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

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract		
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2~3, 5	Section "Abstract"
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	6~7	Section "Introduction"
Objectives	3	State specific objectives, including any prespecified hypotheses	2, 5, 7	Section "Abstract-Background", and paragraph 4 of section "Introduction"
Methods				
Study design	4	Present key elements of study design early in the paper	7	Section "Study subjects and design"
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection		
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		
		(*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		
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable		
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	*7~8*	*Section "Study subjects and design" and "Laboratory tests,*

				detection of serum tumor markers and calculation of diagnostic models”
Bias	9	Describe any efforts to address potential sources of bias	7	Exclusion Criteria in the section “Study subjects and design”
Study size	10	Explain how the study size was arrived at		All HCC, CCA and benign liver diseases patients who had AFP, AFP-L3%, PIVKA-II, CEA, CA19-9, PLT, TBIL and ALB tests results (HCC and CCA patients who had tests results before treatments) and did not meet the exclusion criteria (see section “Study subjects and design”) in the Sun Yat-Sen Memorial Hospital of Sun Yat-Sen University within one year (February 2023 to January 2024) were included for the analysis.

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Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8~9	Section “Statistical Analysis”
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8~9	Section “Statistical Analysis”
		(*b*) Describe any methods used to examine subgroups and interactions		
		(*c*) Explain how missing data were addressed		
		(*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		
		(*e*) Describe any sensitivity analyses		
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		
		(b) Give reasons for non-participation at each stage		
		(c) Consider use of a flow diagram		
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	7, 9, 19~20	Section “Study subjects and design”, section “Clinical data, levels of liver cancer serum tumor markers and diagnostic models in all study groups”, and Table 1
		(b) Indicate number of participants with missing data for each variable of interest		
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)		
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time		
		Case-control study—Report numbers in each exposure category, or summary measures of exposure		
		Cross-sectional study—Report numbers of outcome events or summary measures		
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		
		(*b*) Report category boundaries when continuous variables were categorized	21~29	Cut-off values of tumour markers and diagnostic models were shown in Table 2~4

	(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period

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Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses		
Discussion				
Key results	18	Summarise key results with reference to study objectives	3, 5, 12, 14~15	Section “Abstract-Conclusions”, paragraph 1 of section “Discussion”, and section “Conclusions”
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	14	Paragraph 5 of section “Discussion”
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12~15	Section “Discussion” and “Conclusions”
Generalisability	21	Discuss the generalisability (external validity) of the study results	14~15	Section “Conclusions”
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	1	Section “Required Statements”

*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.