

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	Page 1, lines 13–15	“This study retrospectively analyzed 168 patients with SP and RF admitted between March 2024 and August 2025...”
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page 1, lines 9–27	“Abstract: Background... Objectives... Methods... Results... Conclusion...”
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Page 1, lines 35–52; Page 2, lines 55–60	“Severe pneumonia (SP) complicated with respiratory failure (RF)... However, controversy persists regarding the specific medications used.” / “Evidence remains insufficient...”
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 2, lines 61–70	“Therefore, this retrospective cohort study was conducted to investigate the clinical pharmacologic effects of SOM combined with ipratropium bromide nebulization in patients with SP+RF.”
Methods				
Study design	4	Present key elements of study design early in the paper	Page 2, lines 74–79	“A retrospective cohort analysis was conducted based on the medical records of patients with SP+RF admitted to our hospital between March 2024 and August 2025.”
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Page 2, lines 75–76; Page 3, lines 122–128	“...admitted to our hospital between March 2024 and August 2025.” / “...before treatment (T0), at 24 hours after treatment (T1) and at 48 hours after treatment (T2)... 28d-M...”

Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up <i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls <i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants	Page 2, lines 91–100	“Inclusion criteria... Exclusion criteria... After screening, 168 participants were enrolled: 81 in the observation group and 87 in the control group.”
		(b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed <i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case	Not applicable	Not applicable; no matched cohort design was reported.
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page 2, lines 92–97; Page 3, lines 120–128	“Confirmed RF (PaO <sub>2</sub> /FiO <sub>2</sub> ≤ 300 mmHg...)” / “MODS was defined as any organ with a score ≥2 and a cumulative involvement of ≥2 organs... 28d-M, duration of mechanical ventilation (DMV), length of ICU stay and total length of hospital stay.”
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Page 2, lines 104–117; Page 3, lines 120–128	“All patients received SOM upon admission...” / “PaO <sub>2</sub> /FiO <sub>2</sub> , SpO <sub>2</sub> , blood lactate... were monitored...” / “ELISA for measuring IL-6, TNF-α, CRP and Cor levels...”
Bias	9	Describe any efforts to address potential sources of bias	Page 2, lines 80–89	“To minimize and overcome potential confounding factors... multiple methodological strategies were adopted...”
Study size	10	Explain how the study size was arrived at	Page 2, lines 76–79	“The primary endpoint was 28-day mortality... Using PASS software for calculations, each group shall include at least 76 participants.”

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Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Page 3, lines 120–128; Page 3, lines 131–134	“...before treatment (T0), at 24 hours after treatment (T1) and at 48 hours after treatment (T2)...” / “Measurement data were expressed as... frequencies (%)...”
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Page 2, lines 80–89; Page 3, lines 131–134	“...multiple methodological strategies were adopted...” / “intergroup comparisons conducted using the independent-samples t-test... repeated-measures ANOVA... $\chi^2$ test or Fisher's exact test.”
		(b) Describe any methods used to examine subgroups and interactions	Not applicable	Not reported.
		(c) Explain how missing data were addressed	Page 2, lines 93–94	“Complete medical records (including baseline indicators, treatment records and follow-up data)”
		(d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed <i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed <i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy	Not applicable	Not reported.
		(e) Describe any sensitivity analyses	Not applicable	Not reported.
<b>Results</b>				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Page 2, lines 98–100	“After screening, 168 participants were enrolled: 81 in the observation group and 87 in the control group.”
		(b) Give reasons for non-participation at each stage	Page 2, lines 95–97	“Exclusion criteria: (1)... (6)...”
		(c) Consider use of a flow diagram	Not applicable	Not reported.
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 3, line 120; Page 3, lines 138–140	“Baseline data (age, gender, APACHE II score, SOFA score, and Smoking Status)...” / “There was no difference in the age, gender, APACHE II, SOFA and Smoking...”
		(b) Indicate number of participants with missing data for each variable of interest	Not applicable	Not reported.
		(c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)	Page 3, lines	“...before treatment (T0), at 24

			122–128	hours after treatment (T1) and at 48 hours after treatment (T2)... 28d-M..."
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time	Page 3, lines 143–169	“PaO <sub>2</sub> /FiO <sub>2</sub> and SpO <sub>2</sub> continued to increase... blood lactate levels showed a decreasing trend... incidence of MODS was lower... There was no difference in 28d-M...”
		<i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure	Not applicable	Not reported.
		<i>Cross-sectional study</i> —Report numbers of outcome events or summary measures	Not applicable	Not reported.
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Page 3, lines 143–169	“...were higher in the observation group (p<0.05)... were lower in the observation group (p<0.05)... There was no difference in 28d-M between the two groups (p>0.05).”
		(b) Report category boundaries when continuous variables were categorized	Page 2, line 92; Page 2, lines 104–108; Page 3, lines 123–125	“PaO <sub>2</sub> /FiO <sub>2</sub> ≤ 300 mmHg” / “RASS score was -2 to 0” / “Blood glucose was maintained between 7.8–10 mmol/L” / “score ≥2 and a cumulative involvement of ≥2 organs”
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Not applicable	Not reported.

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Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Not applicable	Not reported.
Discussion				
Key results	18	Summarise key results with reference to study objectives	Page 4, lines 173–176	“This retrospective cohort analysis revealed that... improved oxygenation status, respiratory mechanics, and inflammatory stress responses... However, it had no significant impact on 28d-M.”
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Page 7, lines 203–236; Page 8, lines 240–246	“A key mismatch in this study is the lack of a statistically significant difference in the primary endpoint...” / “the retrospective cohort design inherently limits causal inference...” / “the lack of stratification... may limit the generalizability...”
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page 7, lines 203–210; Page 8, lines 240–247	“Therefore, the positive findings of the secondary endpoints should be interpreted with caution...” / “prospective RCT are needed for future validation... Further validation using biomarkers or radiomics is warranted.”
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 8, lines 244–246	“the lack of stratification based on pneumonia severity or pathogen type may limit the generalizability of the findings.”
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Page 8, lines 264–265	“No funds, grants, or other support was received.”

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).