



KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING BIOMEDICAL WASTE DISPOSAL AMONG POST GRADUATE, HOUSE SURGEONS & UNDER GRADUATE STUDENTS IN DENTAL COLLEGES OF BANGALORE: A CROSS SECTIONAL STUDY

Dental Science

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ABSTRACT

Aim: To determine knowledge, attitude and practice regarding Biomedical Waste Disposal among Postgraduate, House surgeons & undergraduate students.

Materials and method: Study consisted of 300 subjects of 3 categories and the survey tool employed was a self-administered questionnaire comprising of 15 multiple choice questions (Q1-Q15) based on Likert scale (3 point).

Results and Conclusion: Postgraduates group was found to be having better knowledge and more positive attitude with good clinical implementation. Awareness about the colour coding disposal system has to be improved in all the 3 groups as better knowledge will lead better clinical practice.

KEYWORDS

Awareness, Biomedical waste (BMW), Colour coding

Introduction:

Waste generated during diagnosis, testing, treatment, research or production of biological products from human or animal source. WHO is known as biomedical waste. Its classified into General Waste, Pathological, Radioactive, Chemical Infectious, Sharps, Pharmaceuticals¹.

All available bio medical waste is not hazardous, 10-25% waste falls under hazardous category and rest 75-90% under non-hazardous category. Further the non-hazardous is divided based on being infectious or not. Out of 10-25% of hazardous waste 15-18% is infectious and rest 5-7% falls under other hazardous category. Major sources of these bio medical wastes include hospitals, labs, medical research, blood banks nursing homes, mortuaries, autopsy centres. Minor sources include dental and medical clinics, cosmetic clinics, and paramedical²

According to Government of India; 2016 Ministry Of Environment, Forest and Climate; the colour coding is given as follows³:

Yellow colour: Human, animal anatomical waste, soiled waste, expired medicines, chemical waste, body fluid, clinical waste

Orange colour: Contaminated waste like plastic bag, bottle, pipes or containers

White colour: Scalpels, blades, needles, syringes like sharps.

Blue colour: Broken glass and infected plastics.

Improperly disposed bio medical waste will lead to Infection to all categories of hospital personnel and waste handler. Nosocomial infections and Risk of infection outside hospital also. Sometimes if the drugs and disposables are not properly disposed, Disposed drugs and disposables might be repacked and sold off. So in order to assess the awareness among dental students this study was aimed to determine knowledge, attitude and practice regarding Biomedical Waste Disposal among Post graduate, House surgeons & under graduate students.

Materials and Methods:

A cross-sectional study was conducted among undergraduates, house surgeons and post graduates in various colleges in Bangalore, India. A total of 300 subjects participated in the study. The questionnaire was designed based on worldwide reports, which included questions related to knowledge Q(1-5) attitude Q(5-10) of participants towards waste management and also about their practice Q(10-15)(Table-1) of waste management in daily clinical practice based on likert scale Questionnaires were distributed to the participants and filled questionnaires were collected. Ethical clearance was obtained from institutional review board and participation was voluntary

Knowledge :

1. Management of biomedical waste is the combined effort of Government, Dental surgeons & auxiliary Staff
2. Are there any guidelines laid down by Government of India for Bio Medical Waste disposal management?
3. Are you aware of this symbol



4. Are Yellow colored bags used to dispose out dated and discarded medicines?
5. Waste sharps are disposed in red bags

Attitude:

1. Do you think it should be made compulsory for healthcare facilities to get their healthcare personnel trained from accredited training centres?
2. Do you think decontamination of bio medical waste before disposal is important?

3. Do you think an awareness program for proper bio medical Waste disposal management is needed?
4. Are you aware improper waste management causes various health hazards?
5. Do you think strict implementation of rules laid by government is necessary?
Practice:
1. Is there any biomedical waste disposal policy in your hospital/clinic?
2. Do you practice waste disposal management in your daily clinical practice?
3. Do you dispose Used sharps and needles in Rigid/puncture-proof container?
4. Do you dispose the blood contaminated cotton plugs in yellow bags?
5. Do you use different containers for disposing wastes?

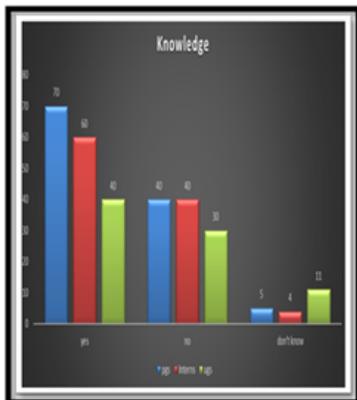
Three point Likert scale: 1. Yes 2.No 3.Don't know (Table 1)

The responses were compiled, computed and analysed for agreement or otherwise between and within the groups. Chi-square test with its corrections was used to confirm the difference in proportions. Probability of 95% was considered as statistically significant

Results:

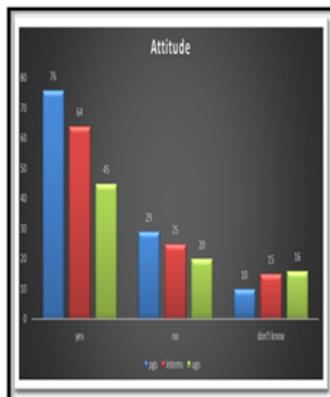
70 of total 115 post graduates had good knowledge about BMW, 40 of them showed satisfactory knowledge and 60% of house surgeons and 50% under graduates showed good knowledge. Basic questions in knowledge category were almost answered by all subjects but most of subjects from the entire 3 category were found to lack knowledge about the colour coding of disposal bins. (GRAPH 1)

