To Assess the Awareness, Beliefs and Practice Patterns Regarding Oxygen Therapy in Prehospital Management of Respiratory Emergencies amongst EMS Professionals in Pune, India

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Abstract-

Background: Respiratory emergencies is one of the life threatening conditions that quickly develop into respiratory failure landing into cardiac arrest hence EMS professional should posses updated knowledge regarding oxygen therapy and same should reflect in their beliefs and practice patterns.

Aim: To assess the Awareness, Beliefs and Practice patterns regarding Oxygen therapy in prehospital management of respiratory emergencies amongst EMS professionals in Pune, India

Methodology: The study was conducted among 100 EMS professionals at Symbiosis Center for health Skills, Pune, India. A pretested and validated questionnaire developed by Aloushan et al[3] was circulated among EMS professionals. The original 25 items questionnaire was utilized for the study, 9 items pertaining to awareness, 7 items pertaining to belief and 9 items pertaining to practice patterns. EMS professionals were given 1 day time limit to submit the completed questionnaire. The data collected was tabulated and statistically analyzed using SPSS version 23.0.

Result: The mean awareness score of the participants in the study was found to be 4.67 and S.D is 1.63 whereas the mean Practice pattern score of the participants in the study was found to be 3.44 and S.D is 1.44. Majority of respondents agreed that oxygen should be given under medical supervision and that humidified oxygen prevented dryness of upper respiratory tract. Greater emphasis needs to be laid on practical sessions demonstrating oxygen therapy in the EMS programs.

Conclusion: It is essential that EMS professionals undergo regular skill upgradation courses and are evaluated at the end of each course. This shall ensure appropriate utilization of the oxygen therapy and minimization of medical errors thereby saving more lives.

Keywords: *Awareness, beliefs, practice patterns*

Background

Respiratory emergencies are one of the most common life threatening conditions encountered by Emergency Medical Services (EMS) professionals. Most patients present with respiratory distress which can quickly develop into respiratory failure and associated cardiac arrest.

A study by Ghosal et al[1] (2016) stated that prevalence of Asthma in India range between 2.05% to 3.5%, while

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COPD prevalence in India varied from 3% to 8%.

Oxygen is the drug of choice in life threatening conditions like Acute Myocardial infarction, Stroke, Cardiac Arrest and some life compromising Respiratory diseases like COPD, Asthma, Congestive Heart Failure, Pulmonary edema etc.[2] Oxygen is listed as one of the most effective and safe drug in these conditions.[3]

The rationale behind utilizing oxygen therapy is that it compensates for the oxygen burden and helps maintain optimum levels of oxygen in blood thereby reducing breathing efforts.[3]

In prehospital scenarios oxygen is commonly delivered without any particular indication and in unknown concentration to treat hypoxemia, however administering higher concentration of oxygen can lead to a state of hyperoxia. The amount of oxygen to be delivered and the method of delivering oxygen depends on underlying medical conditions as well as acute and chronic stage of the particular disease.

Accurate knowledge of these principles is essential for all EMS professionals. Inappropriate use of oxygen can cause major harm to the patient and lead to rapid deterioration.[4]

A study by Kondo et al[5] (2019) concluded that prehospital oxygenation can improve the mortality rate among trauma patients but it should be administered and monitored by only trained staff.[6]

A study by Ghebremicheal et al[7] (2019) emphasized on formulating a protocol for appropriate oxygen delivery.

Hence EMS professionals should possess updated knowledge regarding oxygen therapy and the same should reflect in their beliefs and practice patterns.

Aim

This study intends to assess the Awareness, Beliefs and Practice patterns regarding Oxygen therapy in prehospital management of respiratory emergencies amongst EMS professionals in Pune, India

Methodology

The study was conducted among 100 EMS professionals at Symbiosis Center for health Skills, Pune, India. The EMS professionals were previously given training in their academic curriculum.

A pretested and validated questionnaire developed by Aloushan et al[3] was circulated among EMS professionals. The original 25 items questionnaire was utilized for the study, 9 items pertaining to awareness, 7 items pertaining to belief and 9 items pertaining to practice patterns.

