AWERNESS, ATTITUDE AND APPLY REGARDING BIOMEDICAL WASTE MANAGEMENT

(With Reference To Kachchh District)

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Abstract:

Poor handling of biomedical waste generated by healthcare services poses risks to both human health and the environment. It is crucial to assess healthcare professionals' awareness, attitudes and apply to enhance safety measures. This study was carried out among healthcare workers in hospitals in the Kachchh District to assess variations in their awareness, attitudes and apply. Information was collected using a structured questionnaire and analyzed using percentages and chi-square tests to determine statistically significant dissimilarity. Notable dissimilarity was observed between awareness and attitude and between awareness and applies. However, no significant dissimilarity was found between attitudes and applies, indicating consistent behavior despite dissimilarity in awareness. The findings recommend that improving healthcare professionals' awareness through targeted training could improve biomedical waste management and mitigate associated health and environmental risks.

Introduction:

Biomedical waste management refers to the organized process of handling, storing, transporting and disposing of waste produced by healthcare facilities, clinics, laboratories and other medical activities. This type of waste comprises infectious substances, chemicals, sharp objects, pharmaceuticals and other hazardous materials. Inadequate management of biomedical waste poses significant threats to both human health and the environment, leading to injuries, contamination and the transmission of infectious diseases.

Consequently, effective biomedical waste management is crucial to ensure a safe and sanitary environment for healthcare professionals, patients and the local community. The successful handling of biomedical waste primarily relies on three essential elements: Awareness, Attitude and Apply.

Understanding encompasses being informed about the categories of biomedical waste, the associated dangers and the established protocols for their segregation and disposal. A lack of sufficient understanding can lead to unsafe handling and incorrect disposal, thereby heightening the risk of exposure to blood-borne infections like hepatitis B, hepatitis C and HIV, as well as infections acquired in hospital settings.

Attitudes toward biomedical waste management strongly influence obedience to established guidelines. Healthcare workers with a positive attitude recognize waste management as a safety responsibility and are more likely to follow segregation protocols, use personal protective equipment and comply with disposal regulations. However, negative attitudes can lead to inconsistent apply and increased occupational and environmental risks.

Biomedical waste management apply involves the actual implementation of biomedical waste management procedures in routine healthcare activities. This includes correct segregation at the point of generation, safe storage, transportation and final disposal using colour-coded bins and proper sharps handling.

The Kachchh District, selected as the study area, is the second largest district in India and the largest in Gujarat, including ten talukas, some of which share a border with Pakistan. The healthcare infrastructure in the district has developed comparatively slowly, with limited resources in several hospitals. This has contributed to varying awareness, attitude and apply regarding biomedical waste management among healthcare professionals.

Review Of Litreture:

Vekariya Dhruvil et al. (2023)

This study, conducted in Surendranagar, reviewed the knowledge and attitudes towards biomedical waste management among healthcare personnel. Healthcare workers who had undergone training demonstrated higher awareness and more positive attitudes. Continuous education is recommended to strengthen hospital waste management systems.

Thirunavukkarasu Ashokkumar et al. (2022)

This study from Northern Saudi Arabia evaluated healthcare workers' knowledge, attitudes and practices regarding biomedical waste management. It revealed gaps in training and emphasized the need for innovative, region-specific educational interventions.

Dash Kulumina et al. (2021)

This hospital-based study examined biomedical waste management among nursing professionals in Odisha. Nurses have satisfactory knowledge and compliance, supported by institutional initiatives such as free Hepatitis B vaccination. The researcher focused on the importance of continued training and strict policy enforcement.

Sekar Monika et al. (2018)

This study was conducted at a tertiary care hospital in Puducherry and analyzed biomedical waste handling among different categories of healthcare workers. Interns and postgraduate students showed higher competency levels, whereas the sanitary staff exhibited poor knowledge and practices. Regular and inclusive training programs are strongly recommended.

Nalvaya Anil et al. (2017)

This study of PHCs and CHCs in the Saurashtra region revealed a gap between awareness and actual practice of biomedical waste management. While most workers were

aware of the segregation rules, fewer consistently implemented them. Regular monitoring and strict supervision are suggested to improve actual practice.

Yangchen Dolma et al. (2016)

This cross-sectional study conducted in Srinagar identified a limited understanding of biomedical waste regulations among healthcare workers. Although segregation and sharp handling were practiced, the use of protective measures and formal training remained insufficient. The study emphasized that education and closer supervision are urgently required.

