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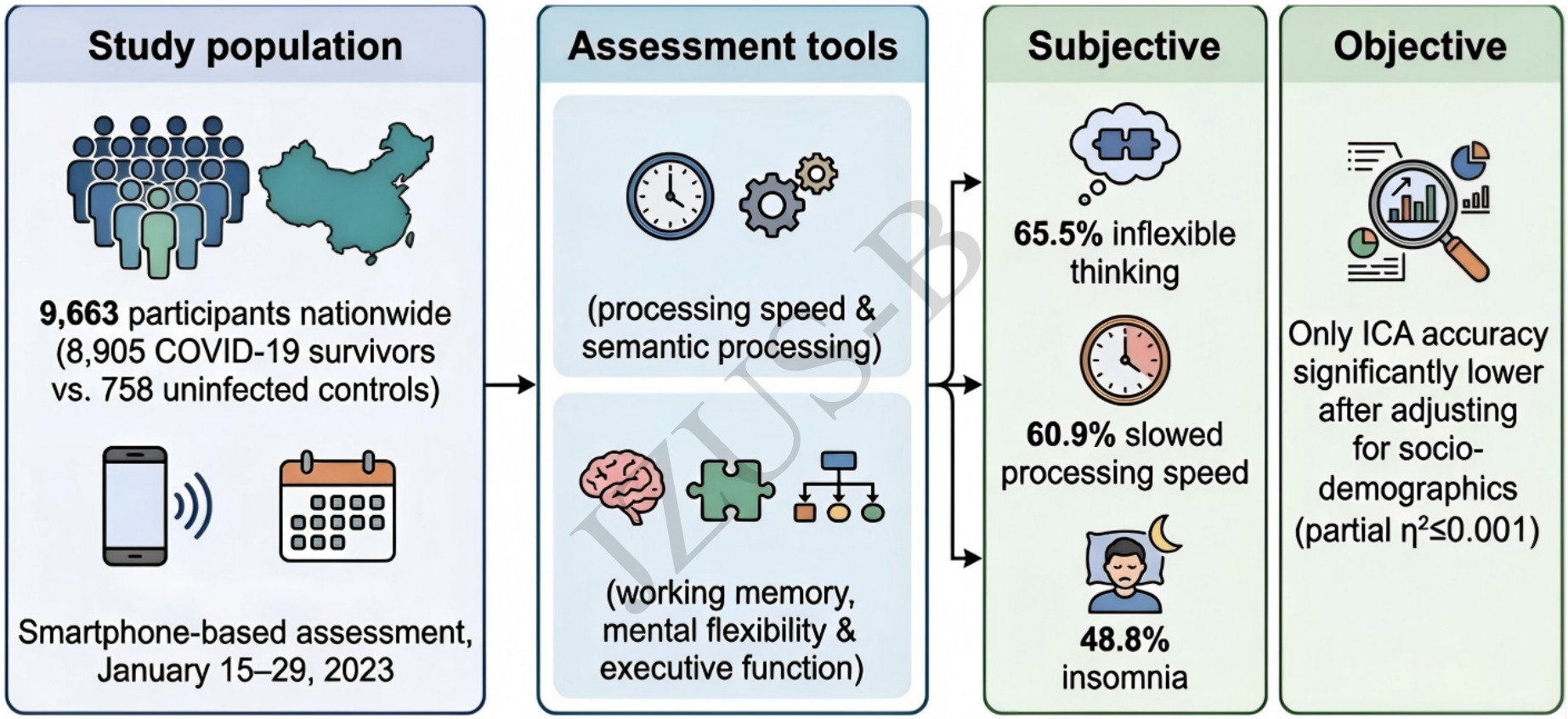
Cognitive function among COVID-19 survivors in the subacute phase during the epidemic of Omicron variant in China

Key words: Cognitive function; Coronavirus disease 2019 (COVID-19); Risk factor; Omicron variant; Subacute phase

Graphical Abstract



Research Summary

Background: After China relaxed COVID-19 prevention measures in December 2022, over 82% of the population was infected with the Omicron variant. The impact on cognitive function in this population remained unknown.

Methods: A large-scale nationwide smartphone-based online cognitive assessment was conducted among 9,663 participants using the Integrated Cognitive Assessment (ICA) and the Number Ordering Test (NOT).

Results: Over 60% of COVID-19 survivors reported subjective cognitive complaints, yet objective cognitive differences were subtle after controlling for socio-demographics. Insomnia after recovery was the strongest and most consistent predictor of poor cognitive performance across all domains.

Conclusion: During the Omicron wave, subjective cognitive complaints were highly prevalent but objective cognitive impact was modest. Insomnia represents a critical modifiable target for intervention.

Innovation points

First large-scale nationwide cognitive assessment of COVID-19 survivors during the Omicron variant epidemic in China (n = 9,663 across all 31 provinces).
Smartphone-based neuropsychological testing enabled rapid, large-scale data collection within 15 days, demonstrating a scalable model for cognitive screening in future public health emergencies.
Revealed a striking discrepancy between high rates of subjective cognitive complaints (>60%) and minimal objective cognitive differences, suggesting that subjective complaints may be driven more by sleep disturbance and psychological distress than by direct neurocognitive damage.
Identified insomnia as the strongest modifiable risk factor for cognitive dysfunction across all assessed domains, supporting targeted sleep interventions (e.g., CBT-I) as a priority in post-COVID-19 rehabilitation.