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

	Item No.	Recommendation	Location in manuscript	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	Title; Abstract	Title: "…: a latent class analysis"; Abstract (Methods): "In this cross-sectional survey (October–December 2025), 12,115 community-dwelling adults aged ≥60 years in 39 subdistricts…"
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	Abstract	Structured abstract (Background/Objectives, Methods, Results, Conclusions) reporting design, setting, sample, indicators, prevalences, latent classes with the range of class size across closely agreeing specifications, adjusted odds ratios with 95% CIs and cautious implications.
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Section 1	Section 1: burden of depressive symptoms, malnutrition and falls in ageing Thailand; shared risk factors; limits of variable-centred studies; gap in Thai community-based long-term care.
Objectives	3	State specific objectives, including any prespecified hypotheses	Section 1 (last paragraph)	Section 1, last paragraph: objectives (1)–(4) and the prespecified hypothesis ("We hypothesised that a distinct subgroup…would be identifiable and that membership would be socially patterned").
Methods				
Study design	4	Present key elements of study design early in the paper	Abstract; Section 2.1	Abstract (Methods); Section 2.1: cross-sectional community survey reported according to STROBE.
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Sections 2.1–2.3	Sections 2.1–2.3: 39 subdistricts of Maha Sarakham Province; home interviews October–December 2025; interviewer training October 2025; registry population as of 30 April 2025.
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants.	Sections 2.3–2.4; Figure 1	Section 2.3: purposive selection of subdistricts; minimum sample by Yamane's formula; random selection from the

		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		registry of older residents; additional participants beyond the minimum. Section 2.4: eligibility and exclusion criteria.
		(*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	—	Not applicable (cross-sectional study)
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Sections 2.6.1–2.6.3	Section 2.6: latent class indicators (9Q, MNA-SF, calf circumference, recent fall, gait impairment) with cut-offs; covariates in four a-priori blocks; concurrent external correlates (MNA items P, G, N).
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	Sections 2.2, 2.5–2.6	Sections 2.2, 2.5–2.6: interviewer-administered questionnaire (official Thai 9Q, MNA, 3A–2S–1F assessment, Morse items, home checklist); IOC 0.991 for item relevance; reliability considered instrument by instrument (9Q Cronbach's α 0.921 in the present sample); interviewer training of one day including supervised practice of anthropometric measurement (2.2); anthropometry by trained interviewers with supplied equipment; same procedures in all subdistricts.
Bias	9	Describe any efforts to address potential sources of bias	Sections 2.2–2.3, 2.5, 2.8; 4.2, 4.3, 4.6	Random selection from the registry (2.3); standardised training and instruments (2.2, 2.5); cluster-robust inference and design-weighted estimates (2.8); bias-adjusted three-step estimators for classification error; SA1–SA10;

				bounding analysis of the 478 interviews beyond the minimum sample (2.8.5, 3.7); recall, social desirability and interviewer effects discussed (4.2, 4.6).
Study size	10	Explain how the study size was arrived at	Section 2.3; Table S1	Section 2.3 and Table S1: Yamane's formula (e = 0.05) applied to 60,478 registered older adults, giving a planned minimum of 12,039 (11,685 in the 39 surveyed subdistricts).

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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	Section 2.6; Table 1	Section 2.6: 9Q (0–6, 7–12, ≥13) and MNA-SF (12–14, 8–11, 0–7) categorised by official cut-offs; age 60–69/70–79/≥80; income bands; chronic conditions 0/1/≥2; study-defined polypharmacy (>3 medications/day); behaviour thresholds; home hazard score as a count.
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	Sections 2.8.1–2.8.6	Section 2.8: cluster-robust prevalence; logistic and log-linear models; LCA (1–6 classes, 500 random starts; selected model re-estimated with 1,000 starts; fit criteria, BLRT, BVR); nonparametric multilevel LCA; bias-adjusted ML three-step multinomial models (Models 1–4); primary CIs from jackknife standard errors with t(38); BCH and ML three-step estimators for external correlates; cross-check against StepMix.
		(*b*) Describe any methods used to examine subgroups and interactions	Sections 2.8.1–2.8.3	Section 2.8: three-way interaction of the conditions in log-linear models (ratio of odds ratios; bootstrap Wald and Rao–Scott tests), with and without age and sex; latent subgroups by LCA; between-subdistrict heterogeneity by multilevel LCA.
		(*c*) Explain how missing data were addressed	Sections 2.4, 2.7	Sections 2.4 and 2.7: no missing values; all 12,115 participants had complete data and no records were excluded.
		(*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	Sections 2.3, 2.8.1, 2.8.3–2.8.4	Cross-sectional: subdistricts treated as clusters in all inference (Taylor-linearised and sandwich SEs, cluster bootstrap, jackknife); estimates weighted to the registered older population (2.3, 2.8).
		(*e*) Describe any sensitivity analyses	Section 2.8.5; Tables S6, S8, S10	Section 2.8 (Sensitivity analyses): SA1–SA10 (alternative indicators, weighting, exclusion of the municipality, four classes, multilevel model, local dependence); nine-item hazard score; model without tooth-brushing; bounding analysis of the additional interviews (2.8.5).
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	Section 2.3; Figure 1; Table S1	Section 2.3 and Figure 1: 40 subdistricts selected, 1 not surveyed; at least 12,125 invited; 10 declined; 12,115 interviewed and analysed; per-subdistrict numbers in Table S1.
		(b) Give reasons for non-participation at each stage	Section 2.3;	Section 2.3 and Figure 1: one subdistrict not surveyed; 10 declined; no non-

