

COVID 19 Pandemic: Impact on Admission, Diagnosis and Treatment of Non-Covid 19 Patients Admitted in SARI ICU

Sunil Ravindranath

Kasturba Medical College Manipal

Bhumika Tumkur Venkatesh

Kasturba Medical College Manipal

Margiben Tusharibai Bhatt

Kasturba Medical College Manipal

Amitha Puranik

Kasturba Medical College Manipal

Shwethapriya Rao

Kasturba Medical College Manipal

Sumalatha A (✉ a.suma86@gmail.com)

JSS Medical College <https://orcid.org/0000-0001-5858-8298>

Research

Keywords: Severe acute respiratory illness, COVID 19, treatment and diagnosis delay, mortality, pandemic

Posted Date: November 2nd, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-99745/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Abstract

Background

Healthcare systems worldwide are overwhelmed in the treatment of ever-increasing number of COVID 19 patients which has affected the management of non COVID 19 patients as well. We tested the adherence to Severe Acute Respiratory Illness (SARI) definition laid down by The Government of India for triaging of suspected COVID 19 cases, and the impact of this strategy on the non covid patients admitted to SARI ICU as suspected cases of covid 19 disease.

Methods

A cross-sectional study was conducted to reflect the appropriateness and adherence of SARI definition in two tertiary care medical college hospitals in triaging COVID 19 suspect cases and assessed the challenges in admission, diagnosis and treatment of non COVID 19 diseases. The study involved 78 patients in two multidisciplinary units of medical college hospitals in the month of June – July 2020. Data related to demographics, severity of illness, advanced life supports required, delay in diagnosis, intervention and treatment of patients in SARI ICU due to suspect COVID 19 status was documented.

Results

Adherence to SARI definition for triaging COVID suspect cases was 19.2%. Respiratory symptoms amounted to 24% of presenting complaints. Despite hindrance in the diagnosis (17.9%) and treatment (12.8%), mortality among patients in SARI ICU was limited to 14.10%. The results were in-significant when checked for the various factors associated with mortality.

Conclusion

The adherence to SARI definition while triaging COVID suspect cases to intensive care units was low among the clinicians. There were hindrances in the diagnosis and treatment of non COVID diseases due to COVID suspect status of the patient. However, treatment outcomes of these patients were comparable to critically ill population with similar disease severity scores suggesting that quality of care may not have been compromised despite the pandemic. Poor adherence to SARI definition while triaging might have led to economic implications on patients and healthcare systems but further studies are required to comment regarding the same.

Background

The coronavirus disease 2019 (COVID-19) which was first detected in Wuhan, China but is now becoming an increasing public concern due to its rapid spread [1],[2],[3],[4]. While most people with COVID-19 develop only mild or uncomplicated illness, approximately 14% develop severe disease that requires hospitalization and oxygen support, and 5% require admission to an intensive care unit [5]. In severe cases, COVID-19 can be complicated by the acute respiratory distress syndrome (ARDS), sepsis and septic shock, multi organ failure, including acute kidney injury and cardiac injury [6]. Older age, male gender and co-morbid diseases like diabetes mellitus, hypertension, and ischemic heart disease have been reported as risk factors for death. [6, 7, 8, 9, 10]

Various countries have strategized their approach at different healthcare levels to cope with and contain the spread of the pandemic. The Government of India laid down interim guidelines, which are upgraded periodically, for clinicians taking care of hospitalized adult and pediatric patients when COVID-19 infection is suspected [11]. The guidelines have defined the triaging of suspected COVID-19 patients as per the severe acute respiratory infection (SARI) definition (Table 1). Patients are triaged at various entry levels and suspected cases, as per this definition, are isolated in a dedicated wing of the health care set up.

Though there are no confirmed numbers on active SARI cases in India, the estimated numbers are in millions adding onto the humongous burden on the manpower, resources, finance and logistical aspects of the hospital infrastructure. This may compromise the quality of care for patients admitted in SARI ICU. Although there is extensive ongoing research about covid patients during this pandemic, there has been no study till date that has investigated the impact of adherence to SARI definition during this COVID-19 pandemic on admission, diagnosis and treatment of non-COVID patients admitted in SARI ICU. This study aimed at looking for implications of SARI definition on patients who are triaged as suspects on admission under this definition and later turn out to be COVID-19 negative.

Materials And Methods

Institutional ethical clearances (IEC 302- 2020 and JSSMC/ IEC / 090620) were obtained and the study was registered in the Clinical Trial Registry of India (CTRI/2020/05/025339) before enrolling the participants. We followed the STROBE guidelines for the methodology to carry out and report the findings from this study.

Study design: The cross-sectional study was conducted in 20 bedded multidisciplinary intensive care units of two tertiary care medical college hospitals, South India in the months of June and July 2020. Each center had designated two local coordinators (SR & SA) who were tasked to provide scientific and structural leadership in their centers. They ensured that all local necessary ethical and regulatory approvals were obtained before the start of enrollment of eligible patients within a window period of 2 months. Informed consent was taken in one of the centers either from the patient or from the patient's legal representative if the patient was on not medically fit to give consent. The other center did not take consent as waiver was granted by IEC. There was no fixed sample size and data from all patients admitted to SARI ICU during the study period was collected thereby eliminating the selection bias.