The 9 items pertaining to awareness and 9 items pertaining to practice patterns are in form of multiple choice questionnaire where the participants were supposed to select single best option out of 4 options. The 7 items pertaining to belief required response on a 5 point Likert scale ranging from strongly agree to strongly disagree.

Informed and written consent was taken from all the participants prior to the administration of the questionnaire. The participants were asked to respond to the questionnaire in 1 day. Responding to all items in the questionnaire were mandatory. All 100 participants submitted the completed questionnaire. The data collected was tabulated and statistically analyzed using SPSS version 23.0.

Result

Table 1. Demographic data distribution

SEX	PERCENTAGE
MALE	60%
FEMALE	40%
AGE IN YEARS	
25-30 YEARS	85%
31- 35 YEARS	10%
36-40 YEARS	3%
ABOVE 40 YEARS	2%
EDUCATION	
B.A.M.S	30%
B.H.M.S	40%
B.U.M.S	20%
Other allied medical degree	10%

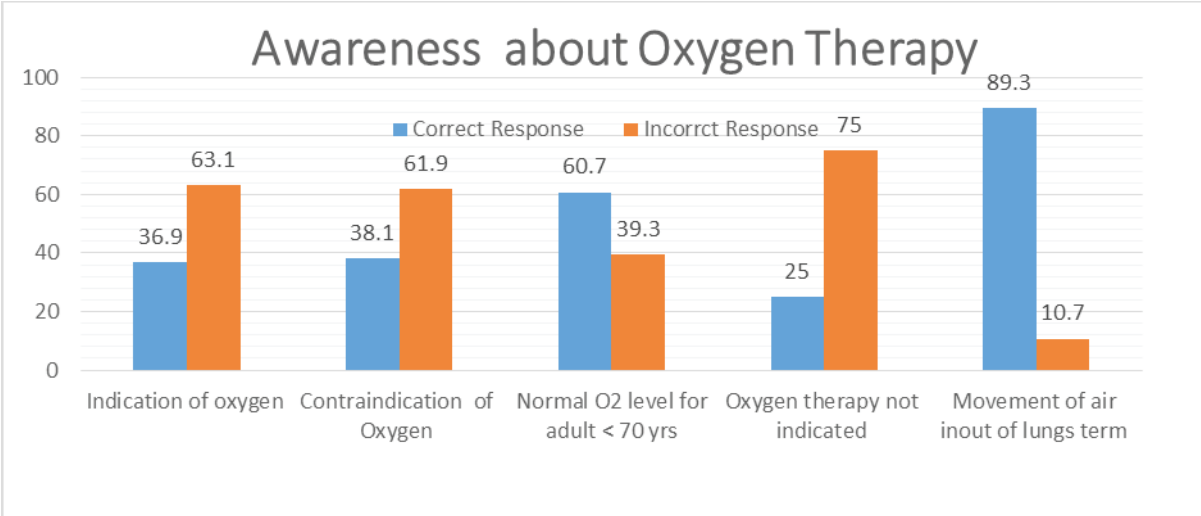

Fig 1. Frequency graph distribution on Awareness among EMS Professionals about Oxygen Therapy

