

Understanding of Severe Sepsis and Septic Shock Among Emergency Department and Intensive Care Unit Medical Officers in a Developing Country Nepal: A Survey Study

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ABSTRACT

Introduction

Severe sepsis and septic shock is a major cause of morbidity and mortality. The burden is higher and the outcome is dismal in the low and middle income countries.

Objective

This study aims to evaluate the knowledge about severe sepsis and septic shock among the medical officers of emergency department and intensive care unit in Nepal. It is a cross-sectional survey study.

Methodology

The medical officers working in emergency department and intensive care unit were asked to fill up the survey questionnaire, which contained the questions related to the demographics of the participant, about the knowledge of sepsis and the hindrances behind the effective management of septic patients. The percentage of correct answers for each question and average correct response for all the questions were analyzed.

Results

Seventy medical officers from twenty-four hospitals across the country were enrolled in the study. Among them, 39 were working in the emergency department and 31 were working in the intensive care unit. For the individual questions, the percentage of correct answers varied from 8.57% to 82.86% (average 48.16%). As per the response of the participants, lack of knowledge about sepsis and management guidelines, lack of experience for management of sepsis and lack of investigation facilities were considered to be the major barriers for effective management of septic patients.

Conclusions

Knowledge and understanding about severe sepsis and septic shock among the medical officers of emergency department and intensive care unit in Nepal is sub-optimal. To improve the outcome of septic patients, efforts should be made to increase the understanding among these first-line health care workers by implementing regular and mandatory training programs.

KEY WORDS

Knowledge, medical officer, septic shock, severe sepsis

INTRODUCTION

Sepsis is defined as the presence of probable or documented infection in conjunction with systemic manifestation of infection. Septic shock is defined as sepsis induced hypotension that persists even after adequate fluid resuscitation.¹ Worldwide, the burden of sepsis is substantial.² Largest part of the global sepsis burden occurs in middle and low income countries. Ninety percent of the worldwide deaths from pneumonia, meningitis or other infections occur in less developed countries.^{3,4} High incidence of bacterial, parasitic and HIV infection combined with low hygienic standards and vaccination rates, widespread malnutrition and lack of resources, explain the disproportionately high morbidity and mortality from sepsis in these countries.^{1,5}

For most ICUs in least developed countries (LDCs), a characteristic factor limiting adequate therapy for the severely ill patient is the lack of a physician on call for 24 hours. Particularly in smaller hospitals in rural areas, physicians are only sporadically present in the ICU, and most responsibilities are left to inadequately trained medical officers or nursing personnel. Reasons for inadequate care, therefore, are not only a high workload of the physicians but also a lack of understanding about how to comprehensively care for a critically ill patient.⁶

Emergency Department and Intensive Care Unit medical officers are usually the first line health care personnels encountering the patients with sepsis. Knowledge and awareness of sepsis among these health care personnels may play a key role in early recognition of sepsis and effective care. Even in the western world, understanding of sepsis was less among emergency medical services personnels.⁷ Interventions performed soon after diagnosis of sepsis have been shown to improve survival.^{8,9,10} This survey study aims to evaluate the knowledge of severe sepsis and septic shock

among the medical officers in emergency department and intensive care unit in various cities of Nepal.

METHODOLOGY

A cross-sectional survey study was conducted among the medical officers working in intensive care unit and emergency department. The study was conducted during January to March 2016. After obtaining written informed consent, the medical officers were asked to fill up the questionnaire. A printed set of questionnaire was used for the survey, which contained the questions related to the demographics of the participant and 14 questions related to knowledge of sepsis. The last question was aimed to explore the reason behind hindrance for the management of septic patients, from the perspective of the participant. The questionnaires were based on surviving sepsis campaign international guidelines for management of severe sepsis and septic shock, 2012.¹ Each of the questions had 5 options with 1 best answer. The questionnaires were pre-checked by 5 experts, not involved in the study, to ensure validity of the questions and to confirm absence of ambiguity in the multiple choices. All the experts had completed MD in Anaesthesiology and had a minimum of 2 years experience in managing the patients with severe sepsis and septic shock.

RESULTS

A total of 70 medical officers were surveyed from 24 hospitals across the country. The participating hospitals were from Kathmandu, Lalitpur, Bhaktapur, Pokhara, Lumbini and Chitwan. Among them, 39 were working in the emergency department and 31 were working in the intensive care unit.

For the individual questions, the percentage of correct answers varied from 8.57 to 82.86% with the average correct answer to be 48.16% when all the answers from all the participants were considered (Table 1).