Participants: Patients aged more than 18 years and admitted to SARI ICU as per attending clinician discretion were included in the study. Confirmed COVID-19 cases were excluded from the study.

Data Collection: Data related to the following were collected from the inpatient-charts. Patient demographic data along with comorbidities, annual income of the patient, history of contact/travel, whether health insurance availed. The patient's presenting complaints were classified into respiratory and non-respiratory. Adherence to SARI definition and American Thoracic Society (ATS) criteria for ICU admission [12] for community acquired pneumonia (CAP) were documented. SOFA score [13] was collected at admission. Requirement of various organ supports like mechanical ventilation, vasopressor use and renal replacement therapy were noted. Patient outcomes such as discharged from ICU and in hospital mortality were also documented. Data about impediment to treatment defined as any delay, change or failure in diagnosis in SARI ICU, any cross-consultation delay, any hindrance in allied health services due to suspected COVID-19 status while patient was in SARI ICU, was also collected.

Statistical analysis: The collected patient data was analyzed using software SPSS version 16. Care was taken to minimize the errors in data entry and analysis. Data was summarized using mean and standard deviation for normally distributed variables. Median and interquartile range (IQR) was reported for skewed variables. Frequencies of all the categorical data were calculated and summarized using graphs. Fisher exact test was performed to assess the relationship of delay in diagnosis, impediment in treatment, age, gender, organ support and co-morbidities with that of mortality. Independent samples T test was used to detect whether a significant difference in age exists between those who experienced mortality and those who did not. Since the factor onset of symptom delay was not normally distributed, Mann-Whitney U test was used to compare it between those who experienced mortality and those who did not.

Results

The overall data of total 78 patients were collected (Table 2) out of which 31 (39.7%) were females 47 (60.3%) were males. The mean age of the participants was 55.15 (17.71) years. The median annual income of participants was 144,000 (84,000 – 210,000) INR or 1958 USD, out of which 37 (47%) utilized government schemes, 8 (11%) utilized private schemes and 33 (42%) participants paid cash for hospitalization. Comorbidities of the patients enrolled were as mentioned in Table 3. The mean SOFA [11] score was found to be 5.87 with only 15 (19.2%) patients admitted fulfilling the SARI definition and 45 (57.7%) patients admitted fulfilling the ATS criteria.

The majority of the patients admitted in SARI ICU reported non-respiratory symptoms. (Figure 1). Out of the 78 patients who were hospitalized, 74% were admitted with non-respiratory presentations. Out of which 21.79% had constitutional symptoms, 19.23% had gastrointestinal causes such as abdominal pain, abdominal distension, vomiting, diarrhea etc., cardiac causes such as shortness of breath, palpitation and chest pain were seen in 17.94% and another 17.94% patients had neurological symptoms such as seizures, septic encephalopathy, giddiness etc. Renal symptoms such as decreased urine output, uremic encephalopathy, volume overload were found in 15.38%. Of the patients with respiratory symptoms documented, shortness of breath was observed in 15.38%, cough in 12.82% and productive sputum was observed in 3.84% patients (Figure 2).

It was observed that majority of the patients were not on advanced life supports (43%). At least 19% were on invasive mechanical ventilation and vasopressors both, 13% were on invasive mechanical ventilation alone and 1% were on non-invasive mechanical ventilation. 5% patients were on vasopressor therapy alone, 9% on renal replacement therapy alone and only 1% were on combined vasopressor support and renal replacement therapy as depicted in Figure 3. The treatment impediment was mainly seen in allied health services like physiotherapy. The other reasons for the impediment to treatment included cross-consultation, intervention, diagnosis and treatment as represented in Figure 4. The majority of the patients (66%) admitted to SARI ICU were discharged from the hospital, 19% were discharged against medical advice whereas 14.10% of the patients died. The results were not significant when checked for age, gender, onset of symptom, non-respiratory comorbidity, and impediment to treatment with the mortality as depicted in Table 4.

Discussion

There were 1,81,859 confirmed and 89,729 active COVID 19 cases in India at the start of study. Government of India had upped its ante in preparedness for a pandemic bringing out decisive measures to contain the spread. Apart from protocols and clinical management guidelines from the Ministry of health and family welfare (MOHFW), Government of India vouched for social distancing measures such as lockdown which spanned over two and a month period in 4 different phases (24th March 2020 – 8th June 2020). Despite measures like lockdown, screening, testing and triaging, India witnessed single day spikes of more than 1000 cases in almost every state. With the process of unlock in the near future evident, the total number of confirmed cases were expected to rise and it is imperative that limited healthcare resources were utilized with just and rationale.

SARI definition laid down by Government of India for triaging of suspected COVID 19 cases is depicted in Table 1. The study was conceptualized keeping in mind how these measures were affecting the non COVID 19 patients in the initial stages of the pandemic. The study centers were different with one being a closed ICU with in house intensivist and another an open ICU being managed by clinicians with round the clock intensivist assistance for procedures and management.

