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Corresponding author:

Lan Ge

langer_2025icu@163.com

Author Affiliation:Longquan Campus of Hebei
Provincial People's Hospital.**Multicomponent Lifestyle Interventions for Adults With Overweight or Obesity After Stroke or Transient Ischemic Attack: A Systematic Review and Meta-analysis**

Ge, L; Ma, HY; Li, F; Sun, HQ.

ADMINISTRATIVE INFORMATION**Support** - This study did not receive any funding in any form.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2026100066**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 14 October 2026 and was last updated on 14 October 2026.**INTRODUCTION**

Review question / Objective Multicomponent lifestyle interventions may improve cardiovascular risk after stroke or transient ischemic attack (TIA), but effects in adults with overweight or obesity remain uncertain. This study is aim to evaluate effects on body mass index (BMI), systolic blood pressure (SBP), and low-density lipoprotein cholesterol (LDL-C) after stroke or TIA.

Condition being studied With a history of ischemic stroke, hemorrhagic stroke, or TIA and coexisting overweight or obesity.

METHODS

Participant or population Adults aged 18 years or older with a history of ischemic stroke, hemorrhagic stroke, or TIA and coexisting overweight or obesity.

Intervention A multicomponent lifestyle intervention delivered by health professionals or a multidisciplinary team, including at least two prespecified intervention components comprising dietary counseling or energy restriction, a specific dietary pattern, structured aerobic, resistance, or adapted physical activity, behavioral therapy, or cardiovascular risk-factor management, and lasting at least 4 weeks.

Comparator Usual care, minimal intervention, or another control condition that did not meet the definition of a multicomponent lifestyle intervention.

Study designs to be included Randomized controlled trial, including pilot randomized trials.

Eligibility criteria Studies were eligible if they met all of the following criteria:

Design: randomized controlled trial, including pilot randomized trials.

Population: adults aged 18 years or older with a history of ischemic stroke, hemorrhagic stroke, or

TIA and coexisting overweight or obesity, defined as BMI ≥ 25 kg/m² using international criteria or BMI ≥ 24 kg/m² using Asian criteria. Individuals with severe aphasia or dementia that precluded participation in the intervention were excluded.

Intervention: a multicomponent lifestyle intervention delivered by health professionals or a multidisciplinary team, including at least two prespecified intervention components comprising dietary counseling or energy restriction, a specific dietary pattern, structured aerobic, resistance, or adapted physical activity, behavioral therapy, or cardiovascular risk-factor management, and lasting at least 4 weeks. The term multicomponent indicated the inclusion of two or more active lifestyle or risk-factor management components and did not require every intervention to include all listed domains.

Comparator: usual care, minimal intervention, or another control condition that did not meet the definition of a multicomponent lifestyle intervention.

Outcomes: change in at least one of the following: body weight, SBP, BMI, or LDL-C. Prespecified secondary outcomes were waist circumference, body-fat percentage, neurological or functional measures (including the National Institutes of Health Stroke Scale and Barthel Index), total cholesterol, triglycerides, high-density lipoprotein cholesterol, blood glucose or glycated hemoglobin, quality of life, and adverse events such as falls, cardiovascular events, or exercise-related injury.

Information sources PubMed, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL), and Web of Science.

Main outcome(s) Prespecified outcomes were changes from baseline to follow-up in: (1) weight-related measures—body weight, BMI, waist circumference, and body-fat percentage; (2) cardiometabolic measures—SBP, LDL-C, total cholesterol, triglycerides, high-density lipoprotein cholesterol, blood glucose, and glycated hemoglobin; and (3) functional and safety outcomes—neurological or functional scores, quality of life, and adverse events. Only SBP, BMI, and LDL-C were reported sufficiently consistently for quantitative synthesis. Other outcomes were not pooled because of insufficient reporting, inconsistent definitions, or incompatible follow-up time points and were treated as evidence gaps. Values reported in alternative units were converted to standard units using established conversion factors.

Quality assessment / Risk of bias analysis The Cochrane Risk of Bias 2 tool (RoB 2) was used to

assess the methodological quality of included trials. The domains were bias arising from the randomization process, bias due to deviations from intended interventions, bias due to missing outcome data, bias in outcome measurement, and bias in selection of the reported result. Each domain was judged as low risk, some concerns, or high risk. Overall risk of bias was determined using the RoB 2 algorithm: low risk when all domains were low risk; some concerns when at least one domain raised some concerns and none was high risk; and high risk when at least one domain was high risk or multiple domains raised concerns that materially reduced confidence in the result. Two reviewers assessed risk of bias independently and resolved disagreements through discussion.

Strategy of data synthesis Random-effects meta-analysis was used to estimate the average intervention effect while allowing for potential between-study variation in intervention composition, delivery, participant characteristics, and follow-up. Pooled estimates were calculated using inverse-variance weighting, with between-study variance estimated using the restricted maximum likelihood method. Hartung-Knapp adjustment was applied to the confidence intervals for the pooled random-effects estimates. Mean differences (MDs) and 95% confidence intervals (CIs) were calculated for continuous outcomes because the same measurement units were used across studies. Statistical heterogeneity was assessed using I^2 , tau-squared (τ^2), and Cochran Q. For interpretation of I^2 , values of 0–40% were considered potentially unimportant, 30–60% possibly moderate, 50–90% possibly substantial, and 75–100% possibly considerable heterogeneity, following the indicative ranges in the Cochrane Handbook [30]. These ranges were used as guidance rather than rigid thresholds, with the magnitude and direction of effects and clinical characteristics of the included studies also considered. Prediction intervals were calculated to estimate the expected range of true effects in a future comparable setting.

Subgroup analysis Prespecified subgroup analyses examined potential effect modification by follow-up duration (≤ 26 vs > 26 weeks), intervention intensity (low, moderate, or high), and stroke phase (acute/subacute vs chronic). Intervention intensity was classified using a prespecified operational framework based primarily on the amount and frequency of planned professional contact over the intervention period. Low-intensity interventions involved three or fewer planned professional contacts or predominantly self-directed management without ongoing professional

feedback. Moderate-intensity interventions involved four to seven planned contacts or approximately monthly or bimonthly professional follow-up, whereas high-intensity interventions involved eight or more planned contacts or weekly or fortnightly professional follow-up. Intervention duration was considered in conjunction with contact frequency and total contact burden rather than as an independent classification criterion. Multidisciplinary delivery and the range of intervention components were used as supporting information when required to distinguish between categories. Subgroup differences were assessed using tests of interaction (between-subgroup Q).

Sensitivity analysis Sensitivity analyses included leave-one-out analyses, exclusion of pilot randomized trials, restriction to larger studies (total sample size ≥ 100), and alternative estimators of between-study variance, including DerSimonian-Laird, Paule-Mandel, and empirical Bayes methods, with REML used for the primary analysis. The extent to which pooled estimates changed across these analyses was evaluated.

Country(ies) involved China.

Keywords stroke; transient ischemic attack; obesity; lifestyle intervention; weight management; meta-analysis.

Contributions of each author

Author 1 - Lan Ge - Conceptualization, Methodology, Investigation, Writing – Original Draft.

Email: langer_2025icu@163.com

Author 2 - Huiya Ma - Data Curation, Formal Analysis, Writing – Review & Editing.

Email: manhuiyy_365@21cn.com

Author 3 - Fang Li - Validation, Visualization, Writing – Review & Editing.

Email: fangllymn@21cn.com

Author 4 - Haiqing Sun - Supervision, Project Administration, Writing – Review & Editing.

Email: sunhqopu23@21cn.com