Kumar Dinesh et al. (2016)

This study examined the nursing staff of a rural tertiary care hospital in Gujarat. The nursing staff showed good knowledge and use of personal protective equipment, although attitude and awareness of institutional guidelines required improvement. Ongoing training and administrative support are recommended to improve knowledge and attitudes regarding biomedical waste.

Chudasama Rajesh et al. (2013)

This study was conducted in a tertiary care hospital in Rajkot and found inadequate management of biomedical waste among healthcare workers. Doctors showed higher awareness than nurses and sanitary staff. The authors suggested the urgent need for structured and regular training programs for nurses and nursing staff.

Pandit N. et al. (2005)

This district-level study in Gujarat reported poor awareness and improper biomedical waste disposal practices in healthcare facilities. A lack of standardized systems and infrastructure was evident. Suggestions such as policy enforcement, training and continuous evaluation were emphasized in this study.

Mathur Vanesh et al. (2011)

This study evaluated the biomedical waste management Applys in large hospitals in Allahabad. Clinical staff showed better awareness than did sanitary workers. The findings indicate the need for uniform training to improve safety standards.

Objective:

To examine the dissimilarity between Awareness, Attitude & Apply related responses among healthcare professionals about BMWM in hospitals in Kachchh District.

Hypothesis:

$\mathbf{H_0}$ 1: There is no statistically significant dissimilarity between the Awareness and Attitude related responses of healthcare professionals regarding biomedical waste management in hospitals in the Kachchh District.

H_0 2: There is no statistically significant dissimilarity between the Awareness and Apply related responses of healthcare professionals regarding biomedical waste management in hospitals in Kachchh District.

H_0 3: There is no statistically significant dissimilarity between the Attitude and Apply related responses of healthcare professionals regarding biomedical waste management in hospitals in Kachchh District:

Methodology:

The data required for this study were gathered from hospitals in the Kachchh District of Gujarat. A total of 500 healthcare professionals participated, comprising two doctors, four nursing staff and four sweeper staff from each of the 50 selected hospitals.

Data were gathered using a structured questionnaire to review the awareness, attitude and apply of biomedical waste management. Data analysis was performed using frequency and percentage distributions.

This study aimed to identify the gaps between awareness and attitude, awareness and apply and attitude and apply among healthcare workers.

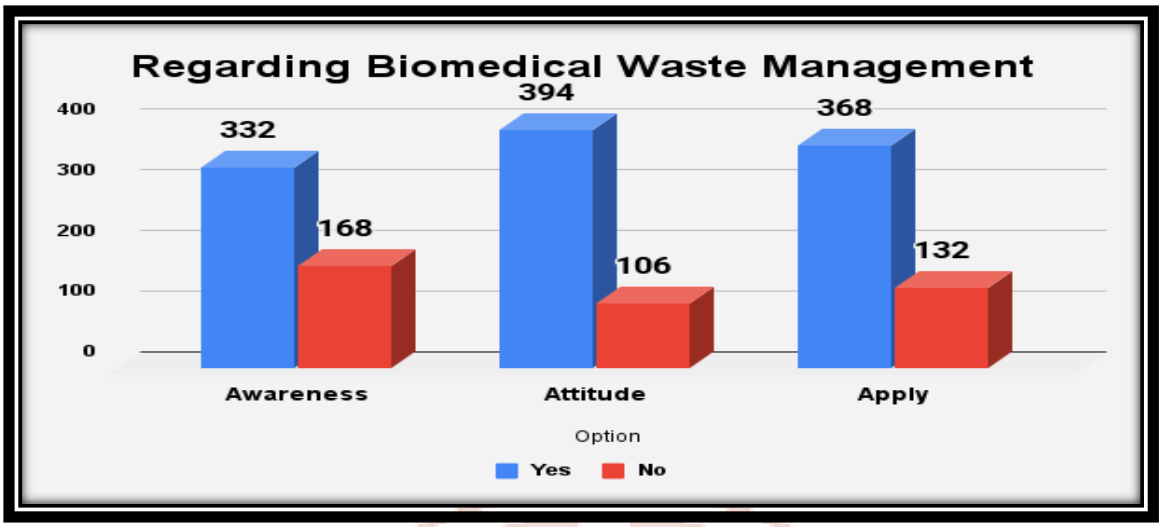
Results:

The results of this study are presented in the form of tables and charts. All statistical analyses and hypothesis testing were performed based on the data presented in these tables.