The adherence of clinicians to SARI definition while admitting the suspected patients to ICU was a mere 19.2% and could be due to following reasons. Admissions to SARI ICU was more so decided as per the clinician's discretion and in the face of enormous volume of SARI and ILI like cases clinicians were liberal in SARI admissions wanting to err on the side of caution due to fear of possible in hospital clustering, lack of awareness of SARI definition. Shortness of breath was the commonest presenting complaint of which only 15.38% had a respiratory cause. This points to the fact that fear among

clinicians could have contributed to the overzealous admission as it has maximal visual impact. Nonetheless, among the admitted SARI cases, nearly 57.7% had fulfilled the American Thoracic Society criteria for admission to ICU in cases of severe community acquired pneumonia suggesting that majority did require ICU care but may not SARI ICU.

The mean age of our study participants and comorbidities were comparable to that of INDICAPS study [14] and Stride study [15]. The mean SOFA score was also similar to that of ICON study [16] suggesting that the study population was representative of a general ICU population. ICU mortality was lower despite higher SOFA score compared to that seen in INDICAPS study [14]. Compared to medical ICUs involved in USCIITG-CIOS study, mortality was lower in our study [17]. Percentage of patients requiring mechanical ventilation, vasopressors and renal replacement therapy was higher compared to KIND study [18] yet mortality was marginally lower in our study. Thus, despite the uncertain scenario involved with the ongoing pandemic, the study population was treated with appropriate care.

The impediments in diagnosis, intervention, cross consultation, treatment and allied health services care to the patient were restricted to 17.9%, 23.1%, 12.8%, 24.4% and 67.9%, respectively. The delay in interventions especially intubation (15.38% delay) was high in one of the centers because of the fact that it was open ICU. Mean PaO₂/FiO₂ ratios at which patients were intubated was 143.16 mm Hg. Hindrance in cross consultations were mainly with cardiological evaluation and technicians involved in echocardiography due to staff limitation. Nursing care including administering intravenous medications, feeding, bowel and bladder care were largely unaffected as the 1:1 nurse patient ratio implemented for the clinical care. However, there were undue delay reported in sending laboratory investigations to microbiology, pathology and critical care laboratories, procuring medicines from in-hospital pharmacies, intra-hospital transfer of patients for investigations due to limited house-keeping staffs which could not be documented. The hindrance for allied health services were due to the fact that the physiotherapy and dietician were initially not involved in SARI ICU as duration of ICU stay was expected to be short. Despite the diagnosis and treatment being affected in 17.9% and 12.8% of cases respectively, patients discharge from the hospital percentage was 66%. Mortality was shown to be 14.10%. 1% of the patients were provided palliative care during hospital stay.

It is interesting to note that nearly 47% of study population had availed government run health insurance schemes and 11% had used private health insurance compared to only 16% insured patients (both government and private) in INDICAPS study. [14] This could be due to extensive availability and implementation of government run health schemes in the study centers. The average cost of SARI ICU stay per day in the two study centers was INR 25000 per day. This is higher than the average cost of regular ICU stay which is around 15000 per day. There were considerable unquantified monetary implications observed by the investigators during the study on the hospital management as well, considering the finance involved in revamping the existing hospital infrastructure into dedicated intensive care units for COVID-19 suspects, continuing education of healthcare workers regarding infection control practices, personnel protection aspects while working in SARI ICU, additional use of large amount of sanitizers, protective gears such as PPE, N95 masks and the complete shutdown of elective procedures and outpatient units during the lockdown. Even though we intended to capture this economic data initially, it could not be done due to lack of manpower and funding.

The study had its own limitations. The mean SOFA score of the patients under study in SARI was 5.87. SOFA scores were calculated on the first day of ICU admission only and might not be reflective of the sequential worsening of the organ functions later in the ICU stay. We defined non COVID 19 patients as those whose first RT-PCR was negative. Since, RT-PCR has approximately 63% and 32% percent sensitivity for nasal and throat swabs respectively this definition may have been flawed and the suspect patients might mandate repeat RT-PCR if the pretest probability of patients having COVID 19 are high [19, 20]. It was an observational cross-sectional study involving two tertiary care multidisciplinary medical college hospitals. The findings cannot be generalized unless it is done on a larger scale involving multiple centers. The decreased sample size in this study was due to the restrictions that were laid due to pandemic situation that decreased the access for data collection.

Despite these limitations, our study had major strengths. This is one of the first studies to our knowledge to evaluate outcome variables like failure or change in diagnosis, delay in intervention, treatment and investigations impacting on clinical management and mortality of non COVID 19 patients in this pandemic scenario. The study also projects the challenges and management of non-COVID 19 patients at tertiary care sectors. Further studies in a larger scale is mandated to evaluate the guidelines in triaging of COVID 19 suspect cases for better utilization of healthcare resources in treatment of patients during these trying times and to project the needs to overcome the barriers to enhance the treatment care for non-COVID 19 patients during the pandemic.

Conclusion

The adherence to SARI definition while triaging COVID suspect cases to intensive care units was low among the clinicians. There were hindrances in the diagnosis and treatment of non COVID diseases due to COVID suspect status of the patient. However, treatment outcomes of these patients were comparable to critically ill population with similar disease severity scores suggesting that quality of care may not have been compromised despite the pandemic. Poor adherence to SARI definition while triaging might have led to economic implications on patients and healthcare systems but further studies are required to comment regarding the same.

Declarations

Authors contributions

SR and SA conceived and designed the analysis, collected the data, participated in the analysis and wrote the paper. BTV conceived and designed the analysis, contributed to data, participated in the analysis and wrote the paper. MTB, AP and SPR participated in designing of the analysis, collected the data and wrote the paper.

