International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2019): 7.583

Assessment of Laryngoscope Decontamination Practices Followed by Anaesthetists of Rajasthan, India: An Online Survey

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Abstract: ***Background: A laryngoscope is one of theessential equipment of invasive anaesthetic procedures. It is a potential source of hospital acquired infections (HAI) and its spread is not appreciated by the anaesthesiologists. The objective of this study was to assess the Knowledge, Attitude, and Practice of anaesthesiologists towards the decontamination of laryngoscope in government and private hospitals of Rajasthan.Since this type of study had not been conducted yet in our setting, therefore it was unique. Methods: An online survey was conducted for four months from November, 2019 to February, 2020 in leading government and private hospitals of Rajasthan. A google form consisting ofquestions regarding the common laryngoscope decontamination practices was sent to 100 anaesthesiologists. Results: A total of 80 responses were received. 70% anaesthesiologists agreed that their hospital had a well-defined protocol for disinfection, whereas 7.5% denied and 12.5% had no knowledge of protocols. 66% of the anaesthetists agreed that the staff had been trained properly for the same, 26% denied any training and 8% had no knowledge about the training. 61% of them admitted that they do not disinfect laryngoscope, while 25% disinfected by autoclaving and 5% used chemical disinfectant. Conclusions: To ensure appropriate knowledge and safe practice of laryngoscope, proper training should be provided to all the healthcare workers. It will also be helpful in making IEC (Information, Education and Communication) material. There is a need to follow standard national guidelines for adequate decontamination of anaesthesia-related equipment.***

Keywords: Autoclaving, chemical disinfectant, hospital acquired infection, laryngoscope

1. Introduction

A laryngoscope is one of the most essential equipment of invasive anaesthetic procedures. Laryngoscopy involves contact of the instrument with the mucous membrane, saliva, blood and other secretions of a patient, thus making laryngoscope a potential source of cross-infection. Though the tip of the laryngoscope comes in direct contact with the patient, the handle also gets contaminated when the tip of the blade touches it in the folded closed position.[1] Moreover, using laryngoscope without wearing gloves can also contaminate the handle.

Although laryngoscope is one of the most commonly used tools by an anaesthesiologist, its role as a source of hospital acquired infection (HAI) and its spread is not well appreciated by them.[2] India already struggles with the massive burden of healthcare problems with low doctor to patient ratio, formulation and implementation of a definite, consistent guidelines for decontamination practices is a far-fetched dream.

This study aims to find out the knowledge, attitude and common practices used for decontamination of a laryngoscope by anaesthesiologists which can be helpful in making IEC (Information, Education, Communication) material, identifying and eliminating the lacunae. Since this type of study has not been conducted yet in our setting, therefore it is unique.

2. Methods

A self- administered, validated questionnaire was developed and an online survey was conducted for four months from November, 2019 to February, 2020 in leading government and private hospitals in Rajasthan. The questionnaire was sent to 100 anaesthesiologists selected randomly and equally from each hospital to find about the prevailing decontamination practices of laryngoscope. Purposive sampling technique was used to determine the sample. A written consent was taken from the participants in the beginning of the online survey. Those who consented, were enrolled for the study. A 20% non-response rate was considered. The data obtained was entered and analysed in MS Excel in the form of frequency and percentage.

3. Results

Out of 100, a total of 80 responses were received. Different opinions on same question were also seen between anesthesiologists from same hospital. Although all 80 anesthesiologists (100%) acknowledged that a laryngoscope is a potential source of HAI, only 62.5% used gloves before handling the instrument. Amongst all, 85% had never used a disposable laryngoscope while 15% had used it before. Two of them even reused the disposable laryngoscope after cleaning. 70% of the anaesthesiologists agreed that their hospital had a well-defined protocol for disinfection, whereas 17.5% denied and 12.5% of them had no knowledge of protocols. Out of those 70%, only 39% followed the protocols. On further evaluation, it was found

that the main reason behind not following protocols was that "the process consumed too much time" as stated by 44% of the 15 anaesthesiologists, while 32% didn't understand the process. Lack of proper facilities for disinfection of the instrument was one of the other reasons of not following the protocols [Figure 1].

