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

	Item No	Recommendation
Title and abstract	1	(*a*) Title and Abstract; explicitly described as a cross-sectional survey
		(*b*) Abstract; covers background, objectives, sampling, core KAP-TAM scores, regression predictors, barriers, and clinical implications
Introduction		
Background/rationale	2	Introduction; elaborates clinical value of smart nursing devices in neurorehabilitation, and the lack of integrated TAM-KAP multi-centre surveys
Objectives	3	Abstract (Aims) and final paragraph of Introduction; objective: to investigate nurses' knowledge, attitudes, and usage behaviours, and to test the dual-pathway hypothesis of the combined TAM-KAP framework
Methods		
Study design	4	Section 1 Subjects and Methods, opening paragraph; clearly identifies a cross-sectional questionnaire design
Setting	5	Section 1.1 Study subjects; data collected January–May 2026 across 20 hospitals in 16 Chinese provinces, neurology and rehabilitation wards
Participants	6	Section 1.1 Inclusion/exclusion criteria; convenience sampling of registered nurses with ≥3 months specialty experience; excluded rotating, training, or long-leave nurses
Variables	7	Section 1.4 Research tools; six core dimensions defined: Knowledge, Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Usage Attitude, Behavioural Intention, Actual Usage Behaviour; complete Likert scoring rules provided
Data sources/ measurement	8*	Sections 1.4.1–1.4.6; self-designed general, knowledge, and behaviour questionnaires plus adapted TAM scale; pilot test among 30 nurses; Cronbach's α total = 0.952, S-CVI/Ave = 0.92; identical scales used for neurology and rehabilitation nurses
Bias	9	Section 1.5 Data collection; electronic informed consent mandatory before questionnaire access; single IP one-response restriction; minimum 3-minute completion threshold; careless-response questionnaires excluded; convenience sampling bias addressed in Limitations
Study size	10	Section 1.3 Sample size estimation; G*Power 3.1 software; two statistical tests (multiple linear regression, one-way ANOVA); f^2=0.15, f=0.25, α=0.05, power=0.80, 20% invalid response reserve; target ≥200 participants, final valid n=219
Quantitative variables	11	All Likert dimension scores analysed as continuous variables; demographic factors (age, education, title, training frequency) categorised into standard subgroups for inter-group comparison
Statistical methods	12	(*a*) Section 1.6 Statistical methods; SPSS 26.0; descriptive statistics, univariate group comparison, Pearson correlation, hierarchical multiple linear regression to resolve multicollinearity
		(*b*) One-way ANOVA / Kruskal-Wallis H test for demographic subgroups; Pearson correlation matrix for six KAP-TAM dimensions
		(*c*) All questionnaire items set as mandatory; 100% valid response rate, no missing data across all variables
		(*d*) Convenience sampling acknowledged; stratified subgroup analyses conducted by department and training frequency; sampling generalisability discussed in Limitations
		(*e*)Hierarchical regression Step 2 (adding PEOU to PU-only model) as sensitivity test to verify stable predictive effect of perceived usefulness despite multicollinearity

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Results		
Participants	13*	(a) Section 2.1 General characteristics; 219 valid questionnaires collected; 120 neurology nurses (54.79%), 99 rehabilitation nurses (45.21%); Table 1
		(b) Section 1.5 Data collection; questionnaires completed <3 minutes or with identical repetitive answers excluded; zero discarded forms in final dataset
		(c) Manuscript Figure 1: flow chart showing sampling, screening and final valid sample n=219
Descriptive data	14*	(a) Table 1; age, education background, professional title, specialty working years, ward equipment allocation, training frequency; inter-group comparison of total KAP scores
		(b) Zero missing data for all dimensions, stated in Section 2.1
Outcome data	15*	Table 2
Main results	16	(*a*) Table 3 Pearson correlation matrix (unadjusted r values); Table 4 hierarchical regression standardised β; VIF values reported to assess collinearity between PU and PEOU
		(*b*) Training frequency divided into five ordered groups; age split into four brackets as listed in Table 1
		(*c*) Not applicable; cross-sectional association study without incidence estimation
Other analyses	17	Tables 1–7
Discussion		
Key results	18	Sections 3.1–3.4 Discussion opening; summarises insufficient knowledge, positive usage attitudes, prominent intention-behaviour gap, perceived usefulness as core predictor, training frequency as the only significant demographic factor
Limitations	19	Section 3.8 Limitations; cross-sectional design prohibits causal inference; convenience sampling selection bias; self-report social desirability bias; severe multicollinearity between PU and PEOU; no organisational-level variables measured
Interpretation	20	Full Discussion section; interprets intention-behaviour gap and dual TAM-KAP pathway; compares results with international digital rehabilitation nursing studies; avoids overstating causal relationships
Generalisability	21	Section 3.7 Practice implications & 3.8 Limitations; sample mainly tertiary hospital nurses; results cannot be directly generalised to primary/secondary care institutions; findings specific to neurological and rehabilitation nursing
Other information		
Funding	22	Acknowledgements section; declare funding and confirm funders had no influence on all research and writing processes

*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.