

Assessing the Preparedness for Emergency Management of Status Asthmaticus in Pediatric Patients' among EMS Professionals, Pune, India

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Abstract

Background: Asthma is one of the most common diseases affecting children. Children affected by Asthma need recurrent hospitalization and show high degree of absenteeism in schools due to exacerbations. It is characterized as a state of hyper responsiveness triggered by allergens such as pollens, foods, dust mites and animal dander which irritate and cause bronchoconstriction. EMS professionals shoulder great responsibility in pediatric respiratory emergencies as their actions determine the long term quality of life of these children

Aim: The present study is aimed at assessing the preparedness with regards to management of Status Asthmaticus amongst EMS professionals in Pune, India.

Methodology: The study was conducted amongst 189 Emergency medical Services professionals residing in Pune India. A pretested and validated questionnaire was utilized for the study. The questionnaire consisted of 21 items meant to assess the knowledge and skills with regards to Emergency Management of Status Asthmaticus amongst EMS professionals. Each correct answer was given a score of one with maximum score of 21. The questionnaire was administered online.

Result: EMS professionals showed average level of preparedness with reference to management of Status Asthmaticus.

Conclusion: EMS professionals need periodic training to improve their level of knowledge and skills. Simulation play a pivotal role in augmenting the skills of EMS professionals in order to identify suspected cases and provide accurate emergency management.

Keywords: Pediatric, Status Asthmatics, Hyper responsiveness, Simulation.

Background

Asthma is a chronic, non-communicable disease ranked 16th amongst the leading cause of diseases around the world contributing to higher rates of mortality and morbidity among children and adults. It is estimated that

by the year 2025, 100 million people will get affected by Asthma.¹

Asthma is one of the most common diseases affecting children. The disease prevalence is nearly 6.8% for age group of 6-7 years and less than 5% for age group of 3-14 years. Asthma has been increasing steadily and prevalence affecting a significant number of children leading to deterioration in their quality of life^{2,3}

Children affected by Asthma need recurrent hospitalization and show high degree of absenteeism in schools due to exacerbations.⁴

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Asthma is a state of hyper responsiveness triggered by allergens such as pollens, foods, dust mites and animal dander which irritate and cause bronchoconstriction. Most frequently change of temperature, cold air, viral infections, exercise and exposure to cigarette smoke can trigger asthma attack. Pediatric patients present with breathlessness and non-productive cough. Significant wheezing may be audible on auscultation of the chest, the child can develop signs of increasing respiratory distress if early intervention is delayed. The child can develop severe respiratory distress if early timely intervention is not carried out.^{5,6}

Dharmage et al¹ in a study (2019) opined that childhood asthma can lead to long term impairment of lung function with gross anomaly in airway development and gradual progression to Chronic Obstructive Pulmonary Disease (COPD) along with associated comorbidities like bacterial pneumonia.

A study by Yosef et al⁷ (2015) found that factors like frequency of attack, night time wakefulness, effect on the daily activities and frequency of exacerbations helps in categorizing asthma as controlled, partially controlled or uncontrolled stage.

Emergency Medical Services need to encounter cases of severe Asthma presenting as Status Asthmaticus. A study by Amorha et al⁸ (2018) recommended that health care professionals should have adequate knowledge on quality of management and lifestyle of the Asthmatic patient to restrict the Asthma to the controlled stage. Status Asthmaticus occurs due to repeated exposure to triggering factors in the uncontrolled stage. Although asthma can't be cured yet episodes of Status Asthmaticus can be prevented by implementation of proper management guidelines. The preventive drugs indicated in uncontrolled asthmatic are grossly underutilized.

A study by Almutawa et al⁹ (2014) stated that Health care professionals show low adherence to guidelines of asthma management.

EMS professionals shoulder great responsibility in pediatric respiratory emergencies as their actions determine the long term quality of life of these children¹⁰.

Aim

The present study is aimed at assessing the

preparedness with regards to management of Status Asthmaticus amongst EMS professionals in Pune, India.

Methodology

The study was conducted amongst 189 Emergency medical Services professionals residing in Pune India. A pretested and validated questionnaire developed by Aziz et al⁵ was utilized for the study.