Graph (1): showing KNOWLEDGE AMONG PG 'S, INTERNS AND UG'S



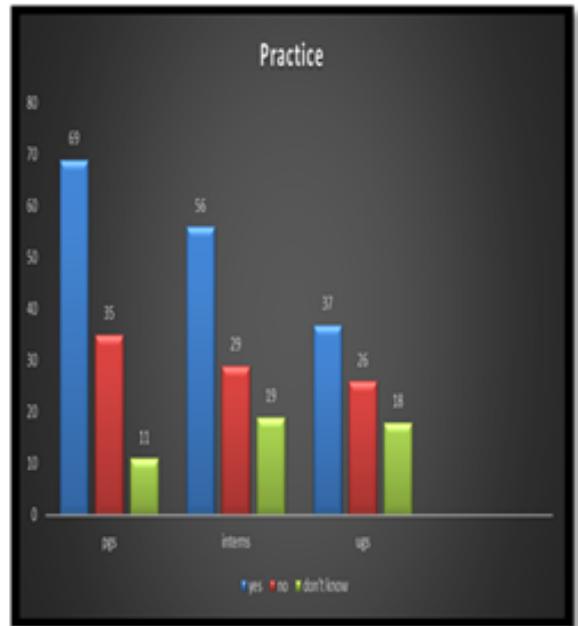
66% of post graduates had a positive attitude (the highest of all groups). When asked about the requirement of awareness and training programs, almost all the subjects responded positively and showed positive attitude towards learning and implementation of bio medical waste disposal rules in clinical practice. (GRAPH 2)

Graph (2): showing ATTITUDE AMONG PG'S, INTERNS AND UG'S



90% of subjects from all the three categories agreed that they practiced in their daily practice but the results showed the subjects lacked adequate knowledge about the color coding system of waste disposal. (GRAPH 3)

Graph (3): showing ATTITUDE AMONG PG 'S, INTERNS AND UG'S



The χ^2 (chi square values) and 'p' values were listed in Table 2.(<0.05 significant)

Question	χ^2	P Value
KQ1	10.874	0.0280
Q2	12.582	0.0135
Q3	10.201	0.0372
Q4	9.202	0.0562
Q5	6.754	0.1495
AQ1	49.396	0.0000
Q2	22.298	0.0002
Q3	50.304	0.0000
Q4	47.571	0.0000
Q5	71.593	0.0000
PQ1	1.189	0.8799
Q2	2.231	0.6933
Q3	2.959	0.5647
Q4	18.361	0.0010
Q5	1.646	0.8005

Although a positive attitude was observed towards biomedical waste management among those questioned, but there was no statistical significance.

DISCUSSION:

The present study have shown that most of subjects were aware of method of disposal of waste sharps but mostly postgraduates followed it in their clinical practice which was in accordance with A study done by Singh et al in 2012 in Lucknow concluded that dentist were aware of the method of disposing waste sharps and needle but failed to practice⁴. In present study it was found that most of subjects in all 3 categories were seen to lack knowledge about colour coding waste disposal system. A study done by Suwarna et al in a medical college in Bangalore in 2012 concluded that doctors and nurses had more knowledge about colour coding of containers⁴ and also a study done by Naresh kumar et al concluded lack of knowledge regarding segregation and colour coding of waste among different staffs of Rajendra institute of medical sciences, Ranchi in a survey among doctors, nurses, lab technicians and sanitary staff⁸.

In present study we have observed that post graduates had a better attitude than other groups. Whereas in a study done by done by

Suwarna et al (2012) it was seen that house surgeons had knowledge but attitude and practice was satisfactory⁵.

Lack of knowledge about the colour coding disposal of waste and subjects positive attitude towards awareness programs show that training programs have to be conducted for both students and health care workers. This is very much in accordance with the previous studies done⁶.

A study done by Veda et al concluded safe and effective management of waste is not only a legal necessity but also a social responsibility. Lack of concern, motivation, awareness and cost factor are some of the problems faced in the proper hospital waste management similar results are also acquired in this study⁷.

Nosheen et al in his review concluded Proper collection and segregation of biomedical waste are important. Practice of proper medical waste disposal and management is also inadequate. However, there is need for raising awareness about medical waste and its related issues⁹.

Shahida Rasheed et al in her cross sectional survey aimed evaluate the current practices of segregation approaches, storage arrangements, and collection and Disposal systems in the teaching hospitals of Karachi and concluded there should be proper training and management regarding awareness and practices of waste Disposal which is in accordance with the present study¹⁰.

Present study have included house surgeons who have shown to have positive attitude towards waste disposal management and undergraduate group who had knowledge and practices which was not satisfactory but 50% of them showed positive attitude towards waste management. Very few studies have previously included house surgeons and almost no studies were done by taking undergraduates in survey.

Conclusion: Study concluded that further improvement of knowledge is required in budding dentists of today in order to achieve a better tomorrow. Postgraduates group was found to be having better knowledge and more positive attitude with good clinical implementation. Awareness about the colour coding disposal system has to be improved in all the 3 groups as better knowledge will lead better clinical practice. Continuing education programs and short courses on cross-infection, infection control procedures and biomedical waste management are suitable means of improving the knowledge. Strict implementation of rules laid by government and annual check of the same, have to be looked after by universities and authorized councils, practitioner's failing to follow them are to be penalized.

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