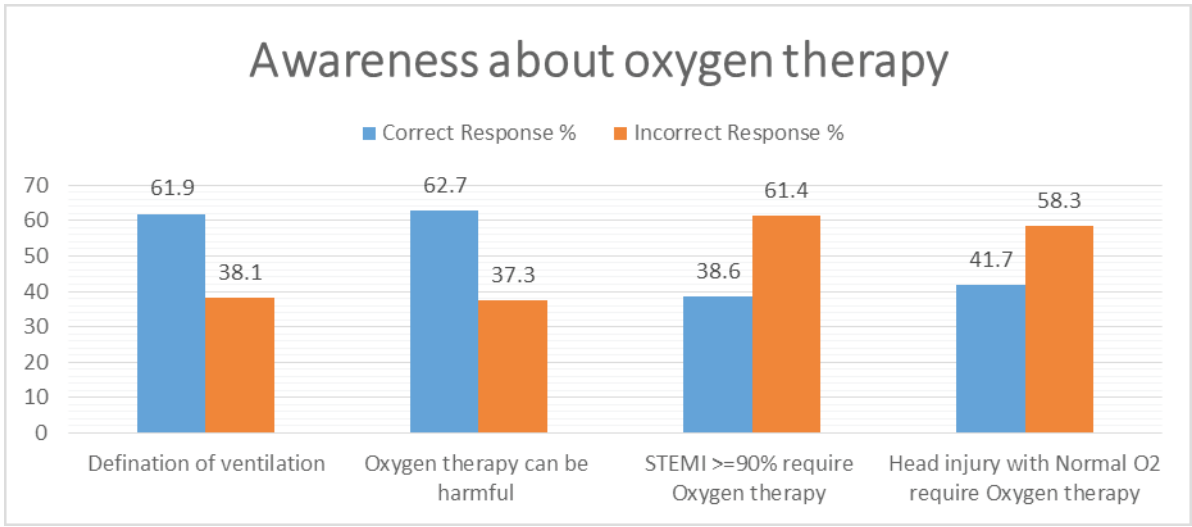

Fig 2. Frequency graph distribution on Awareness among EMS Professionals about Oxygen Therapy

As shown in Fig 1 a significant majority of EMS professionals responded inaccurately on the items pertaining to indication and contraindications of oxygen therapy. Majority of respondents were aware of the correct definition of ventilation and normal oxygen level.

As depicted in Fig 2, the respondents were well aware of the harms of oxygen therapy but responded incorrectly on the utilization of oxygen therapy in patients of ST Elevation Myocardial Infarction (STEMI) and head injury with normal oxygen saturation.

The mean awareness score of the participants in the study was found to be 4.67 and S.D is 1.63