The questionnaire consisted of 21 items meant to assess the knowledge and skills with regards to Emergency Management of Status Asthmaticus amongst EMS professionals. 6 items tested the knowledge on pathophysiology, 4 items on symptomatology and 11 items on the management. Of the 21 items, 14 required binary responses while 7 items were multiple choice questions with one or more correct option. Each correct answer was given a score of one with maximum score of 21. The questionnaire was administered online.

Written and informed consent was taken by the EMS professionals. The participants were asked to submit the completely filled questionnaire in one day by mail. Responding to all the items in the questionnaire was mandatory. All the 189 EMS professionals submitted the duly filled questionnaire.

The data collected was tabulated and statistically analyzed using SPSS version 23.0.

Table 1. Demographic Data Distribution:

Sex	Number (%)
Male	138 (73%)
Female	51 (27%)
Age	Number (%)
< 30 years	174 (92.1%)
>30 years	15 (7.9%)
Qualification	Number (%)
BAMS	99 (52.4%)
BHMS	82 (43.4%)
Others	8 (4.2%)
Experience	Number (%)
< 1 year	94 (49.7%)
> 1 year	95 (50.3%)

Result

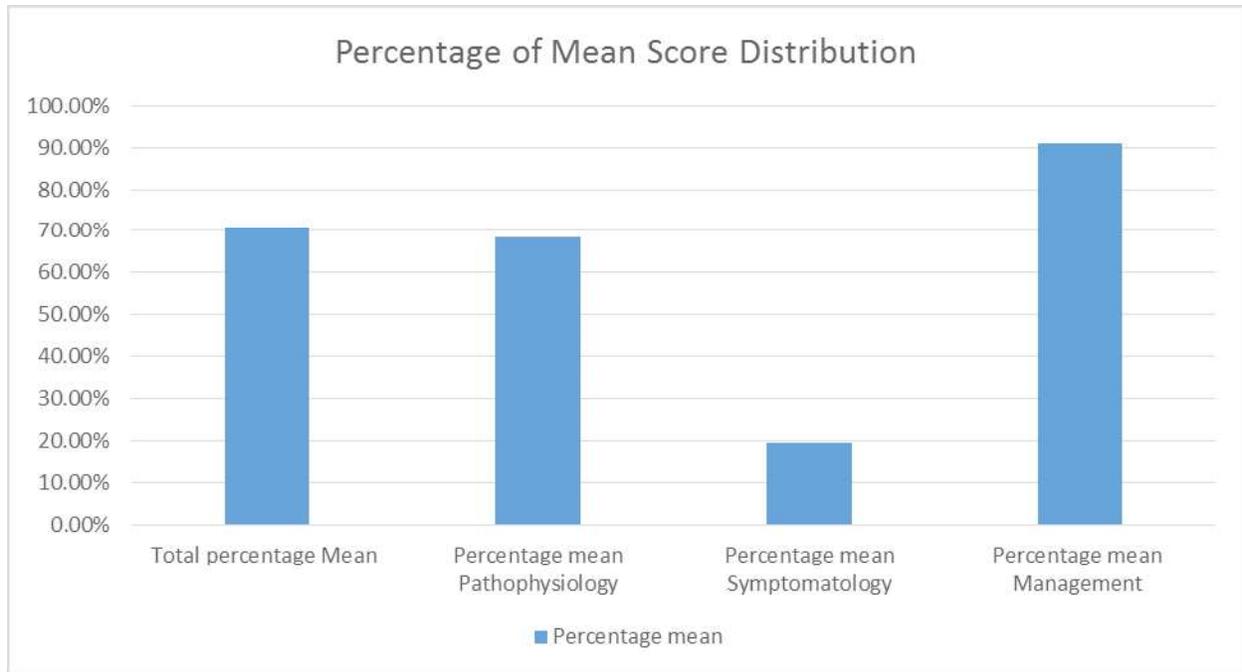


Fig 1. Percentage of mean score distribution

Table.2 Preparedness assessment score

Total Mean Score	14.9
Standard Deviation	3.05

As depicted in fig 1 & table 2, EMS professionals showed average level of preparedness with reference to management of Status Asthmaticus. The poorest score were obtained on the items testing symptomatology knowledge. Fairly high scores were obtained on the items testing the skills and knowledge regarding management aspects.

