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: section/paragraph)	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if	Our research does not involve the use of any antibodies.	No

Cell materials	Yes (indicate where provided: section/paragraph)	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	Our research does not involve the use of any cell lines.	No
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	Our research does not involve any primary cultures.	No

Experimental animals	Yes (indicate where provided: section/paragraph)	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	Our research does not involve any animals.	No
Animal observed in or captured from the field: Provide species, sex and age where possible	Our research does not involve any animals.	No
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	Our research does not involve any animals.	No

Plants and microbes	Yes (indicate where provided: section/paragraph)	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)	Our research does not involve any plants.	No
Microbes: provide species and strain, unique accession number if available, and source	Our research does not involve any microbes.	No

Human research participants	Yes (indicate where provided: section/paragraph)	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	"The study was approved by the Institutional Ethics Committee of the Affiliated Cancer Hospital of Zhengzhou University (Approval number2017407) "in Materials and Methods/paragraph 1.	
Provide statement confirming informed consent obtained from study participants.	"All patients signed informed consent" in Materials and Methods/paragraph 1.	
Report on age and sex for all study participants.	This study does not analyze the data, such as sex and age of the participants. Therefore, the relevant data are not registered.	No

Design

Study protocol	Yes (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	Our research was not the clinical trial.	No

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	The laboratory protocol was mentioned in our manuscript on Materials and Methods/ paragraph 4-9.	

Experimental study design (statistics details)	Yes (indicate where provided: section/paragraph)	n/a
State whether and how the following have been done**,** **or** if they were not carried out.		
Sample size determination	"After randomization, 39 specimens were obtained for subsequent experiments and blinding at the gene mutation level.". in Materials and Methods/ paragraph 1.	
Randomisation	"After randomization, 39 specimens were obtained for subsequent experiments and blinding at the gene mutation level. " in Materials and Methods/ paragraph 1.	
Blinding	"After randomization, 39 specimens were obtained for subsequent experiments and blinding at the gene mutation level. " in Materials and Methods/ paragraph 1.	
Inclusion/exclusion criteria	"Inclusion criteria: 1) All specimens were puncture biopsy. 2) All patients were diagnosed with NSCLC;3) it's need to obtain the enough paraffin samples from the same patient to take the Routine Collection (ROUCO) method and BIOCO method. 4) All patients signed informed consent. "in Materials and Methods/ paragraph 1.	

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	The gene detection kit used in this study had been approved by NMPA, and those had been proved to have good repeatability in our laboratory. The samples collected by BIOCO in this study were all puncture biopsy specimens, and the small samples were not enough to complete the repetitive experiment.	No
Define whether data describe technical or biological replicates	No repetitive experiment was carried out in this study.	No

Ethics	Yes (indicate where provided: section/paragraph)	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	"The study was approved by the Institutional Ethics Committee of the Affiliated Cancer Hospital of Zhengzhou University (Approval number2017407) "in Materials and Methods/ paragraph 1.	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Our research does not involve any animals.	No
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	This study involves paraffin samples of human tissue. It has been approved by the Institutional Ethics Committee of the Affiliated Cancer Hospital of Zhengzhou University (Approval number 2017407) and all the patients have signed informed consent forms. All the experiments were completed in the Department of Molecular Pathology of the Affiliated Cancer Hospital of Zhengzhou University. in Materials and Methods/ paragraph 1.	

Dual Use Research of Concern (DURC)	Yes (indicate where provided: section/paragraph)	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval	BIOCO has applied for a patent for utility model (patent application number is 201820902335.6) in China. In Materials and Methods/ paragraph 3.	

Analysis

Attrition	Yes (indicate where provided: section/paragraph)	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.	"When the tumor cell content is greater than 20%, the next detection step is performed" in Materials and Methods/ paragraph 8	

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	"t test was applied for comparison of DNA extraction efficiency and EGFR testing accuracy between new protocol based on BIOCO and the conventional process based on the Routine Collection (ROUCO). All statistical analyses were conducted using the SPSS statistical software, version 19.0 (SPSS Inc., Chicago, IL, USA). $P < 0.05$ was considered statistically significant." in Materials and Methods/ paragraph 14.	

Data Availability	Yes (indicate where provided: section/paragraph)	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	We did not create any publicly dataset in this study.	No
If data are publicly available, provide accession number in repository or DOI or URL.	We did not create any publicly dataset in this study.	No
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	We did not create any publicly dataset in this study.	No

Code Availability	Yes (indicate where provided: section/paragraph)	n/a
For all newly generated code and software essential for replicating the main findings of the study:		No
State whether the code or software is available.	We did not use any code or software in this study.	No
If code is publicly available, provide accession number in repository, or DOI or URL.	We did not use any code or software in this study.	No

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.	

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