INPLASY

Prevalence of internet addiction among Chinese adolescents: a comprehensive meta-analysis of 169 comparative studies

INPLASY2024100032
doi: 10.37766/inplasy2024.10.0032
Received: 8 October 2024
Published: 9 October 2024

Zheng, MR.

Corresponding author:
Murui Zheng

yc37609@um.edu.mo

Author Affiliation:
Faculty of Health Sciences,
University of Macau.

ADMINISTRATIVE INFORMATION

Support - The University of Macau (MYRG2019-00066-FHS; MYRG2022-00187-FHS).

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2024100032

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 9 October 2024 and was last updated on 9 October 2024.

INTRODUCTION

Review question / Objective We conducted this meta-analysis with language restrictions to examine the pool prevalence of internet addiction in Chinese adolescents and its associated demographic and clinical factors.

Rationale Internet addiction (IA) is increasingly recognized as a significant public health concern, especially among adolescents, due to its potential to disrupt academic, social, and psychological functioning. Adolescents, who are highly engaged with digital platforms for education, entertainment, and social interaction, are particularly vulnerable to developing IA. In China, the rapid digitalization of society and the widespread availability of smartphones and internet access have contributed to rising concerns about IA among adolescents. However, existing prevalence studies on IA among Chinese adolescents vary widely in their findings due to differences in methodologies, assessment tools, and geographic regions. This meta-analysis seeks to provide a comprehensive and pooled estimate of IA prevalence among Chinese adolescents, identify factors contributing to the heterogeneity in these estimates, and offer valuable insights for future prevention and intervention efforts.

Condition being studied Internet addiction (IA) is characterized by excessive or compulsive use of the internet, leading to impairment in personal, social, academic, or occupational functioning. This condition has been recognized as a growing concern, particularly among adolescents, due to their high engagement with digital technologies for education, entertainment, and social interaction. Adolescents are particularly vulnerable to internet addiction, given their developmental stage, social dynamics, and increased exposure to online platforms. In China, the prevalence of internet addiction among adolescents has garnered attention due to the rapid digitalization of society. This meta-analysis aims to synthesize existing research on the prevalence of internet addiction among Chinese adolescents to better understand

its impact and contributing factors in this population.

METHODS

Search strategy A systematic and comprehensive search was conducted across both English-language databases (PubMed, Web of Science, and PsycINFO) and Chinese-language databases (Wan Fang and Chinese National Knowledge Infrastructure) from inception until September 6, 2023. The search terms used included: ("China" OR "Chinese" OR "Hong Kong" OR "Macau" OR "Taiwan") AND ("Internet addiction" OR "Internet dependency" OR "pathological Internet use" OR "problematic Internet use" OR "compulsive Internet use" OR "excessive Internet use" OR "computer addiction" OR "Internet gaming disorder" OR "online game addiction" OR "video game addiction" OR "videogame addiction" OR "computer game addiction" OR "smartphone addiction" OR "mobile phone addiction" OR "social media addiction" OR "problem cellular phone") AND ("prevalence" OR "survey" OR "cross-sectional study" OR "rate") AND ("Adolescents" OR "Adolescence" OR "Teen" OR "Youth" OR "middle school student" OR "high school student"). Five independent reviewers screened the titles, abstracts, and full texts of the search results. The references of selected studies were also manually reviewed to ensure that no relevant studies were missed.

Participant or population The population of interest for this meta-analysis is Chinese adolescents, defined as individuals aged 12-18 years, residing in mainland China, Hong Kong, Macau, or Taiwan. Eligible studies included cross-sectional and baseline data from longitudinal studies that reported the prevalence of internet addiction using standardized diagnostic criteria such as the Internet Addiction Test (IAT-8, IAT-10, or IAT-20). Studies targeting special populations, such as medical students or identified internet addicts, were excluded to focus on the general adolescent population. This meta-analysis aims to estimate the prevalence of IA among Chinese adolescents and examine demographic and geographic factors contributing to variability in IA prevalence.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included This meta-analysis will include cross-sectional epidemiological studies that report the prevalence of internet addiction among Chinese adolescents. Additionally, baseline data from longitudinal studies will be included, provided they meet the inclusion criteria. Studies that do not report prevalence data, such as case-control, experimental studies, and qualitative research (e.g., reviews, case studies), will be excluded.