92.5% of anaesthesiologists said that the OT staff was responsible for cleaning and disinfection of laryngoscopes but 66% agreed that the staff had been trained properly for the same, while 26% denied any training and 8% had no knowledge about the training. Regarding cleaning and disinfection protocols, 33% of the anaesthetists said that they wipethe laryngoscope with alcohol based solution (spirit), 25% of them rinse the instrument under running water, 20% practice both, first wiping the instrument with alcohol based solution followed by rinsing it under running water and 22% clean the instrument with betadine scrub followed by rinsing under running water. [Figure 2]. 61% admitted that they do not disinfect laryngoscope, while 25% disinfect by autoclaving and 5% use chemical disinfectant [Figure 3]. Only 41% anaesthesiologists clean or disinfect laryngoscope after every use, 19% clean once at the end of the OT and 10% clean once at the beginning of the OT [Figure 4]. It was interesting to note that 77.5% anaesthesiologists clean or disinfect only the blade of laryngoscope while 22.5% of them clean both, the blade and the handle of a laryngoscope.

4. Discussion and Conclusion

In an era of deadly communicable diseases, the importance of cleaning and disinfection cannot be neglected. Though in our survey, all the anaesthesiologists acknowledged laryngoscope as a source of HAI, we found marked variability in the knowledge and attitude towards handling cleaning and disinfecting of the instrument.

According to Spaulding classification, laryngoscope is classified as semi-critical device.[3] Centre for Disease Control (CDC) and American Society of Anaesthesiologists recommend cleaning and high-level disinfection or sterilization for the laryngoscopes.[2] Our study revealed that 61% of anaesthesiologists do not disinfect the laryngoscope as compared to 54% as studied by Chawla et al.[2]

According to this study, only 22.5% disinfect both, the blade and handle of the laryngoscope. Literature provides proof that blades and handles are potential source of cross-infection as they both, directly or indirectly get contaminated with blood, secretions and harbour microbes.[4,5]

Many studies have reported various techniques of cleaning and decontaminating laryngoscope like the use of chemical disinfectants, autoclaving, gas sterilization, gamma radiation.[6,7,8] Just washing the blades with warm water is the least effective method of cleaning, while 70% isopropyl alcohol is infective at inhibiting bacterial growth.[9] According to the present study, 33% of respondents used alcohol-based solution, 25% used running water and 20% used both as a method of cleaning the instrument. Autoclaving is considered the best method of sterilization of a laryngoscope[9] which was performed by only 25% respondents in this study.

Many countries follow well-documented guidelines for decontamination of laryngoscopes.[10-13] In India, there are no guidelines for cleaning and disinfection of anaesthesia-related equipment. Practices for decontamination of laryngoscopes vary widely. The result of the present study showed that 70%anaesthesiologists agreed tohaving well-defined protocols for decontamination in their hospitals, but only 39% of them followed those protocols. Time consumption and complexity of those protocols were the main reasons for not abiding by them. No studies have proved that a change in laryngoscope decontamination practices are exclusively responsible for a reduction in HAI. This lack of evidence is a hindrance in formulation and implementation of uniform guidelines.[14]

American Association of Nurse Anaesthetists recommends the single use of a disposable laryngoscope to prevent spread of HAI.[15] However, there are concerns about efficiency of these devices as they are manufactured with the material to justify their disposal which may create dissatisfaction amongst the users. Moreover, it is difficult to use these disposable blades in settings where there is a large turnover of patients. Only 15%anaesthesiologists had used disposable laryngoscope according to the present study. Furthermore, 2 out of those 12 had reused it which is against the prescribed protocols.

This study showed that there was no uniformity in handling and techniques of decontamination practices of a laryngoscope. Poor compliance with the prescribed protocols was also seen.

Laryngoscope is thus a potential source of infection and it is a duty of all the healthcare workers to follow ideal practices to decontaminate the instrument. To ensure adequate knowledge and safe practices, proper training should be provided to all the healthcare workers. IEC material should be made for the awareness of all healthcare workers in public and private sector.