- Ethics approval and consent to participate

Institutional ethical clearances (IEC 302- 2020 and JSSMC/ IEC / 090620) were obtained and the study was registered in the Clinical Trial Registry of India (CTRI/2020/05/025339) before enrolling the participants. Informed consent was taken in one of the centers either from the patient or from the patient's legal representative if the patient was on not medically fit to give consent. The other center did not take consent as waiver was granted by IEC.

- Consent for publication

Not applicable

- Availability of data and materials

Informed consent was taken in one of the centers either from the patient or from the patient's legal representative if the patient was on not medically fit to give consent. The other center did not take consent as waiver was granted by IEC.

- Competing interests

The authors declare that they have no competing interests

- Funding

There was no funding for the above study.

- Author's information

Corresponding author- Dr Sumalatha A. (SA)

MBBS, MD, DM (critical care medicine) Intensivist, JSS medical college, Mysuru

Email id; a.suma86@gmail.com

First author- Dr Sunil Ravindranath. (SR)

MBBS, MD, IDCCM, FNB

Assistant professor, Department of critical care medicine, Kasturba medical college and hospital, Manipal academy of higher education

Email id- sunil.r@manipal.edu

Second author- Dr Bhumika Tumkur Venkatesh (BTV)

Assistant professor, Coordinator, Public health evidence South Asia, Prasanna school of public health, manipal academy of higher education.

Email id- bhumika.tv@manipal.edu

Third author- Dr Margiben tusharbhai Bhatt (MTB)

MBBS, MD, DNB, IDCCM

Senior resident, Department of critical care medicine, Kasturba medical college and hospital, Manipal academy of higher education

Email id- drmargibhatt@hotmail.com

Fourth author- Amitha puranik, (AP)

Assistant professor, Department of data science, Prasanna school of public health, Manipal academy of higher education.

Email id- amitha.puranik@manipal.edu

Fifth author- Dr Shwethapriya Rao,

Associate professor, Department of critical care medicine, Kasturba medical college and hospital, Manipal academy of higher education

Email id- shwethapriya.rao@manipal.edu

Sixth author- Dr Sumalatha A. (SA)

MBBS, MD, DM (critical care medicine) Intensivist, JSS medical college and hospital, Mysuru

Email id; a.suma86@gmail.com

- Acknowledgements

We would like to express our gratitude to the postgraduates of department of Anaesthesia, pain and critical care medicine, JSS medical college, Mysuru who helped us in collection of data. We would like thank Dr Sriram Sampath, Dr Gurudatt C.L., Dr Ravi M.D., Dr Chetak and Dr Mahesh P.A for their valuable inputs during preparation of this manuscript. We would also like to thank Dr Purva, Dr Devika, Dr Harinaveen and Dr Rituparna- postgraduates from department of anaesthesia, KMC manipal for their efforts in data collection.

References

1. World Health Organization [Internet]. Geneva: WHO characterizes COVID-19 as a pandemic [accessed 2020 March 11]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-asthey-happen>.
2. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Engl J Med*. 2020 Mar; 382(13): 1199-1207
3. COVID-19: too little, too late? *Lancet*. 2020 March; 395(10226): 755.
4. Day M. Covid-19: surge in cases in Italy and South Korea makes pandemic look more likely. *BMJ*. 2020 Feb; 368:m751.
5. Epidemiology Working Group for NCIP Epidemic Response, Chinese Center for Disease Control and Prevention. [The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China]. *Zhonghua liu Xing Bing xue za zhi = Zhonghua Liuxingbingxue Zazhi*. 2020 Feb;41(2):145-151. DOI: 10.3760/cma.j.issn.0254-6450.2020.02.003.
6. Yang X, Yu Y, Xu J, Shu H, Xia J, Liu H et al. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. *Lancet Respir Med*. 2020. Epub 2020/02/28. doi: 10.1016/S2213-2600(20)30079-5. PubMed PMID: 32105632.
7. Guan W, Ni Z, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med* 2020;382:1708-1720.
8. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020;395:1054-1062.
9. Goyal P, Choi JJ, Pinheiro LC, et al. Clinical characteristics of Covid-19 in New York City. *N Engl J Med* 2020;382:2372-2374.
10. Karagiannidis C, Mostert C, Hentschker C, et al. Case characteristics, resource use, and outcomes of 10 021 patients with COVID-19 admitted to 920 German hospitals: an observational study. *Lancet Respir Med*. 2020;8(9):853-862. doi:10.1016/S2213-2600(20)30316-7
11. <https://main.mohfw.gov.in/sites/default/files/Guidelines%20on%20Clinical%20management%20of%20severe%20acute%20respiratory%20illness.pdf>
12. Lionel A. Mandell, Richard G. Wunderink, Antonio Anzueto, John G. Bartlett, Douglas Campbell, Nathan C. Dean, Scott F. Dowell, Thomas M. File, Jr., Daniel M. Musher, Michael S. Niederman
13. Vincent JL, Moreno R, Takala J, et al. The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction/ failure. On behalf of the Working Group on Sepsis-Related Problems of the European Society of Intensive Care Medicine. *Intensive Care Med* 1996; 22: 707–10.
14. Divatia JV, Amin PR, Ramakrishnan N, et al. Intensive Care in India: The Indian Intensive Care Case Mix and Practice Patterns Study. *Indian J Crit Care Med*. 2016;20(4):216-225. doi:10.4103/0972-5229.180042
15. Manu Varma MK, Krishna B, Sampath S. Secular Trends in An Indian Intensive Care Unit-Database Derived Epidemiology: The Stride Study. *Indian J Crit Care Med* 2019;23(6):251–257.
16. Vincent J-L, Marshall JC, Namendys-Silva SA, François B, Martin-Loeches I, Lipman J, et al. Assessment of the worldwide burden of critical illness: the intensive care over nations (ICON) audit. *Lancet Respir Med*. 2014;2(5):380–386. doi: 10.1016/S2213-2600(14)70061-X.
17. Checkley W, Martin GS, Brown SM, et al. Structure, process, and annual ICU mortality across 69 centers: United States Critical Illness and Injury Trials Group Critical Illness Outcomes Study. *Crit Care Med*. 2014;42(2):344-356. doi:10.1097/CCM.0b013e3182a275d7.
18. Park J, Jeon K, Chung CR, Yang JH, Cho YH, Cho J, et al. A nationwide analysis of intensive care unit admissions, 2009–2014–The Korean ICU National Data (KIND) study. *J Crit Care*. 2018;44:24–30. doi: 10.1016/j.jccr.2017.09.01
19. Arevalo-Rodriguez I, Buitrago-Garcia D, Simancas-Racines D, et al. False-negative results of initial RT-PCR assays for Covid-19: a systematic review. medRxiv 20066787. 2020 10.1101/2020.04.16.20066787%J
20. Wang W, Xu Y, Gao R, et al. Detection of SARS-CoV-2 in different types of clinical specimens [JAMA]. *JAMA* 2020. 10.1001/jama.2020.3786. 32159775

