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.	Page 2/Line29-35	Abstract/Para 1
Abstract	2	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	Page2-3/Line 36-53	Abstract/Para 2-4
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.	Page 3-4/Line 58-79	Introduction/Para 1-2
	3b	Specify the objectives, including whether the study describes the development or validation of the model or both.	Page 4/Line 80-83	Introduction/Para 3
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, if applicable.	Page 5/Line 86-100	Materials and methods/Para 1
	4b	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	Page 6-7/Line 124-140	Materials and methods/Para 3
Participants	5a	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	Page 5/Line 88-100 Page 7-8/Line 142-156 Page 8-9/Line 158-179	Materials and methods/Para 1 Materials and methods/Para 4-5
	5b	Describe eligibility criteria for participants.	Page 5/Line 90-96	Materials and methods/Para 1
	5c	Give details of treatments received, if relevant.	Page 5-6/Line 101-121	Materials and methods/Para 2
Outcome	6a	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	Page 8-9/Line 158-179	Materials and methods/Para 5
	6b	Report any actions to blind assessment of the outcome to be predicted.	Page 8/Line 166-168	Materials and methods/Para 5
Predictors	7a	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	Page 10/Line 205-211	Materials and methods/Para 8
	7b	Report any actions to blind assessment of predictors for the outcome and other predictors.	Page 10/Line 205-211	Materials and methods/Para 8
Sample size	8	Explain how the study size was arrived at.	Page 5/Line 86-100	Materials and methods/Para 1

Missing data	9	Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.	Page 6/Line 129-130	Materials and methods/Para 3
Statistical analysis methods	10a	Describe how predictors were handled in the analyses.	Page 9/Line 171-179 Page 9-10/Line 194-204	Materials and methods/Para 5 Materials and methods/Para 7
	10b	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	Page 10/Line 205-211	Materials and methods/Para 8
	10d	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	Page 9-10/Line 194-204 Page 10/Line 226-228	Materials and methods/Para 7,11
Risk groups	11	Provide details on how risk groups were created, if done.	N/A. The present study did not create risk groups.	
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.	Page 12-13/Line 254-290 Table1, 2	Results/Para 1-6
	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.	Page 12-13/Line 254-263	Results/Para 1
Model development	14a	Specify the number of participants and outcome events in each analysis.	Table 3, 4	Table 3,4
	14b	If done, report the unadjusted association between each candidate predictor and outcome.	Table 3,4	Table 3,4
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).	Supplementary Table	Supplementary Table
	15b	Explain how to the use the prediction model.	N/A. The Cox regression model which included the immune score status of primary tumour fail to predict the postoperative survivals in patients underwent liver resection.	
Model performance	16	Report performance measures (with CIs) for the prediction model.	Page14-15/Line 292-316 Table 3, 4	Results/Para 7,8 Table 3, 4
Discussion				
Limitations	18	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	Page 19-20/Line 414-421	Discussion/Para 5
Interpretation	19b	Give an overall interpretation of the results, considering objectives, limitations, and results from similar studies, and other relevant evidence.	Page 18/Line 350-358	Discussion/Para 1
Implications	20	Discuss the potential clinical use of the model and implications for future research.	Page 19-20/Line 385-413	Discussion/Para 3,4
Other information				

Supplementary information	21	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	Page 20-21/Line 446-451	Data availability statements/Para 1 Compliance with Ethical Standards/Para 1
Funding	22	Give the source of funding and the role of the funders for the present study.	Page 21/Line 459-462	Funding/Para 1

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