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 available.	Not involved in this article.	**N/A**

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	Not involved in this article.	**N/A**
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	Not involved in this article.	**N/A**

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	Not involved in this article.	**N/A**
Animal observed in or captured from the field: Provide species, sex and age where possible	Not involved in this article.	**N/A**
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	Not involved in this article.	**N/A**

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)	Not involved in this article.	**N/A**
Microbes: provide species and strain, unique accession number if available, and source	Not involved in this article.	**N/A**

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.	Yes. Page 7, line 91-92. Methods/ Study subjects/ paragraph 1	
Provide statement confirming informed consent obtained from study participants.	Yes. Page 7, line 100-101. Methods/ Study subjects/ paragraph 1	
Report on age and sex for all study participants.	Yes. Page 7, line94, line 105-106. Methods/ Study subjects/ paragraph 1	

Design

Study protocol	**Yes (indicate where provided: section/paragraph)**	**n/a**
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	Not involved in this article.	**N/A**

Laboratory protocol	**Yes (indicate where provided: section/paragraph)**	**n/a**
Provide DOI or other citation details if detailed step-by-step protocols are available.	Yes. Page 7-9, line 110-136. Methods/ SNP selection and genotyping/ paragraph 1-3.	

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	Yes. Page 8, line 127-136. Methods/ SNP selection and genotyping/ paragraph 3.	
Randomisation	Not indicated in this article.	N/A
Blinding	Yes. Page 8, line 129-130. Methods/ SNP selection and genotyping/ paragraph 3.	
Inclusion/exclusion criteria	Yes. Page 8, line 133-134. Methods/ SNP selection and genotyping/ paragraph 3.	

Sample definition and in-laboratory replication	**Yes (indicate where provided: section/paragraph)**	**n/a**
State number of times the experiment was replicated in laboratory	Not indicated, data was generated from the HumanExome Beadchip array.	N/A
Define whether data describe technical or biological replicates	Not indicated.	N/A

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.	Yes. Page 7, line91-92. Methods/ Study subjects/ paragraph 1	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	Not involved in this article.	**N/A**
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	Not involved in this article.	N/A

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	Not involved in this article.	**N/A**

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.	Yes. Page 8-9, line 133-134. Methods/ SNP selection and genotyping/ paragraph 3	

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Yes. Page 9, line 138-149. Methods/Statistical analyses/ paragraph 1	

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.	Not involved in this article.	**N/A**
If data are publicly available, provide accession number in repository or DOI or URL.	Yes. Page 9-10, line 154-158, line 160-166. Methods /Bioinformatics analysis&Online Kaplan-Meier plotter /paragraph 1,2,3	
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	No publicly available data are reused.	**N/A**

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:		
State whether the code or software is available.	Not involved in this article.	**N/A**
If code is publicly available, provide accession number in repository, or DOI or URL.	Not involved in this article.	**N/A**

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.	Yes, the paper follows the ICMJE recommendations. STROBE Checklist is provided with the manuscript.	

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

Section/item	Item No	Recommendation	Reported on Page Number/Line Number	Reported on Section/Paragraph
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Title page	Title
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page 3~4/line 7~27	Abstract/Paragraph 2~3
Introduction				
Background/ rationale	2	Explain the scientific background and rationale for the investigation being reported	Page 4~6/line 34~72	Introduction/Paragraph 1~2
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 6/line 74~86	Introduction/Paragraph 3
Methods				
Study design	4	Present key elements of study design early in the paper	Page 7/line 91~108	Methods/ Paragraph 1~2
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Page 7/line 96-106	Methods/ Paragraph 1
Participants	6	(a) ***Cohort study***—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up ***Case-control study***—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 ***Cross-sectional study***—Give the eligibility criteria, and the sources and methods of selection of participants	Page 7/line 91~106	Methods/ Paragraph 1
		(b) ***Cohort study***—For matched studies, give matching criteria and number of exposed and unexposed ***Case-control study***—For matched studies, give matching criteria and the number of controls per case	N/A	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page 7/line 101~105	Methods/ Paragraph 1
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 7/ line 101~105	Methods/ Paragraph 1
Bias	9	Describe any efforts to address potential sources of bias	Page 7/line 105~106	Methods/ Paragraph 1
Study size	10	Explain how the study size was arrived at	Page 8~9/line 127~136	Methods/ Paragraph 5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Page 9/line 139~149	Methods/ Paragraph 6

Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Page 9/line 138~149	Methods/Paragraph 6
		(b) Describe any methods used to examine subgroups and interactions	Page 9/line 145~147	Methods /Paragraph 6
		(c) Explain how missing data were addressed	N/A	N/A
		(d) ***Cohort study***—If applicable, explain how loss to follow-up was addressed ***Case-control study***—If applicable, explain how matching of cases and controls was addressed ***Cross-sectional study***—If applicable, describe analytical methods taking account of sampling strategy	Page 7/line 105~106	Methods/ Paragraph 1
		(e) Describe any sensitivity analyses	N/A	N/A
Results				
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 10/line 169~170	Results/Paragraph 1
		(b) Give reasons for non-participation at each stage	Page 8~9/line133~134	Methods/ Paragraph 6
		(c) Consider use of a flow diagram	N/A	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 10/line 169~174	Results/Paragraph 1
		(b) Indicate number of participants with missing data for each variable of interest	N/A	N/A
		(c) ***Cohort study***—Summarise follow-up time (eg, average and total amount)	N/A	N/A
Outcome data	15*	***Cohort study***—Report numbers of outcome events or summary measures over time	N/A	N/A
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	Page 11~12/line 195~204	Results/Paragraph 4
		Cross-sectional study—Report numbers of outcome events or summary measures	N/A	N/A
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 11/line 185~186	Results/ Paragraph 2
		(b) Report category boundaries when continuous variables were categorized	Page 11/line 195~200	Results/Paragraph 4
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Page 11/line 200~204	Results/paragraph 4
Discussion				
Key results	18	Summarise key results with reference to study objectives	Page 13/line 226-233	Discussion/Paragraph 1
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 16/line 302-308	Discussion/Paragraph 6

Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page 16/line 298~309	Discussion/Paragraph 6
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 13~16/line 234~297	Discussion/Paragraph 2~5
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 17/line 313-317	Acknowledgements/ Paragraph 2

*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.

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*As the checklist was provided upon initial submission, the page number/line number reported may be changed due to copyediting and may not be referable in the published version. In this case, the section/paragraph may be used as an alternative reference.