Tables

Table 1 : SARI definition by Ministry of Health and Family welfare, Government of India.

SARI	An ARI with history of fever or measured temperature $\geq 38\text{ C}^\circ$ and cough; onset within the last ~10 days; and requiring hospitalization. However, the absence of fever does NOT exclude viral infection
Surveillance case definition for COVID 19	Severe acute respiratory infection (SARI) in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation ¹ (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised); AND any of the following: a) A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset; or b) the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel; or c) the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation 2. A person with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures: a) close physical contact ² with a confirmed case of nCoV infection, while that patient was symptomatic; or b) a healthcare facility in a country where hospital-associated nCoV infections have been reported;

Table 2: Basic demographic data

Age – mean (SD) in years	55.15 (17.71)
Gender (%)	Male: 47 (60.3) Female: 31 (39.7)
Patient’s income – Median (IQR)	144000.00 (84000.00, 210000.00) in rupees/annum
Percentage of modes of payment by patients	cash-42% government schemes-47% private schemes- 11%
SOFA score – mean (SD)	5.87 (4.15)
Patients admitted patients fulfilling SARI definition (%)	15 (19.2)
Patients admitted patients fulfilling ATS criteria (%)	45 (57.7)

Table 3: Comorbidities of the patients admitted in SARI ICU

Diabetes mellitus	30 (38.41%)
Hypertension	27 (34.61%)
Cardiac conditions (IHD, heart failure, atrial and ventricular septal defects)	17(21.79%)
Respiratory conditions (COPD, Bronchial asthma, pulmonary Koch’s, Bronchiectasis)	14(17.94%)
Neurological and psychiatric conditions	6(7.69%)
Hypothyroidism and other endocrinological diseases	9(11.53%)
Renal failure	14(17.94%)
Post-Surgery	1(1.28%)
Malignancy	3(3.84%)
Other immunosuppressive diseases	5(6.41%)

Table 4: From Fisher exact test it is evident that there was *no* statistically significant association between gender, delay in diagnosis, treatment, organ support with mortality ($p>0.05$). There was no occurrence of mortality among those with delayed diagnosis, treatment

		Delay in diagnosis		Delay in treatment		Organ Support		Respiratory comorbidity		Non-respiratory comorbidity		Gender	
		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Female	Male
Mortality	No	53	14	57	10	42	25	23	44	15	52	29	38
	(%)	(82.8)	(100.0)	(83.8)	(100.0)	(91.3)	(78.1)	(92.0)	(83.0)	(83.3)	(86.7)	(93.5)	(80.9)
	Yes	11	0	11	0	4	7	2	9	3	8	2	9
	(%)	(17.2)	(0.0)	(16.2)	(0.0)	(8.7)	(21.9)	(8.0)	(17.0)	(16.7)	(13.3)	(6.5)	(19.1)