Eligibility criteria Inclusion criteria:
Population: Chinese adolescents (12-18 years old), including those from mainland China, Hong Kong, Macau, and Taiwan.
Studies reporting the prevalence of internet addiction using standardized scales such as the Internet Addiction Test (IAT-8, IAT-10, IAT-20).
Cross-sectional or baseline data from longitudinal studies.
Exclusion criteria:
Studies focusing on special populations (e.g., medical students, identified internet addicts).
Studies without sufficient information on sample size, cutoff values, or prevalence.
Qualitative studies, case-control, or experimental studies.

Information sources The information sources for this meta-analysis include:
Electronic Databases: PubMed, Web of Science, PsycINFO for English-language studies; Wan Fang and Chinese National Knowledge Infrastructure (CNKI) for Chinese-language studies.
Manual Search: Reference lists of selected studies will be reviewed to identify additional relevant studies.
Grey Literature: Any grey literature such as conference proceedings or theses will be included if they meet the inclusion criteria and provide sufficient data on prevalence.

Main outcome(s) The primary outcome of this meta-analysis is the pooled prevalence of internet addiction among Chinese adolescents, reported as a percentage with a 95% confidence interval (CI). Prevalence estimates will be calculated based on studies using validated scales (IAT-8, IAT-10, and IAT-20). The outcome will be measured across different demographic and geographic subgroups to explore variations in prevalence.

Quality assessment / Risk of bias analysis The quality of the included studies will be assessed using an eight-item tool for epidemiological studies, covering aspects such as sampling method, measurement tools, and statistical analysis. Each study will be assigned a total score ranging from 0 to 8, with scores categorized into low (0–3), moderate (4–6), and high quality (7–8). Two independent reviewers will assess the quality

of each study, and any disagreements will be resolved through discussion with a senior reviewer.

Strategy of data synthesis A random-effects model will be employed to pool the prevalence estimates of internet addiction across studies due to expected heterogeneity. The pooled prevalence and its 95% confidence intervals will be calculated. Heterogeneity will be assessed using the I^2 statistic and Cochran's Q test. Subgroup analyses will be conducted for categorical variables (e.g., assessment tools, geographical regions), and meta-regression analyses will explore the relationship between continuous variables (e.g., mean age, proportion of males) and prevalence. Publication bias will be evaluated using a funnel plot and Egger's test. Sensitivity analyses will be performed by removing one study at a time to examine the robustness of the results.

Subgroup analysis Subgroup analyses will be performed to explore potential sources of heterogeneity in the prevalence of internet addiction. The subgroups to be analyzed include:
Assessment Tools: IAT-8, IAT-10, IAT-20.
Geographical Regions: Central, Eastern, Northern, Southern, and other Chinese regions.
Demographic Factors: Gender (male vs. female), age group, rural vs. urban residence, only child vs. non-only child, and junior vs. senior students.
Publication Years: Studies published between 2004-2008, 2009-2013, 2014-2018, and 2019-2023.

Sensitivity analysis Sensitivity analyses will be conducted to evaluate the robustness of the pooled prevalence estimates. This will involve excluding one study at a time and recalculating the overall prevalence estimate to determine if any individual study unduly influences the results. Additionally, analyses will be repeated by excluding studies with moderate quality to assess the impact of study quality on the results. The robustness of the findings will also be tested by using alternative prevalence definitions or cutoff values, if applicable.

Country(ies) involved China.

Keywords prevalence, internet addiction, meta-analysis, adolescents, China.

Contributions of each author
Author 1 - Murui Zheng.