

A Weighted Subjective Memory Questionnaire (SMCQ-R) for Screening Early Symptomatic Alzheimer’s Disease

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INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Subjective memory complaints (SMCs) are among the earliest signs of Alzheimer's disease (AD), but their clinical utility is limited by high prevalence among cognitively normal (CN) older adults, which reduces specificity. The original 14-item Subjective Memory Complaints Questionnaire (SMCQ) offers a brief, self-administered screening tool, but assigns equal weight to all items and includes several items frequently endorsed by CN individuals (e.g., "memory worse than 10 years ago"), limiting diagnostic accuracy. We applied LASSO regression-based item selection and empirical weighting to develop a revised SMCQ (SMCQ-R) and evaluated whether it improves discrimination between early symptomatic AD and CN individuals.	Participants: Development dataset — 252 AD patients and 252 age/sex-matched CN individuals (KLOSCAD cohort and SNUBH Dementia Clinic). Independent validation dataset — 114 AD patients and 359 CN individuals (Korean Trial-Ready Registry, TRR). Item selection & weighting: Excluded SMCQ items endorsed by >33% of CN participants (3 items removed) Applied LASSO regression with 10-fold cross-validation on remaining 11 items Entered retained items into multivariable logistic regression Derived integer weights by scaling coefficients to the smallest positive coefficient → final 9-item scale, score range 0–30 Analysis: ROC analysis (AUC, DeLong's test) compared SMCQ vs. SMCQ-R vs. MMSE. Hierarchical logistic regression assessed incremental value of adding SMCQ/SMCQ-R to MMSE.	-The 9-item SMCQ-R (score range 0–30) retained items assessing: comparative memory decline, recent events, conversations, appointments, facial recognition, frequency of losing objects, getting lost near home, and remembering children's phone numbers; the shopping-list item was reverse-coded. -Development dataset: SMCQ-R showed higher AUC than the original SMCQ (0.868 vs. 0.811, $p < 0.001$); accuracy improved (0.808 vs. 0.758, $p < 0.001$), driven by a significant gain in sensitivity (0.806 vs. 0.675, $p < 0.001$) with comparable specificity -Validation dataset: SMCQ-R showed significantly higher specificity (0.850 vs. 0.813, $p = 0.031$) and modestly better accuracy (0.816 vs. 0.789, $p = 0.061$), with comparable AUC (0.833 vs. 0.821) and identical sensitivity (0.711 for both) -Incremental value: MMSE alone achieved 86.0% classification accuracy. Adding the original SMCQ improved this to 88.0%. Adding the SMCQ-R achieved the highest accuracy, 89.5% (vs. MMSE alone, $\chi^2 = 5.69$, $p = 0.017$), with the best model fit (Nagelkerke $R^2 = 0.80$) -Both SMCQ and SMCQ-R generalized well across demographically distinct development and validation cohorts (all $p > 0.05$ for AUC, accuracy, sensitivity, and specificity)	The SMCQ-R is a brief, 9-item, evidence-based refinement of subjective memory assessment that improves diagnostic specificity over the original 14-item SMCQ while reducing item burden. Combined with the MMSE, it provides incremental value for early symptomatic AD screening, supporting its potential role in primary care and community settings. Items capturing episodic and spatial memory failures (e.g., getting lost, recent events) carried the highest diagnostic weight, consistent with early hippocampal-entorhinal involvement in AD pathology, while routine/procedural memory items showed weak or inverse associations.	-Youn JC, Kim KW, Lee DY, et al. Development of the Subjective Memory Complaints Questionnaire. <i>Dement Geriatr Cogn Disord</i>. 2009;27:310-317. -Han JW, Kim TH, Kwak KP, et al. Overview of the Korean longitudinal study on cognitive aging and dementia. <i>Psychiatry Investig</i>. 2018;15:767-774. -Choi YJ, Oh DJ, Han JW, Kim KW. Development and validation of a weighted Subjective Memory Complaints Questionnaire (SMCQ-R) for early symptomatic Alzheimer's disease detection. <i>J Alzheimers Dis</i>. 2025. DOI: 10.1177/13872877251390383. ACKNOLWEDGEMENT This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (RS-2023-BR077158). ALZHEIMER'S ASSOCIATION 