INPLASY PROTOCOL

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Corresponding author:
Ling Tan

2687180325@qq.com

Author Affiliation:
Chinese Academy of Chinese Medical Sciences, Xiyuan Hospital.

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None declared.

Association of body mass index trajectory with respect to hypertension risk: A systematic review of cohort studies and network meta-analysis of 89,094 participants

Tan, L[1]; Long, L[2]; Ma, X[3]; Yang, W[4]; Liao, F[5]; Lu, J[6]; Qu, H[7]; Fu, C[8].

Review question / Objective: **The risk of hypertension determined by different BMI trajectories in adolescents or adults.**
Condition being studied: **BMI trajectories are built from different trajectory modeling approaches to nonlinear time trends and nonlinear changes in BMI with age, which can provide information on the underlying patterns of BMI changes with age. The relationship between BMI trajectories and the risk of hypertension is still controversial.**
Information sources: **electronic databases, contact with authors, trial registers, or grey literature.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 April 2022 and was last updated on 18 April 2022 (registration number INPLASY202240105).

INTRODUCTION

Review question / Objective: **The risk of hypertension determined by different BMI trajectories in adolescents or adults.**

Condition being studied: **BMI trajectories are built from different trajectory modeling approaches to nonlinear time trends and nonlinear changes in BMI with age, which can provide information on the underlying patterns of BMI changes with age. The**

relationship between BMI trajectories and the risk of hypertension is still controversial.

METHODS

Search strategy: Two reviewers (LT and HQ) independently performed a systematic search of PubMed, the Cochrane Library, Embase, Scopus, and Web of Science from inception to 31 Janurary 2022. Terms: body mass index trajectory [Title/Abstract] OR body mass index change [Title/Abstract] OR quetelet index trajectory [Title/Abstract] OR quetelet index change [Title/Abstract] OR body size trajectory [Title/Abstract] OR body size change [Title/Abstract] OR body height trajectory [Title/Abstract] OR body height change [Title/Abstract] OR body weight trajectory [Title/Abstract] OR body weight change [Title/Abstract] OR body adiposity index trajectory [Title/Abstract] OR body adiposity index change [Title/Abstract] OR body shape index trajectory [Title/Abstract] OR body shape index change [Title/Abstract] OR body fat trajectory [Title/Abstract] OR body fat change [Title/Abstract] OR fat mass trajectory [Title/Abstract] OR fat mass change [Title/Abstract] OR waist circumference trajectory [Title/Abstract] OR waist circumference change [Title/Abstract] OR waist-height ratio trajectory [Title/Abstract] OR waist-height ratio change [Title/Abstract] OR waist-hip ratio trajectory [Title/Abstract] OR waist-hip ratio change [Title/Abstract] AND blood pressure, high [Title/Abstract] OR blood pressures, high [Title/Abstract] OR high blood pressure [Title/Abstract] OR high blood pressures [Title/Abstract] OR hypertens*[Title/Abstract] OR idiopathic hypertension [Title/Abstract] OR essential hypertension [Title/Abstract] OR elevat* blood pressure [Title/Abstract] OR raised blood pressure [Title/Abstract] OR excessive blood pressure [Title/Abstract] OR elevat* diastolic blood pressure [Title/Abstract] OR elevat* systolic blood pressure [Title/Abstract] OR elevat* arterial blood pressure [Title/Abstract] OR high diastolic blood pressure [Title/Abstract] OR high systolic blood pressure [Title/Abstract] OR high arterial blood pressure [Title/Abstract] OR raised diastolic blood pressure [Title/Abstract] OR raised systolic blood pressure [Title/Abstract] OR raised arterial blood pressure [Title/Abstract] OR excessive diastolic blood pressure [Title/Abstract] OR excessive systolic blood pressure [Title/Abstract] OR excessive arterial blood pressure [Title/Abstract] AND Observational stud*[Title/Abstract] OR cohort*[Title/Abstract] OR cohort stud*[Title/Abstract] OR longitudinal[Title/Abstract] OR longitudinal stud*[Title/Abstract] OR prospective[Title/Abstract] OR prospective stud*[Title/Abstract] OR follow-up stud*.

Participant or population: General population who was not diagnosed with hypertension at baseline.

Intervention: Measured body mass index as the exposure.

Comparator: "Stable normal" trajectory.

Study designs to be included: Prospective and retrospective cohort studies.

Eligibility criteria: That were conducted in general population who was not diagnosed with hypertension at baseline; that measured body mass index as the exposure and recored the statistical method of optimal BMI trajectory classification; that considered the occurrence of high blood pressure as the outcome; and that reported the number of participants or person years and the number of individuals with hypertension, and adjusted effect estimates (relative risk, hazard ratio, or odds ratio) with 95% confidence intervals for high blood pressure across categories of measures of BMI trajectory.

Information sources: Electronic databases, contact with authors, trial registers, or grey literature.

Main outcome(s): Incidence of hypertension.

Quality assessment / Risk of bias analysis: Newcastle-Ottawa Scale (NOS) for assessing the quality of the cohort studies was used.

Strategy of data synthesis: we performed a quantitative meta-analysis of the relevant parameters based on Bayes' theorem.

Subgroup analysis: We performed subgroup analyses of the trajectories of "Persistent increasing" ,"Stable high" , and "Resolving" compared with the "Stable normal" trajectories, respectively, to clarify the reasons for the heterogeneity between studies on each type of trajectories.

Sensitivity analysis: We performed sensitivity analyses for each of the studies on the "Persistent increasing" , "Stable high" and "Resolving" trajectories, respectively.

Language: Searches were not restricted by language.

Country(ies) involved: China.

Keywords: Trajectory of body mass index; hypertension; growth trajectory; network meta-analysis; HBP; BMI.

Contributions of each author:

Author 1 - LING TAN - Author 1 drafted the manuscript.
Email: 2687180325@qq.com
Author 2 - Linzi Long - The author provided statistical expertise.
Email: qixiang830803@163.com
Author 3 - Xiaochanng Ma - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Email: maxiaochang@x263.net
Author 4 - Wenwen Yang - The author read, provided feedback and approved the final manuscript.
Email: werweny@163.com
Author 5 - Feifei Liao - The author provided statistical expertise.
Email: 446604125@qq.com
Author 6 - Jieming Lu - This author performed a GRADE assessment of the quality of the evidence.
Email: 710936562@qq.com
Author 7 - Hua Qu - The author read, provided feedback and approved the final manuscript.
Email: hua_qu@yeah.net
Author 8 - Changgeng Fu - The authors conducted the study protocol design.
Email: fucgbs@163.com