5. Acknowledgement

The authors gratefully acknowledge SN Medical College for granting the permission for the study and the support provided throughout.

6. Declarations

Funding: None

Conflict of interest: The authors declare no conflict of interest

Ethical approval: Not required

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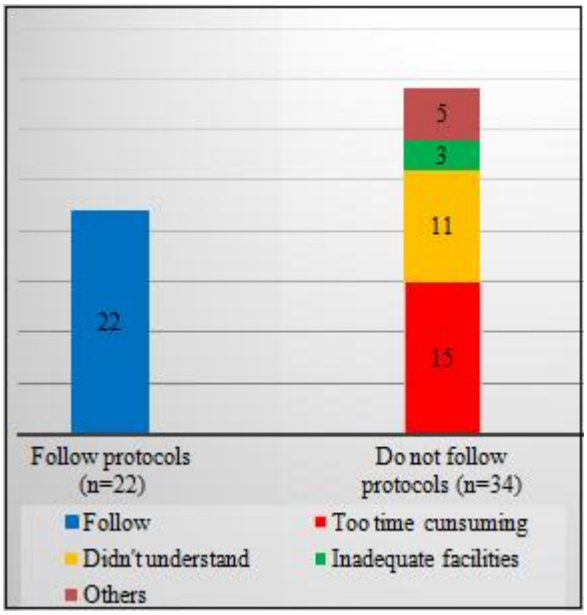

Figure 1: Reasons for not following protocols for decontamination of laryngoscopes.

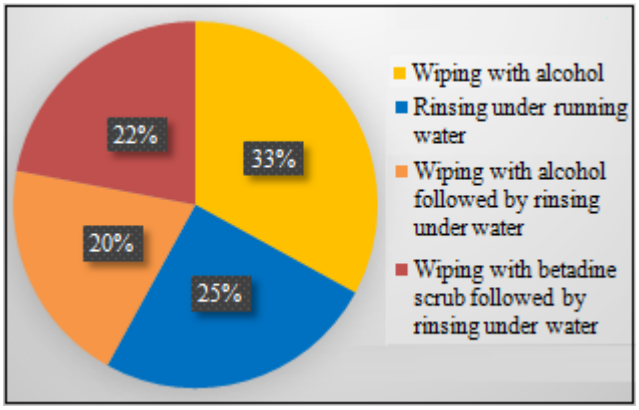

Figure 2: Techniques of cleaning laryngoscopes

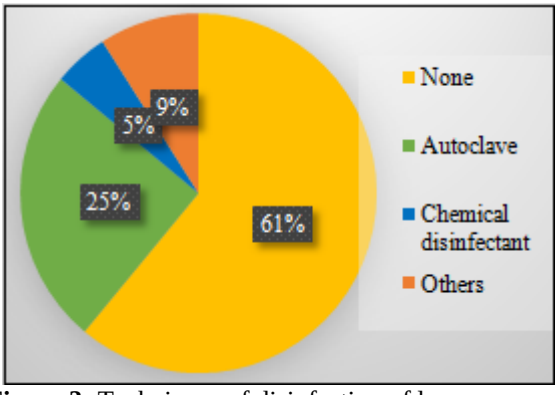

Figure 3: Techniques of disinfection of laryngoscopes

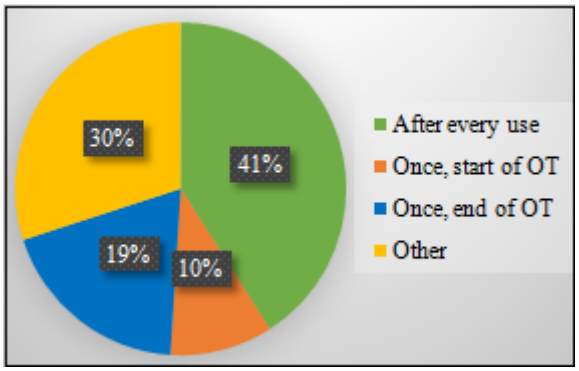

Figure 4: Timing of disinfection of laryngoscopes