Table 1: Components in the questionnaire and the response of the participants

Components	Correctly answered n (%)
Definition of sepsis	9 (12.86)
Criteria for organ dysfunction in severe sepsis	29 (41.43)
Ideal timing to obtain blood culture in severe sepsis & septic shock	45 (64.29)
Recommended target mean arterial pressure during management of Severe Sepsis & Septic Shock	26 (37.14)
Recommended target CVP for management of severe sepsis & septic shock	45 (64.29)
Recommendation for completing Early Directed Goal Therapy (EGDT)	17 (24.29)
Goals about timing of antibiotics administration after diagnosis of severe sepsis &/or septic shock	58 (82.86)
Recommended volume of initial fluid challenge for management of severe sepsis and septic shock	17 (24.29)
Fluid of choice for management of severe sepsis/ sepsis induced hypoperfusion	60 (88.57)
Initial vasopressor of choice for management of septic shock	45 (64.29)
Target goals during EGDT	39 (55.71)
Indication to initiate dobutamine infusion in septic shock	6 (8.57)
Indication for administration of corticosteroid for management of septic shock	39 (55.71)
Advantages of managing a patient with severe sepsis as per EGDT protocol/ Surviving Sepsis Campaign Bundle	37 (52.86)
All component correctly answered	472 (48.16)

Majority of the participants responded that various factors were responsible as barriers for effective management of sepsis. Lack of knowledge about sepsis and management guidelines, lack of experience for management of sepsis and lack of investigation facilities were found to be the major barriers (Table 2).

Table 2: Response of the participants about the hindrance for effective management of sepsis

Components	Correctly answered n (%)
Lack of knowledge about sepsis and management guidelines	47 (67.14)
Lack of experience	41 (58.57)
Lack of investigation facilities	37 (52.86)
Lack of central venous catheter insertion facilities	28 (40.00)
Non-availability of vasopressors and inotropes	26 (37.14)
Non-affordability of the patients	32 (45.71)

DISCUSSION

Globally, sepsis is a leading cause of critical illness and mortality.¹¹ Patients with sepsis and organ dysfunction have mortality that exceeds that of ST-segment elevation myocardial infarction.¹² The incidence keeps increasing, with the low income countries affected the most.¹³ The new definition of sepsis (Sepsis-3) considers organ dysfunction as the key component of pathobiology of sepsis and is based on the retrospective review of large database.^{14,15} However, the definition awaits prospective validation, specially in the resource limited setting and its applicability in low-income nations still remains questionable and implementation of the new definition has yet to prove to make difference in patient management and to improve outcome.^{14,16} So, we conducted our study based on the definition and recommendations as suggested by surviving sepsis campaign international guidelines for management of severe sepsis and septic shock, 2012.¹

Resource limited settings face several barriers for effective delivery of critical care. High cost of care is one of the main barriers. However, most cost-effective interventions like rapid fluid resuscitation, early administration of appropriate antibiotics and basic monitoring in patients with severe sepsis and septic shock are relatively inexpensive and very effective to influence outcome. As compared to the developed world, the septic patients in low-income countries are younger and with fewer comorbidities, creating a remarkable opportunity to offer a significant outcome

difference by providing effective and timely care.¹⁷

Our study elucidated the fact that lack of knowledge about sepsis and its management was significant among the medical officers in emergency department and intensive care unit of various cities of Nepal. The participants also expressed that lack of knowledge and experience were the key barriers for effective management of patients with severe sepsis and septic shock. The scenario is not uncommon even in developed nations.⁷ Obviously, the timely and protocolized goal directed therapy or standardized care in the patients with severe sepsis and septic shock can significantly improve patient outcome.^{8,18} The problems attributable to significant lack of knowledge and deficiency of trained health care professionals can be overcome by training the health care professionals dealing with the patients with sepsis about the evidence based and resource-appropriate management strategies.^{17,19} The local professional societies and government authorities should make policies to regularly train the health care professionals about recognition and effective early management of sepsis. Local formulation and implementation of resource appropriate protocols and checklists can foster effective patient care. Attempts should be made to retain the trained experts. The focus should be to develop both short-term and long term training courses.²⁰ Collaboration with local societies, leaders and international agents can be helpful.

There were few limitations of the study. The number of cases was limited. The level of experience of the medical officers and prior training and workshops attained were not enquired. Whether the medical officers were supervised by the intensivist, anesthesiologist or the physician was not documented. Future studies incorporating these parameters and trying to explore the effectiveness of training programs on the knowledge of medical officers, would be imperative.

CONCLUSION

Knowledge and understanding about severe sepsis and septic shock among the medical officers of emergency department and intensive care unit in Nepal is sub-optimal. To improve the outcome of septic patients, efforts should be made to increase the understanding among these first-line health care workers of the nation by implementing regular and mandatory training programs and continuing medical educations.

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CONFLICT OF INTEREST

We declare no conflict of Interest.



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