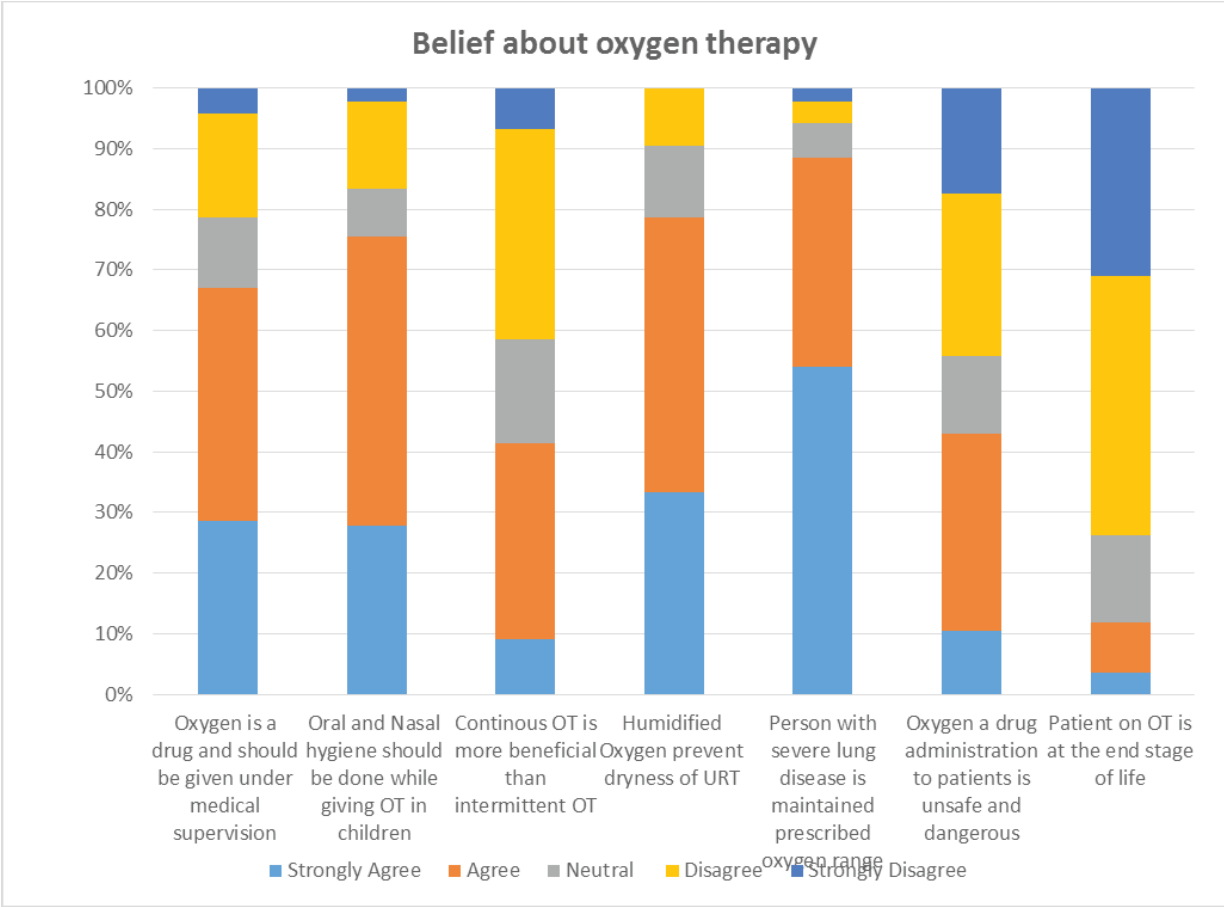

Fig 3. Table showing perception level among Health care professionals about Oxygen therapy

As seen in Fig 3. majority of respondents agreed that oxygen should be given under medical supervision and that humidified oxygen prevented dryness of upper respiratory tract.

There was consensus amongst respondents that person with severe lung disease should be maintained in a prescribed oxygen range

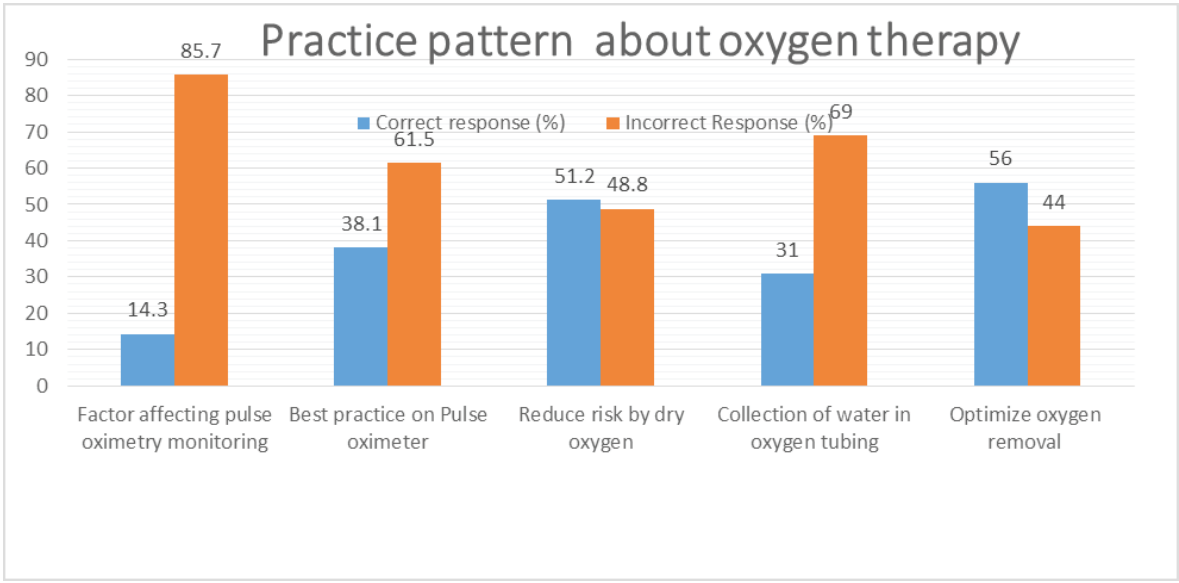

Fig 4. Frequency Graph distribution on Practice Pattern among EMS professionals about Oxygen Therapy