TABLE: 1

Regarding Biomedical Waste Management

Variable	Option	Awareness	Attitude	Apply
Regarding biomedical waste	Yes	332	394	368
	No	168	106	132
	Total	500	500	500



Explanation Of Table And Chart:

The gathered data showed a clear dissimilarity between the responses of Awareness, attitude and Apply regarding the management of biomedical waste. Attitude had the highest positive response (394) compared to Awareness (332), indicating that more respondents showed a positive mindset than actual understanding of the subject. When comparing Awareness and Apply, the Apply score (368) was higher than the Awareness score, suggesting that some respondents follow waste management activities even without complete Awareness. The comparison between Attitude and Apply demonstrates that although attitude is the strongest, Apply is slightly lower, indicating a drop from positive thinking to actual action. Overall, this dissimilarity reflects that Attitude is higher than both Awareness and Apply.

To check whether there is statistically significant dissimilarity between the Awareness and Attitude related responses of healthcare professionals regarding biomedical waste management in hospitals in the Kachchh District, the chi-square test was used, as given below:

Items	Value
Chi square calculated value	19.3244
Degree of freedom	(No. of row-1)* (No. of columns-1)=1
Significance level	0.05
Chi square Critical value	3.84
Answer	Calculated value > Critical value
Result	Reject H_0
Analysis	Accepted the alternative hypothesis
Conclusion	There is statistically significant dissimilarity between the Awareness and Attitude related

	responses of healthcare professionals regarding biomedical waste management in hospitals in the Kachchh District.

Interpretation Of Table And Result:

The chi-square test showed a significant dissimilarity between the Awareness and Attitude related responses of healthcare professionals towards biomedical waste management in hospitals in Kachchh District. The calculated value ($\chi^2 = 19.3244$) was higher than the critical value (3.84) at 0.05 significance; therefore, the null hypothesis was rejected. This indicates that awareness and attitude related responses are not the same.

To check whether there is statistically significant dissimilarity between the Awareness and Apply related responses of healthcare professionals' regarding biomedical waste management in hospitals in Kachchh District, the chi square has been used, which is given below.

Items	Value
Chi square calculated value	6.1714
Degree of freedom	(No. of row-1)* (No. of columns-1)=1
Significance level	0.05
Chi square Critical value	3.84
Answer	Calculated value > Critical value
Result	Reject $\boldsymbol{H_0}$
Analysis	Accepted the alternative hypothesis
Conclusion	There is statistically significant dissimilarity between the **Awareness and Apply** related responses of healthcare professionals regarding biomedical waste management in hospitals in Kachchh District.

Interpretation Of Table And Result:

The chi-square test showed a significant dissimilarity between healthcare professionals' awareness and apply related responses regarding biomedical waste management in hospitals in Kachchh District ($\chi^2 = 6.1714 > 3.84$), indicating that the distribution of responses related to awareness and apply is not the same.

This suggests that even if most healthcare professionals had adequate awareness, it was not consistently applied in their daily practice. The gap between awareness and apply related responses highlights that awareness alone is insufficient for proper biomedical waste management. Regular training, strict supervision and reinforcement of guidelines are essential to improve compliance and translate awareness into effective apply in hospitals in the Kachchh District.

To check whether there is no statistically significant dissimilarity between the Attitude and Apply related responses of healthcare professionals regarding biomedical waste management in hospitals in Kachchh District, the chi-square test was used, as given below:

Items	Value
Chi square calculated value	3.7276
Degree of freedom	(No. of row-1)* (No. of columns-1)=1
Significance level	0.05
Chi square Critical value	3.84
Answer	Cal value < Cri value
Result	Fail to Reject H_0
Analysis	Accepted the null hypothesis
Conclusion	There is no statistically significant dissimilarity between the **Attitude and Apply** related responses of healthcare professionals regarding biomedical waste management in hospitals in Kachchh District

Interpretation Of Table And Result:

Chi-square analysis showed **no** statistically significant dissimilarity between the attitudes and applies related responses of healthcare professionals regarding biomedical waste management in hospitals in Kachchh District. The calculated value ($\chi^2 = 3.7276$) was less than the critical value (3.84) at 0.05 significance, so the null hypothesis was fails to rejected.

The results of this study show that healthcare professionals' positive or negative attitudes toward biomedical waste management are normally reflected in apply related responses. In other words, their attitudes did not significantly differ from their actual apply. Promoting a positive attitude may support regular biomedical waste management apply in hospitals in the Kachchh District.

Conclusion:

The results show that higher apply does not depend on higher awareness. In contrast, attitude did not strongly influence apply. Overall, the results indicate that biomedical waste management applies are maintained largely independently of individual awareness and attitudes.

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