix] World Health Organisation's News on "Health Care Waste" accessed at https://www.who.int/news-room/fact-sheets/detail/health-care-waste

[x] Central Pollution Control Board (CPCB) published its annual report 2019, accessed at https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/AR_BMWM_2019.pdf

[xi] Schedule III of the Bio-Medical Waste Management Rules, 2016

[xii] Rule 4 of Bio-Medical Waste Management Rules, 2016

[xiii] Schedule-I, and Rules 3 (e), 4(b), 7(1), 7(2), 7(5), 7 (6) and 8(2), of the said Rules.

[xiv] Protection of life and personal liberty. No person shall be deprived of his life or personal liberty except according to procedure established by law.

[xv] The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country

[xvi] It shall be duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures

[xvii] MANU/GT/0150/2016
[xviii] MANU/GT/0122/2021
[xix] *Ibid.*,
[xx]Meera Shukla vs. Municipal Corporation, Gorakhpur and Ors, (MANU/GT/0208/2021)
[xxi] Bangalore Medical Trust vs. B.S. Muddappa and Ors. (MANU/SC/0426/1991)
[xxii] Akhil Bhartiya Mengela Samaj Parishad and Ors. vs. Maharashtra Pollution Control Board and Ors. MANU/GT/0018/2022
[xxiii]AIR 1996 SC 2715
[xxiv]JitendraBairagi vs. Hotech Eco Management Pvt. Ltd. and Ors. (07.06.2021 - NGT) : MANU/GT/0112/2021
[xxv] MANU/GT/0042/2017
[xxvi] MANU/GT/0010/2021
[xxvii] Rule, 3 of Bio-Medical Waste Management Rules, 2016