

1 **DOI: <https://doi.org/10.47391/JPMA.018>**

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3 **Knowledge and attitude towards identification and management of**
4 **sepsis among resident physicians in a tertiary care teaching**
5 **hospital in Pakistan**

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14 **Abstract**

15 This study was conducted to determine the compliance and knowledge of sepsis
16 guidelines among resident physicians in a tertiary care hospital of a developing
17 country. A self-structured validated questionnaire was prepared to evaluate
18 compliance and knowledge of the Surviving Sepsis Campaign (SSC) guidelines.
19 A total of 76 resident physicians completed the questionnaire; out of these, 51
20 (67%) were from Internal Medicine department and 25 (33%) were from
21 Emergency Medicine department of the Aga Khan University Hospital, Karachi.
22 71 (93%) of the participants claimed to be aware of the SSC guidelines but only
23 20 (26%) considered themselves very knowledgeable on the subject. 35 (46%)
24 physicians claimed that they were using the guidelines regularly. We concluded
25 that the overall knowledge and compliance of sepsis guidelines was suboptimal.
26 This emphasises the need for increased awareness and teaching of sepsis and SSC
27 guidelines to improve patient outcomes in developing countries.

28 **Keywords:** Sepsis knowledge; health education; critical care.

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30 **Introduction**

31 Sepsis is a serious healthcare concern around the world, affecting more than 30
32 million people each year and causing more than six million deaths.⁽¹⁾ The main
33 barriers in sepsis bundle implementation are low accessibility of resources, lack
34 of intensive care unit (ICU) beds, and shortage of healthcare professionals;
35 however, one of the main problems to be addressed is the low awareness of
36 sepsis.⁽²⁾ Several studies have proven that the management of sepsis is very time
37 sensitive.⁽³⁻⁴⁾ Although there is limited data about mortality rates due to sepsis in
38 South East Asia, the rates range between 30% and 40%.⁽⁵⁾ This pilot study was
39 conducted to evaluate the knowledge and compliance of SSC guidelines among
40 resident doctors of Internal Medicine and Emergency Medicine departments who
41 deal with sepsis patients on a daily basis.

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43 **Methods and Results**

44 This evaluation study was conducted from July 1 to July 31, 2019, at the Aga
45 Khan University Hospital (AKUH) Karachi, Pakistan, after approval by the
46 Institutional Review Board (2019-1586-3925). To evaluate the knowledge and
47 attitudes of resident physicians about sepsis, a self-structured questionnaire was
48 prepared which was pilot-tested and revised by the same panel of experts. The
49 questionnaire was composed of four parts. The first part included demographic
50 data, the second part assessed the participant's attitude towards sepsis
51 management guidelines, the third part assessed the knowledge regarding
52 diagnostic criteria of sepsis and organ dysfunction, and the last part tested the
53 knowledge regarding immediate management of sepsis as per the updated 1-hour
54 bundle. The questionnaire was analysed on the basis of scalar-scoring method.
55 All participants were handed out the pre-approved questionnaire in an exam-like
56 setting, consisting of three shifts each of 20 minutes, at three different dates for
57 the convenience of the resident physicians to attend. IBM SPSS 22 was used for

58 data analysis which is presented as mean with standard deviation for numerical
59 data and number with percentage for categorical data.

60 A total of 76 resident physicians completed the questionnaire; 51 (67%) were
61 Internal Medicine residents and 25 (33%) were Emergency Medicine residents.
62 71 (93%) of the participants claimed to be aware of the SSC guidelines but only
63 20 (26%) considered themselves very knowledgeable on the subject. 35 (46%)
64 physicians claimed that they were using the guidelines regularly (Table 1). 73
65 (96%) chose the correct definition of sepsis. 51 (67%) participants correctly
66 identified sepsis in the two fictitious cases (Table 2). On the basis of scalar
67 scoring method, 42 (55%) resident physicians had excellent knowledge and
68 attitude towards sepsis bundle, 19 (25%) had good and 15 (20%) had poor attitude
69 and knowledge towards the sepsis bundle. It is interesting to note that our results
70 were comparable to other studies conducted around the world. A multi-centre
71 study conducted in eight centres from all over Turkey showed similar results.⁽⁶⁾
72 The main limitation of our study is the relatively small sample size. Secondly,
73 although knowledge of the basic concepts is an important step in recognising and
74 treating sepsis, the performance of the participants could be different in a real
75 clinical setting. Sample size was not calculated.

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77 **Conclusion**

78 The overall knowledge and compliance of sepsis guidelines was suboptimal in
79 our study. We found that 46% of the resident physicians used the guidelines
80 regularly. Furthermore, only 55% of them had excellent knowledge and attitudes
81 towards the bundle. These results emphasise on the need for increased awareness
82 and teaching of sepsis and SSC guidelines to improve patient outcomes in
83 developing countries.

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87 **Disclaimer:** None to declare.

88 **Conflict of interest:** The authors declare that there is no conflict of interest.

89 **Funding Sources:** None to declare.

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116 **Table 1: Attitudes of resident physicians towards sepsis management (N=76)**

Question	Internal Medicine (N = 51)	Emergency Medicine (N = 25)
1. Are you aware of the Surviving Sepsis Campaign Guidelines used to manage sepsis patients?	48 (94%)	23 (92%)
2. Have you ever had a formal teaching session on management of sepsis patients?	29 (57%)	19 (76%)
3. How knowledgeable are you with the Surviving Sepsis Guidelines?		
A. Very knowledgeable	13 (25%)	7 (28%)
B. Somewhat knowledgeable	37 (72%)	17 (68%)
C. Not at all knowledgeable	0	0
4. How often do you use these guidelines when managing a sepsis patient?		
A. Always	19 (37%)	16 (64%)
B. Sometimes	30 (59%)	9 (36%)
C. Never	2 (4%)	0

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120 **Table 2: Knowledge of resident physicians regarding diagnosis of sepsis**121 **(N=76)**

Variable	Internal Medicine (N = 51)	Emergency Medicine (N = 25)
1. Which one do you think is the most appropriate definition of sepsis?		
A. Blood contamination by dirty materials	0	0
B. Life-threatening food poisoning after ingestion of seafood such as fish and shellfish	0	0
C. Life-threatening infectious disease caused by multidrug-resistant bacteria	2 (4%)	1 (4%)
D. Systemic inflammatory response caused by microbial infection	49 (96%)	24 (96%)
E. Allergic reaction against microbes	0	0

2. Ms A is a 55-year-old lady who has had cystitis for 2 days. Her temperature is 38.7°C, pulse 86 bpm, BP 101/80 mmHg, respiratory rate 27 breaths per minute. Urine output was 30 mL/h for the past 3 h. Is this patient septic?	34 (66%)	17 (68%)
3. Mr B is a 42-year-old man who has a painful, red and swollen area on his left lower leg. His temperature is 35.5°C, respiratory rate 28 breaths per minute, pulse 120 bpm, BP 120/70 mmHg and white cell count $4 \times 10^9/L$. Is this patient septic?	34 (66%)	21 (84%)
4. Which of the following might suggest a patient has organ dysfunction?		
A. Low platelet levels	30 (59%)	14 (56%)
B. Raised Creatinine	25 (49%)	17 (68%)
C. Raised bilirubin	21 (41%)	15 (60%)
D. Hypertension	1 (2%)	1 (4%)
E. Hyponatraemia	4 (8%)	5 (20%)