Discussion

Pediatric uncontrolled Asthma presenting as Status Asthmaticus is a life threatening disease with significant impact on the long term quality of life of the child. EMS professionals are generally more focused on cardiac and trauma emergencies among adults, hence various studies testing their knowledge and skills on the management of cardiac and trauma emergencies yield fairly high scores. The scores obtained in the present study are as best average and reflect the lack of prioritization on pediatric respiratory emergencies in the EMS curricula and on-the-job training. The abysmally low scores obtained on

the items pertaining to knowledge of symptomatology are alarming. They point towards the fact that EMS professionals are not equipped to identify suspected cases of Status Asthmaticus, cases of controlled Asthma and the possible complications. Failure to do so can adversely affect the clinical condition of a child suffering from the disease.

The score obtained on items pertaining to emergency management and rehabilitation are encouraging. This indicates that EMS professionals can manage diagnosed cases of Status Asthmaticus astutely.

The importance of continued medical education cannot be over emphasized. Practical sessions using case based vignettes and high fidelity simulation mannikins can positively reinforce the knowledge and skill sets required in effectively handling cases of Status Asthmaticus in pediatric patients.

Simulation offers a safe environment to learn with a team based approach. The short comings found during the simulation sessions can be dealt with during debriefing sessions.

Conclusion

Pediatric Status Asthmaticus requires early diagnosis and prompt management. EMS professionals need periodic training to improve their level of knowledge and skills. Simulation play a pivotal role in augmenting their skills to identify suspected cases and provide accurate emergency management. Further studies can be conducted to study the impact of simulation in this regard.

Conflict of Interest: None

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Ethical Clearance: Obtained from IEC, SIU

References

1. Dharmage, S.C, Perret, J.L, Custovic, A. Epidemiology of Asthma in Children and Adult. *Frontiers in Pediatrics*. 2019; 7: 1-15.
2. Ahmed, S.E, Ahmed, N.E, Adam, D. Assessment of nurse's knowledge and practice regarding care of asthmatic child in Elmak Nimer hospital. ©*International Journal of Research - Granthaalayah*. 2016; 4(2): 39-45
3. Bhagavatheeswaran KS, Kasav JB, Singh AK, Mohan SK, Joshi A. Asthma-related knowledge, attitudes, practices (KAP) of parents of children with bronchial asthma: A hospital-based study. *Ann Trop Med Public Health* 2016; 9:23- 30.
4. Kumar, N, Kamdar, S, Karnani, R.K. Assessment of knowledge regarding asthma & breathing exercises among bronchial asthma patients. *International Journal of Medical Science and Education*. 2018; 5(2): 269-274.
5. Aziz, A.R. Nurses' Knowledge about Asthmatic Attacks in Children at Pediatric Teaching Hospitals in Baghdad City. *Journal of Nursing and Health Science*. 2018; 7(3): 67-74.
6. Ayub, M, Ahmad, S, Mursaleen, Z, Ashfaq, S, Saba, N. Assessment of knowledge, awareness and practice of asthma disease among medical students. *Research journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences*. 2016; 2(4): 142-155.
7. Yosef, H.A, Yosef, A. Knowledge about bronchial asthma management in primary health care physicians in Al-Khobar City, Saudi Arabia. *Journal of Family and Community Medicine*. 2015; 22(1): 1-7.
8. Amorha, C.K, Okpe, C.L, Dim, O.F. Knowledge, attitudes and perceived practice towards asthma among pharmacy students in southern Nigeria. *International Journal of Pharmacy and Pharmaceutical Sciences*. 2018; 10(11): 28-34.
9. Almutawa, F.N, Mutairy, Arada, N. Perception of primary care physicians about guidelines of bronchial asthma. *Alexandria Journal of Medicine*. 2014; 50: 17-24.
10. Quah, B, Rogayah, J. Knowledge of Childhood Asthma among Medical Students. *Asian pacific journal of allergy and immunology*. 1997; 15: 177-182.