Materials Design Analysis Reporting (MDAR) Checklist for Authors

The MDAR framework establishes a minimum set of requirements in transparent reporting applicable to studies in the life sciences (see Statement of Task: doi:10.31222/osf.io/9sm4x.). The MDAR checklist is a tool for authors, editors and others seeking to adopt the MDAR framework for transparent reporting in manuscripts and other outputs. Please refer to the MDAR Elaboration Document for additional context for the MDAR framework.

Materials

Antibodies	Yes (indicate where provided:	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	-	n/a No antibodies were used in our experiments.

Cell materials	Yes (indicate where provided:	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	-	n/a No cell materials were used in our experiments.
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	-	n/a No cell materials were used in our experiments.

Experimental animals	Yes (indicate where provided:	n/a
Laboratory animals: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	-	n/a No experimental animals were used in our experiments.
Animal observed in or captured from the field: Provide species, sex and age where possible	-	n/a No experimental animals were used in our experiments.
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	-	n/a No experimental animals were used in our experiments.

Plants and microbes	Yes (indicate where provided:	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)	-	n/a No plants materials were used in our experiments.
Microbes: provide species and strain, unique accession number if available, and source	-	n/a No microbes materials were used in our experiments.

Human research participants	Yes (indicate where provided:	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	-	n/a The experiment is an in vitro simulation experiment, there are no human research participants, thus the ethics approval is not required.
Provide statement confirming informed consent obtained from study participants.	-	n/a There are no human research participants in the experiment.
Report on age and sex for all study participants.	-	n/a There are no human research participants in the experiment.

Design

Study protocol	Yes (indicate where provided:	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	-	n/a The experiment is an in vitro simulation experiment, not a clinical trial thus clinical trial registration is not required.

Laboratory protocol	Yes (indicate where provided:	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	-	n/a Our experiments do not involve a step-by-step protocol.

Experimental study design (statistics details)	Yes (indicate where provided:	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination	-	n/a Due to the lack of current research on the effect of nebulization methods and drugs on the filter resistance value. We estimated the sample size based on clinical experience. The mean range of resistance values in each group was estimated to be 2-2.5, and the overall standard deviation was estimated to be 0.2. we set the test levels to be α=0.05 and power (1 − ß) of 80%. The two-sided test results showed that the estimated sample size of each group was less than 10, and we finally selected 12 cases in each group according to equipment conditions.
Randomisation	The breathing filters we used in the experiment are from the same manufacturer and the same batch number, and there is no difference between the filters. The breathing filters were divided into eight groups randomly. (Methods/ Experimental process/ paragraph 2)	-
Blinding	-	N/A Our research is not based on patients and only the measurement personnel know which nebulization drugs and methods were used, so there is no blinding method on the research object side. In addition, the grouping category obtained by the statistical analyst is only a numerical code, so the blind method on the data

		analysis side can be achieved.
Inclusion/exclusion criteria	Methods/ Experimental process/ paragraph 1	-

Sample definition and in-laboratory replication	**Yes (indicate where provided:**	**n/a**
State number of times the experiment was replicated in laboratory	The experiments involved in this study were carried out in the laboratory once. (Methods/ Experimental process/ paragraph 2 to 5)	-
Define whether data describe technical or biological replicates	-	n/a The experiment is an in vitro simulation experiment.

Ethics	**Yes (indicate where provided:**	**n/a**
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	-	n/a The experiment is an in vitro simulation experiment, there are no human research participants.
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	-	n/a The experiment is not involving experimental animals.
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	-	n/a The experiment is not involving specimen and field samples.

Dual Use Research of Concern (DURC)	**Yes (indicate where provided:**	**n/a**
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval	-	n/a The study is not involving any dual use research of concern.

Analysis

Attrition	**Yes (indicate where provided:**	**n/a**
State if sample or data point from the analysis is excluded, and whether the criteria for exclusion were determined and specified in advance.	Method/ Statistical analysis /paragraph 1	-

Statistics	**Yes (indicate where provided:**	**n/a**
Describe statistical tests used and justify choice of tests.	Method/ Statistical analysis /paragraph 1	-

Data Availability	**Yes (indicate where provided:**	**n/a**
State whether newly created datasets are available, including protocols for access or restriction on access.	-	n/a This study does not involve.
If data are publicly available, provide accession number in repository or DOI or URL.	-	n/a The data in our study are not publicly available.
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	-	n/a The data in our study are not publicly available

Code Availability	**Yes (indicate where provided:**	**n/a**

For all newly generated code and software essential for replicating the main findings of the study:		
State whether the code or software is available.	-	n/a The experiment is not involving newly generated code and software essential.
If code is publicly available, provide accession number in repository, or DOI or URL.	-	n/a The experiment is not involving newly generated code and software essential.

Reporting

Adherence to community standards	**Yes (indicate where provided: section/paragraph)**	**n/a**
MDAR framework recommends adoption of discipline-specific guidelines, established and endorsed through community initiatives. Journals have their own policy about requiring specific guidelines and recommendations to complement MDAR.		
State if relevant guidelines (eg., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (eg., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.	ICMJE guidelines were followed, as the journal follows ICMJE recommendations for publication.	

Article information: https://dx.doi.org/10.21037/atm-22-84