Appendix 1: 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	1	
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1	
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	2	
Objectives	3	State specific objectives, including any prespecified hypotheses	2	
Methods				
Study design	4	Present key elements of study design early in the paper	2-4	
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	2-4	
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	2-4	
		(*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	2-4	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	2-4	
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	2-4	
Bias	9	Describe any efforts to address potential sources of bias	2-4	
Study size	10	Explain how the study size was arrived at	2-4	

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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	2-4
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	2-4
		(*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	4-7
		(b) Give reasons for non-participation at each stage	4-7
		(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	4-7
		(b) Indicate number of participants with missing data for each variable of interest	4-7
		(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	4-7
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	4-7
		(*b*) Report category boundaries when continuous variables were categorized	4-7
		(*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	7-9
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	7-9
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	7-9
Generalisability	21	Discuss the generalisability (external validity) of the study results	7-9
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	

*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.

Appendix 2: Assumptions Testing for binary logistic regression

1. Binary Dependent Variable

Explanation: Binary logistic regression requires the dependent variable to have two categories to fit a binary outcome model appropriately.

Testing Method: We verified that the dependent variable (participation in simulation) was coded as a binary outcome with two categories: "Have not participated" and "Have participated."

Conclusion: This assumption was met, as the dependent variable was confirmed to be binary.

2. Independence of Observations

Explanation: Logistic regression assumes that each observation is independent of the others, meaning there are no repeated measurements or clustered data.

Testing Method: Unique participant identifiers were used to confirm that each observation represented a unique individual without repeated measures or matched data.

Conclusion: This assumption was satisfied, as each participant provided a single, independent observation.

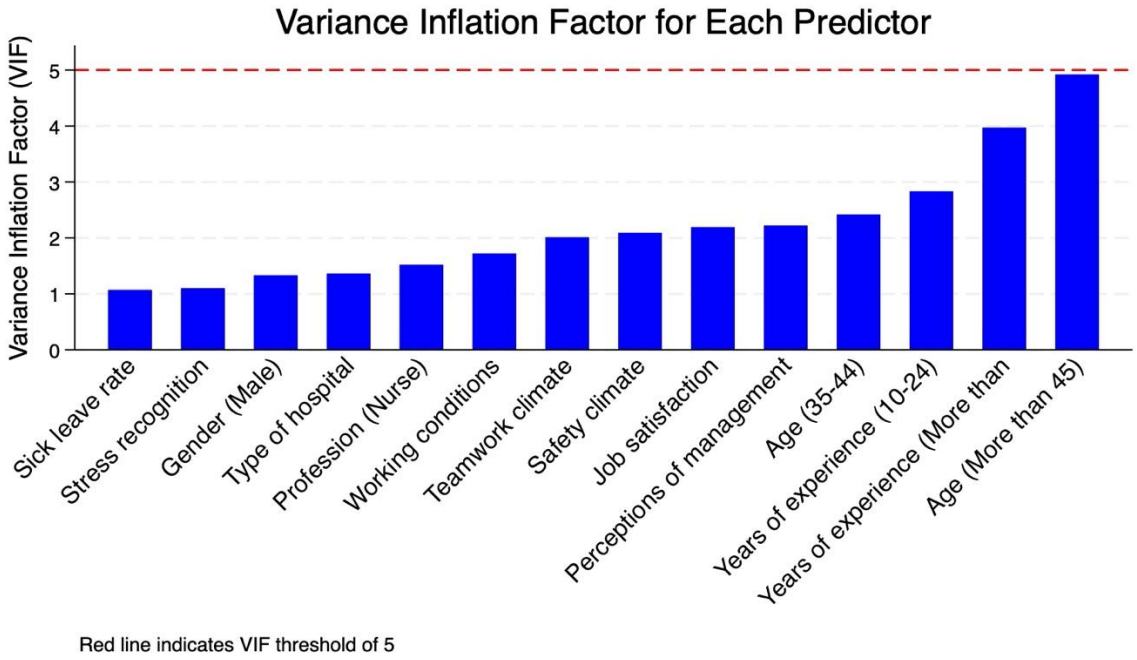
3. No Perfect Multicollinearity Among Independent Variables

Explanation: Logistic regression requires that independent variables not be highly correlated, as multicollinearity inflates standard errors and can reduce the model's interpretability.

Testing Method: We calculated the Variance Inflation Factor for each predictor in the model. VIF values below five were considered acceptable, indicating a low correlation among predictors.

Conclusion: VIF values were within acceptable limits, indicating no multicollinearity concerns among independent variables.

Illustration of Variance Inflation Factors:



4. Linearity of the Logit for Continuous Predictors

Explanation: Logistic regression assumes that each continuous predictor has a linear relationship with the log odds of the outcome variable.

Testing Method: We tested for linearity by including quadratic terms for continuous predictors, such as sick leave rate and dimensions of patient safety culture. The patient safety culture dimensions assessed were teamwork climate, safety climate, job satisfaction, stress recognition, perceptions of management, and working conditions, with mean values as follows:

- **Sick Leave Rate**: Mean = 3.36
- **Teamwork Climate**: Mean = 86.76
- **Safety Climate**: Mean = 74.36
- **Job Satisfaction**: Mean = 83.83
- **Stress Recognition**: Mean = 68.35

- **Perceptions of Management**: Mean = 67.13
- **Working Conditions**: Mean = 79.61

The significance of the quadratic terms was evaluated to determine if non-linear relationships were present.

Conclusion: The quadratic term for sick leave rate was statistically significant, indicating a non-linear relationship with participation. Including this term in the model allows us to accurately capture the curved effect of sick leave on participation rather than assuming a straight-line relationship. By retaining the quadratic term, we ensure the model appropriately reflects this non-linear relationship, meeting the linearity assumption and providing a more accurate fit for the data. The patient safety culture dimensions also demonstrated a linear relationship with the log odds, fulfilling this assumption.

a) 5. Adequate Sample Size

Explanation: Logistic regression typically requires a large sample size to produce stable estimates. A common guideline is to have a minimum of 10 cases for the least frequent outcome per predictor.

Testing Method: Given the number of predictors, the sample size of 1,825 participants was assessed against the minimum requirement for stability.

Conclusion: The sample size was adequate, meeting the guideline for reliable estimation.

Summary Table for assumption testing results

Assumption	Testing method	Key result(s)	Conclusion
Binary dependent variable	Confirmed that the dependent variable variable is binary with two categories	The dependent variable was correctly coded with two categories: participation and no participation	Met
Independence of observations	Verified unique identifiers to confirm each observation is independent	Each participant provided a single, independent observation	Met

No perfect Mmlticollinearity	Checked Variance Inflation Factor values for each predictor	Variance Inflation Factor values were below 5, indicating low multicollinearity	Met
Linearity of the logit for continuous predictors	Tested for linearity by including quadratic terms for continuous predictors like sick leave rate	Quadratic term for sick leave was significant, indicating a non-linear relationship	Retained the quadratic term to capture non-linearity; assumption met with this adjustment
Adequate sample size	Ensured sufficient cases per predictor based on guideline of 10 cases for the least frequent outcome	Sample size of 1,825 participants with adequate cases per predictor	Met