Figures

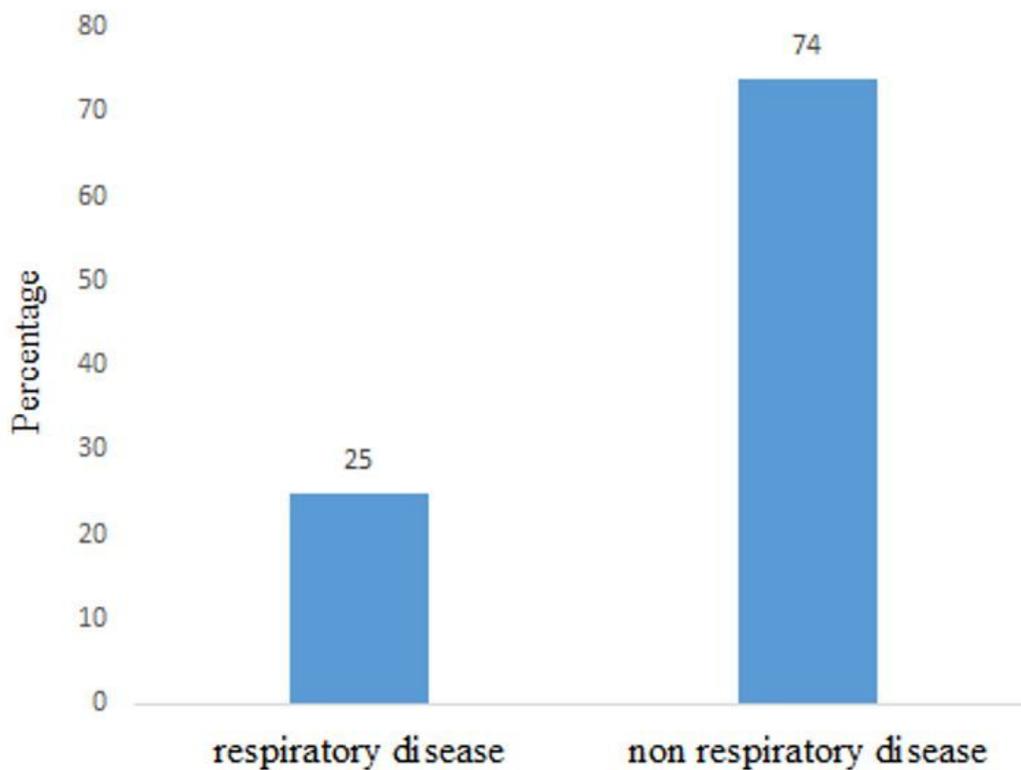


Figure 1

Mode of presentation to SARI-ICU

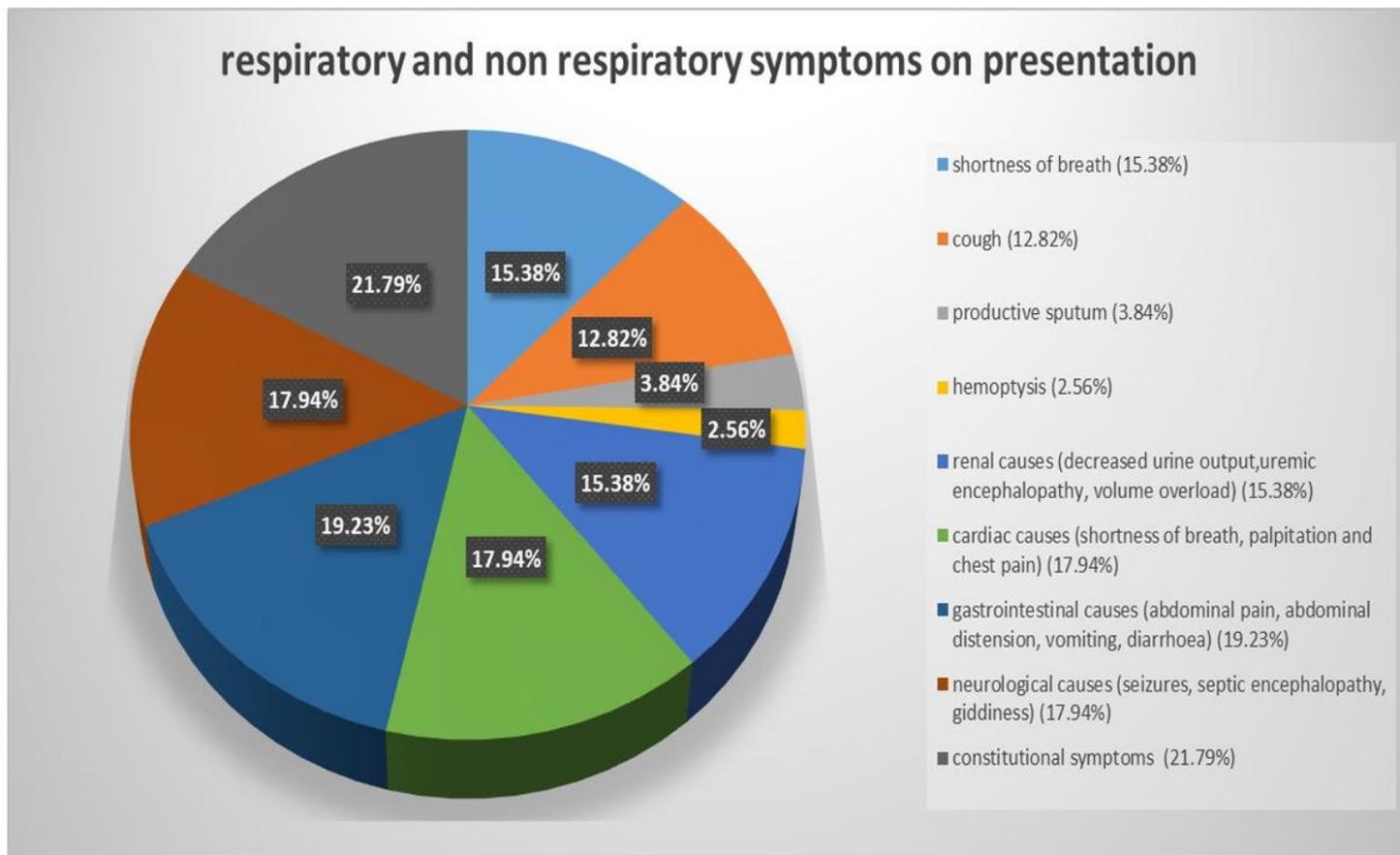


Figure 2

