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A retrospective study to assess the prevalence, determinants and outcome of sepsis in a tertiary care hospital, Udupi district.

DRAGO MELBA BAZEL

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ABSTRACT

A retrospective study to assess the prevalence, determinants and outcome of sepsis among ICU patients in a selected tertiary care hospital, Udupi District was conducted in partial fulfilment of the requirement for the award of Master of Science in Nursing at Manipal College of Nursing Manipal, Manipal Academy of Higher Education Manipal.

The study objectives were to measure the prevalence, determinants and outcome of sepsis and to find the association between determinants and outcome of sepsis among ICU patients. The research variables were prevalence, determinants and outcome of sepsis. The demographic variables were age, gender, diagnosis, history of smoking and alcoholism. The conceptual framework used for the study was based on The Theory of Web of Causation proposed by Mc Mohan and Pugh.

The research approach used for the study was quantitative approach and the design used was case-control design. The samples were the medical records of patients admitted in the ICUs. The data was obtained by using demographic proforma, sepsis determinants checklist, and outcome determinants checklist. The content validity of the tools was established by obtaining suggestions from seven experts and necessary modifications were made as suggested. The tools were pretested. The reliability was checked using 20 medical records; the reliability of sepsis determinants checklist was 0.98 and outcome determinants checklist was also 0.98. The pilot study was conducted with 40 medical records (20 cases and 20 controls) of ICU patients to assess the feasibility, practicability of the study design and to confirm the plan for analysis.

The main study was conducted in Kasturba Hospital, Manipal. Necessary administrative permissions were obtained prior to the study. IEC clearance was obtained. The data was obtained from 348 cases and 348 controls between 10th December 2017 and 20th January 2018. The obtained data were analyzed based on the objectives and hypothesis of the study using both descriptive and inferential statistics using SPSS 16.0 version. Frequency and percentage were used to describe the sample characteristics and outcome of sepsis. Logistic regression analysis was used for the determinants of sepsis by using SPSS 16.0 version.

The findings of the study revealed that majority of the cases 186 (53.45%) were between the age group of 31-59 years, whereas in the controls, majority 209 (60.06) were above 60 years. Most of the cases (69%) as well as controls (63.5%) were males. The prevalence of sepsis was 35.94%. The study reported that the odds of developing sepsis in patients with pre-existing COPD (OR 2.575, CI 1.607, 4.129, $p < .001$) and renal failure (OR 2.789, CI 2.207, 3.526, $p < .001$) was two times higher than those who did not have COPD and renal failure. Factors such as previous hospitalization (OR 1.485, CI 1.243, 1.775, $p < .001$), heart disease (OR 1.459, CI 1.107, 1.922, $p = .007$), use of antibiotics before the occurrence of sepsis (OR 1.372, CI 1.147, 1.641, $p < .001$) were the significant risk factors which contributed to the development of sepsis. The organism which showed the highest growth was *Klebsiella pneumoniae* (95) followed by *E.coli* (92), *Acinetobacter baumannii* (50) and *Pseudomonas aeruginosa* (36), and the least grown organisms were MDR coliform GNB (1) and MRSA (3). The percentage of samples who had septic shock with organ failure was

65.22%. Multi-Organ Dysfunction Syndrome (MODS) was reported in 64.9% of the cases. The highest mortality rate was identified in the cases (56.9%).

The present study showed that there is a significant association ($p < 0.05$) between MODS and certain determinants of sepsis such as previous hospitalization ($\chi^2 = 9.009$, $p = 0.003$), diabetes mellitus ($\chi^2 = 4.355$, $p = 0.037$), renal failure ($\chi^2 = 1.634$, $p < 0.001$), malignancy ($\chi^2 = 8.804$, $p = 0.003$), use of antibiotics before the occurrence of sepsis ($\chi^2 = 6.843$, $p = 0.009$), central line ($\chi^2 = 7.463$, $p = 0.006$), drain tubes ($\chi^2 = 6.323$, $p = 0.012$), external fixators ($\chi^2 = 4.500$, $p = 0.034$) and endotracheal tube ($\chi^2 = 11.351$, $p = 0.001$).

The study also showed that there was a significant association between recovery and certain determinants of sepsis such as previous hospitalization ($\chi^2 = 5.193$, $p = 0.023$), diabetes mellitus ($\chi^2 = 7.696$, $p = 0.006$), use of antibiotics before sepsis ($\chi^2 = 4.655$, $p = 0.031$), endotracheal tube ($\chi^2 = 9.084$, $p = 0.003$), presence of fulminating infections ($\chi^2 = 16.632$, $p < 0.001$), invasive diagnostic tests ($\chi^2 = 5.365$, $p = 0.021$), hemodialysis before the occurrence of sepsis ($\chi^2 = 4.492$, $p = 0.034$) and use of immuno-suppressants ($\chi^2 = 7.678$, $p = 0.006$).

The present study found that there is a significant association between death and a few determinants of sepsis such as external fixators ($\chi^2 = 6.696$, $p = 0.010$), endotracheal tube ($\chi^2 = 13.105$, $p < 0.001$) and presence of fulminating infections ($\chi^2 = 17.023$, $p < 0.001$) and use of immuno-suppressants ($\chi^2 = 4.029$, $p = 0.045$).

Thus, the study concluded that certain factors such as previous hospitalization, heart disease, antibiotic use, presence of certain co-morbidities and indwelling catheters contributed to the development of sepsis and the outcome was poor in patients with septic shock who developed organ failure.

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