TRIPOD Checklist: Prediction Model Development

Section	Item	Checklist description	Reported on Page Number/Line Number	Reported on Section/Paragraph
Title and abstract				
Title	1	Identify the study as developing and/or validating a multivariable prediction model, the target population, and the outcome to be predicted.		
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.		
Introduction				
Background and objectives	3a	Explain the medical context (including whether diagnostic or prognostic) and rationale for developing or validating the multivariable prediction model, including references to existing models.		
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.		
Methods				
Source of data	4a	Describe the study design or source of data (e.g., randomized trial, cohort, or registry data), separately for the development and validation data sets, ifapplicable.		
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.		
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.		
	5b	Describe eligibility criteria for participants.		
	5c	Give details of treatments received, if relevant.		
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.		
	6b	Report any actions to blind assessment of the outcome to be predicted.		
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.		
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.		
Sample size	8	Explain how the study size was arrived at.		

Missing data	9	Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.		
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.		
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.		
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.		
Risk groups	11	Provide details on how risk groups were created, if done.		
Results				
Participants	13a	Describe the flow of participants through the study, including the number of participants with and without the outcome and, if applicable, a summary of the follow-up time. A diagram may be helpful.		
	13b	Describe the characteristics of the participants (basic demographics, clinical features, available predictors), including the number of participants with missing data for predictors and outcome.		
Model development	14a	Specify the number of participants and outcome events in each analysis.		
	14b	If done, report the unadjusted association between each candidate predictor and outcome.		
Model specification	15a	Present the full prediction model to allow predictions for individuals (i.e., all regression coefficients, and model intercept or baseline survival at a given time point).		
	15b	Explain how to the use the prediction model.		
Model performance	16	Report performance measures (with CIs) for the prediction model.		
Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).		
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.		
Implications	20	Discuss the potential clinical use of the model and implications for future research.		
Other information				
Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.		
Funding	22	Give the source of funding and the role of the funders for the present study.		

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.	Experiment in vitro (para1/line 133-135)	

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	Experiment in vitro (para1/line 126)	
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		√

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		√
Animal observed in or captured from the field: Provide species, sex and age where possible		√
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		√

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)		√
Microbes: provide species and strain, unique accession number if available, and source		√

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.		√
Provide statement confirming informed consent obtained from study participants.		√
Report on age and sex for all study participants.		√

Design

Study protocol	Yes (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.		√

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.		√

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	Acquisition and processing of data (para 1/line 75-76)	
Randomisation	Acquisition and processing of data (para 1/line 76-77)	
Blinding		√
Inclusion/exclusion criteria		√

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	Statistical analysis (para 1/line 148-149)	
Define whether data describe technical or biological replicates		√

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.		√
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		√
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.		√

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		√

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.		√

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Statistical analysis (para 1/line 146-147)	

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.		√
If data are publicly available, provide accession number in repository or DOI or URL.	Acquisition and processing of data (para 1/line 75)	
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.		√

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:	Statistical analysis (para 1/line 147-148)	
State whether the code or software is available.		√
If code is publicly available, provide accession number in repository, or DOI or URL.		√

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.	YES	
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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