Pie chart showing mode of presentation of patients to SARI ICU

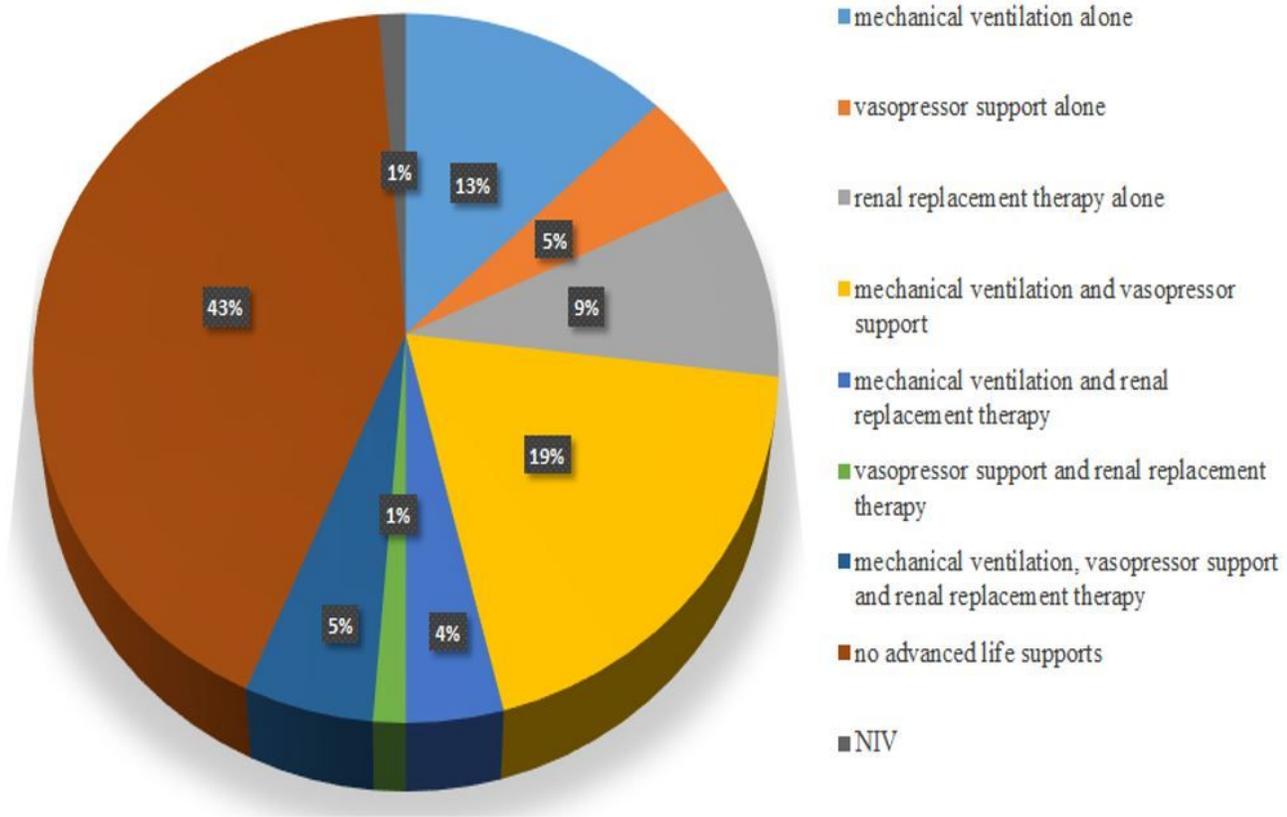


Figure 3

Pie chart showing the requirement of organ supports for patients in SARI ICU

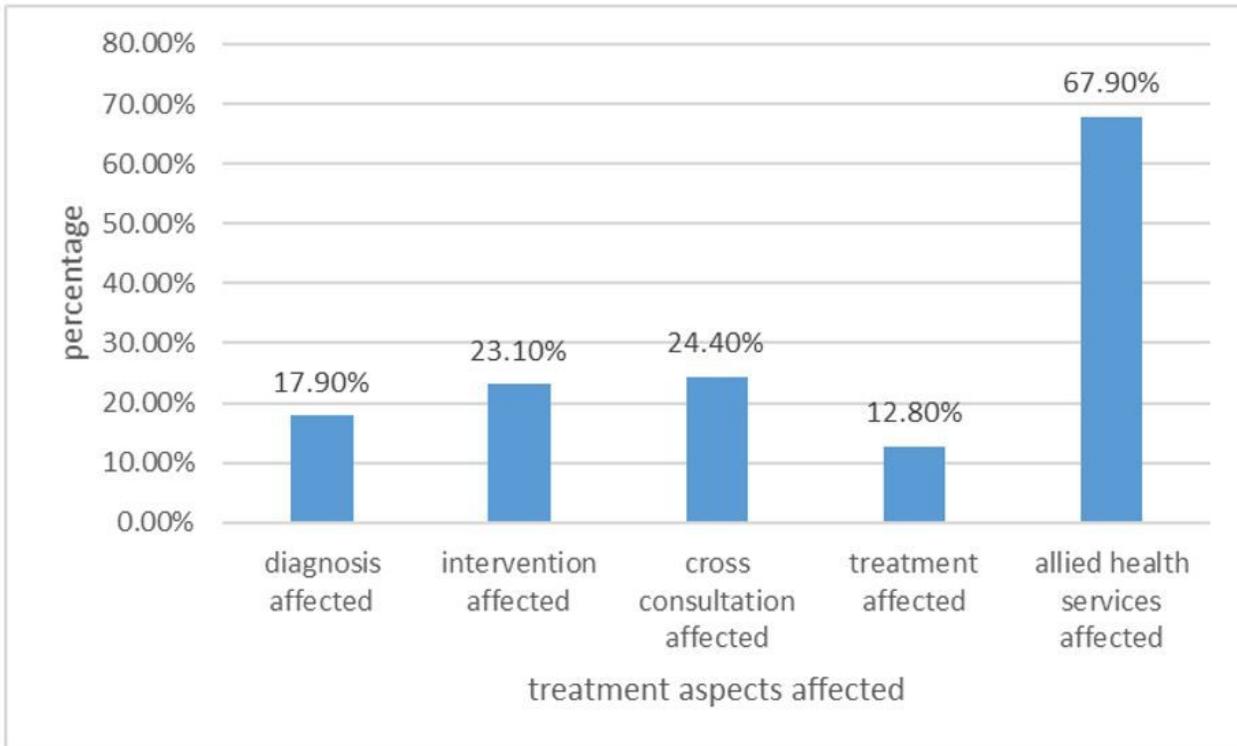


Figure 4

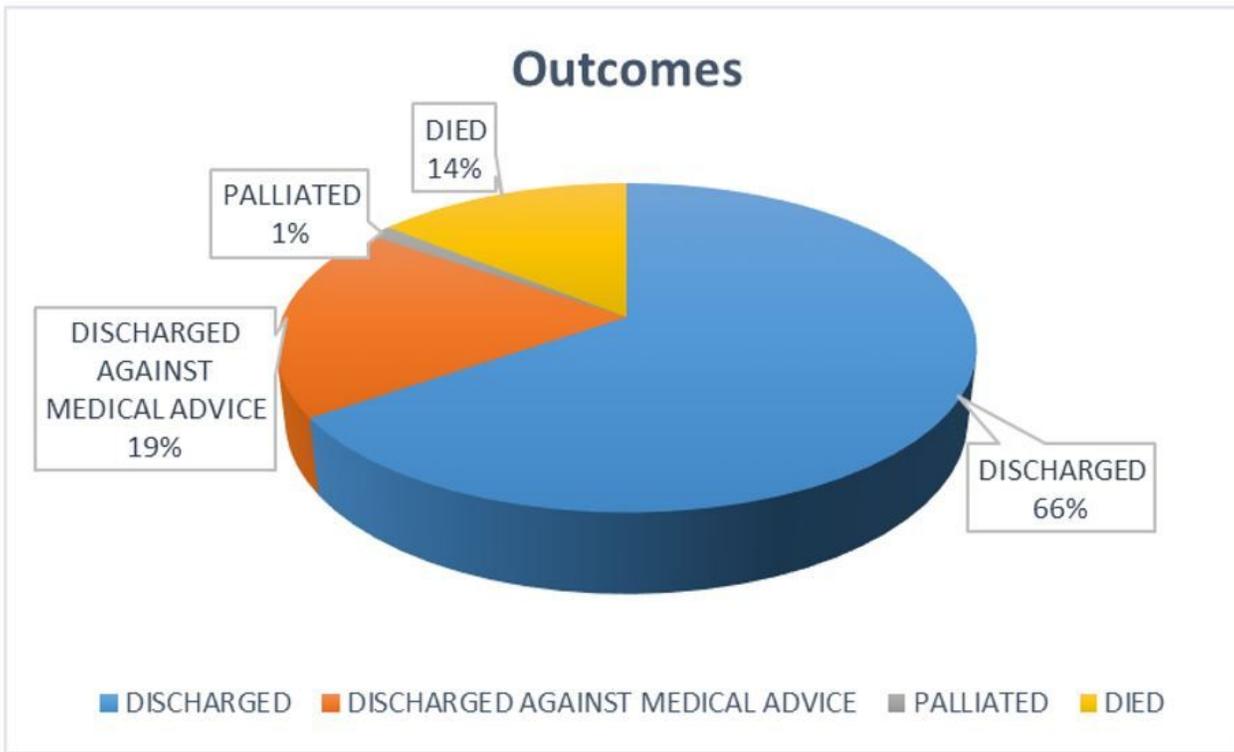


Figure 5

Patient outcomes