			Figure 1	contact, ineligibility or replacement reported by interviewers or coordinators (not recorded systematically).
		(c) Consider use of a flow diagram	Figure 1	Figure 1. Flow of subdistricts and participants.
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Section 3.1; Table 1	Section 3.1 and Table 1: demographic, socioeconomic, social, health, behavioural and home-environment characteristics, overall and by number of conditions.
		(b) Indicate number of participants with missing data for each variable of interest	Sections 2.4, 2.7	No missing data for any variable analysed (Sections 2.4, 2.7).
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)	—	Not applicable (cross-sectional study)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	—	Not applicable (cross-sectional study)
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	—	Not applicable (cross-sectional study)
		Cross-sectional study—Report numbers of outcome events or summary measures	Sections 3.2, 3.4; Figure 2; Table S2	Section 3.2, Figure 2 and Table S2: n and % (95% CI) for each condition and number of conditions; Section 3.4: latent class sizes (model-estimated and modal).
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	Table 1; Sections 3.2, 3.5; Figure 4; Table S5	Table 1 (unadjusted distributions); pairwise aORs adjusted for age, sex and the third condition (3.2); sequential models from age–sex-adjusted (Model 1) to fully adjusted (Model 4) aORs with 95% CIs (3.5, Figure 4, Table S5); covariates specified a priori (2.6.2).
		(*b*) Report category boundaries when continuous variables were categorized	Section 2.6; Table 1	Category boundaries given in Section 2.6 and Table 1.
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Sections 3.4, 3.6; Figure 3	Absolute measures reported: class sizes (3.4) and class-specific prevalences with percentage-point differences for external correlates (3.6). Translation into absolute risk over time not applicable (cross-sectional).

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Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Sections 3.2, 3.4, 3.5, 3.7; Tables S6–S10	Three-way interaction (3.2, Table S7A); number of conditions by latent class (3.4, Table S7B); agreement of count-based rules with class membership (3.7, Table S7C); cross-check against StepMix (2.8.6, 3.5, Table S7D); between-subdistrict heterogeneity and SA1–SA10 (3.7, Tables S6 and S8); bounding analysis of the additional interviews (3.7); jackknife inference and covariate sensitivity (3.5, Tables S9 and S10).
Discussion				
Key results	18	Summarise key results with reference to study objectives	Section 4.1	Section 4.1 (Principal findings).
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	Section 4.6 (also 4.2, 4.3)	Section 4.6, with the likely direction of each bias: cross-sectional design; purposive sites and additional interviews (bounding analysis); under-reporting of falls (direction of bias discussed in 4.2); fall-related mobility indicator; calf cut-off; MNA-SF overlap and class-size uncertainty; interviewer effects; shared-method correlates; screening results without referral; exclusion of severe dementia (likely underestimation).
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Sections 4.1–4.5, 5	Sections 4.1–4.5: associations described as non-causal and conditional; class size model-dependent and conditional on indicators (4.3); population-level rather than individual use (4.3); implications presented as hypotheses (4.5); comparison with previous studies; interpretation by magnitude and precision rather than P values.
Generalisability	21	Discuss the generalisability (external validity) of the study results	Sections 2.3, 4.6	Section 2.3: target population is the registered older population of the 39 study subdistricts; Section 4.6: inference restricted to the older population of the 39 study subdistricts; not generalised to the province or Northeast Thailand.
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	Funding statement (back matter)	Funding: Mahasarakham University (grant no. 6911029); data collection additionally supported by the Thai Health Promotion Foundation (ThaiHealth) through the project Network Collaboration to Drive Maha Sarakham toward a Healthy Province (project no. 68-00185); the funders had no role in the design of the analysis, interpretation, writing or decision to submit.

*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.