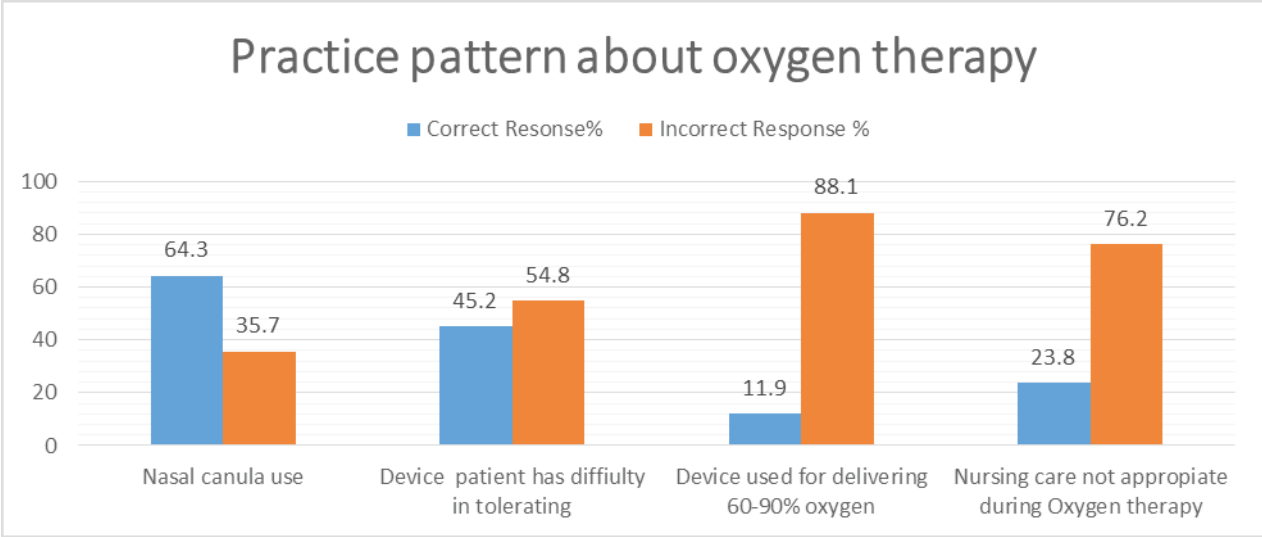

Fig 5. Frequency Graph distribution on Practice Pattern among EMS professionals about Oxygen Therapy

Fig 4 the majority of respondents were not aware of the factors affecting pulse oximetry monitoring and collection of water in the oxygen tubing. Significant number of respondents responded incorrectly on the items pertaining to optimization of oxygen removal.

As shown in Fig 5 most participants responded incorrectly on the items pertaining to devices used in Oxygen delivery.

The mean Practice pattern score of the participants in the study was found to be 3.44 and S.D is 1.44.

Discussion

Judicious use of oxygen therapy in critical emergencies can significantly impact the survival rate of patients. Unlike common knowledge that oxygen therapy is always beneficial, numerous studies have shown that unnecessary oxygen therapy can cause severe harm to the patient.

The respondents being EMS professionals trained in oxygen therapy were expected to score better on the awareness items , but the mean score 4.67 is below par and points to the urgent need of continued education in the form of workshops and seminars.

Majority of the respondents were unaware of the role of oxygen therapy in non-respiratory emergencies like ST Elevation myocardial Infarction (STEMI) and Head injury.

The opinion of EMS professionals on continuous oxygen therapy versus intermittent oxygen therapy was deeply divided similarly there was no consensus on whether administration of oxygen as a drug is unsafe and dangerous .However majority of the respondents appreciated the importance of the oral and nasal hygiene while giving oxygen therapy to children.

The scores obtained on the correct practice pattern in oxygen therapy were abysmal. This clearly shows that EMS professionals require more hands on training in real clinical situations. Most of the respondents were unclear about the methodology of oxygen delivery, monitoring and nursing care during oxygen therapy.

Greater emphasis needs to be laid on practical sessions demonstrating oxygen therapy in the EMS courses.

Conclusion

The study attempts to edge the awareness, beliefs and practice patterns with regards to oxygen therapy amongst actively working EMS professionals. Although the sample size is limited, result points towards a vast scope of improving the knowledge and skill set of EMS professionals.

It is essential that EMS professionals undergo regular skill upgradation courses and are evaluated at the end of each course. This shall ensure appropriate utilization of the oxygen therapy and minimization of

medical errors thereby saving more lives.

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