

Assessing the Relationship Between Life Events and Internet Addiction Disorder Among Adolescents and College Students: A Protocol for Systematic Review and Meta-analysis

Jun Wang

Chengdu University of Traditional Chinese Medicine <https://orcid.org/0000-0001-7133-9640>

Wei Peng

Chengdu University of Traditional Chinese Medicine

Qinghong Hao

Chengdu University of Traditional Chinese Medicine

Mimi Qiu

Chengdu University of Traditional Chinese Medicine

Yalin Chen

Chengdu University of Traditional Chinese Medicine

Yang Tu

Chengdu University of Traditional Chinese Medicine

Yang Wang

Chengdu University of Traditional Chinese Medicine

Tianmin Zhu (✉ tianminzhu@cdutcm.edu.cn)

School of Rehabilitation and Health Preservation, Chengdu University of Traditional Chinese Medicine, Chengdu, China

Protocol

Keywords: internet addiction disorder, life events, adolescent and college student, meta-analysis, systematic review

Posted Date: August 25th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-60490/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background

The increasing number of adolescents and college students who overuse the Internet is a global problem, brought a series of physical and mental harm to them. Systematic and standardized clinical treatment plan has not yet been formed, early intervention of its influencing factors, However, may help to reduce the symptoms of over-dependence to a certain extent. In this study, we will synthesize the present studies to evaluate the relationship and the mediating factors between life events and internet addiction disorder among adolescents and college students.

Methods

From inception to 25 March 2020, and contains the following databases: China National Knowledge Infrastructure (CNKI), China Biology Medicine (CBM), China Science and Technology Journal Database (VIP), Wan Fang Data, PubMed, Embase, The Cochrane Library, and Web of Science, MEDLINE. All observational studies will be included. No restriction on gender, race, or nation. Two reviewers (JW and YT) will independently conduct study selection, data extraction, and study quality assessment, any discrepancies will be settled by a third author (WP). Study quality will be assessed by the Newcastle-Ottawa Scale. The main outcome is several scales include YDQ, CIAS-R, IAT, ASLEC, LES and other high-quality scales on IAD and life events. We will use Review Manager 5.3 software to assess bias risk and data synthesis of each study.

Discussion

The findings of this study may provide a helpful reference for the intervention of Internet addiction disorder among adolescents and college students.

Systematic review registration

CRD42020177316

Background

Internet Addiction Disorder (IAD) refers to the uncontrolled impulsive use of the Internet under the influence of no addictive substances, which lead to obvious physical, psychological and social impairment [1]. In recent years, with the increasing popularity of the Internet and the rapid development of network technology, the excessive dependence of adolescents and college students on the Internet has become a widely concerned of social and family [2]. A recent research indicated that the prevalence percentage among adolescents in China was close to 10%, which is higher than that observed in the World (6.0%) [3]. Some previous studies showed that IAD severely impaired the attention, memory, cognitive control and other functions of adolescents and college students, moreover, IAD is also a major

risk factor for students' academic imbalances, impaired social functioning, behavioral disorders, anxiety, depression and other psychological problems [4–9].

Life events is defined in the literature as “the major failure or success encountered by the individual in real life, or the events that caused the individual to have a greater emotional response and involve lifestyle changes” [10, 11]. As a common psychological and social stressor, life events is one of the important psychological stress factors affecting individual health especially negative events [12]. Accumulating studies suggested that negative life events may increase the risk of individual suicide, school problem behaviors, criminal behaviors, addictive behaviors, etc. [13–16].

Is there a relationship between negative events and IAD and which mediating model is optimal? In recent years, some researchers have conducted in-depth research on this. Xiao et al. showed that there were significant differences in the total scores of life events and factors among college students with different degrees of IAD, and those with higher scores of IAD were significantly higher in the total scores and factors of life events scale than lower scores [12]. In addition, many clinicians found that adolescents and college students who experience more negative life events are more likely to have IAD [10, 12, 17–20]. However, Mei et al. found that there was no significant difference in the average score of life events between Internet addicts and non-addicts [21]. Besides, there are many mediating models of IAD and life events. Some researchers thought it should be Self-disclosure play a leading role, some thought it was Coping style, Counterfactual thinking and Resilience, some researchers even thought there were multiple effects between life events and IAD [20, 22–25].

From the above, there is no consensus on the relationship and mediating factors that play the main role between IAD and life events on published researchers. Therefore, we will conduct a meta-analysis to ascertain the relationship and the mediating factors between life events and IAD among adolescents and college students.

Objectives

The aim of this study is to arrangement and analysis the published data to determine the relationship and mediating factors between life events and IAD among adolescents and college students. In order to provide a new reference for the clinical intervention of IAD. we will focus on the following questions:

- 1)What is the relationship between life events and IAD?
- 2)What kinds of events will be the most risk factors?
- 3)Which factor plays the main mediating role?

Methods

The protocol of this systematic review (SR) will be reported following the Preferred Reporting Items for Systematic Review and Meta-analysis Protocol (PRISMA-P)2015 [26] guidelines. See **S1 Table** for the

checklist.

Eligibility criteria

Study design

The inclusion criteria include:

Studies that:

Reported the relationship and mediating factors between life events and IAD

All observational studies published up to 25 March 2020

Published in Chinese or English

We will exclude:

Single case or case series methodologies

Only measured IAD or another technology addiction

Participants

Participants who were diagnosed with IAD (Between the ages of 13 and 25) will be included. There will be no restriction on gender, race, or nation.

Interventions

This study is an observational study without any intervention.

Comparators

Since most included studies are observational, there may not be any control group/comparison group at all.

Outcome measurements

The main outcome will be the scales associated with clinical and psychopathological measures. IAD was measured by young diagnostic questionnaire for IAD (YDQ) [27], Chinese Internet Addiction Scale Revision (CIAS-R)[28], Internet Addiction Test (IAT)[1], Life events was measured by Adolescent Self-rating Life Events Checklist (ASLEC)[29], The Life Experiences Survey (LES)[30]and other high quality scales on IAD and Life events. As the scales used in different studies are different, the results will be comprehensively analyzed based on the final included literature.

Search strategy

Database searches

We will search the following databases from inception to 25 March 2020: China National Knowledge Infrastructure (CNKI), China Biology Medicine (CBM), China Science and Technology Journal Database (VIP), Wan Fang Data, PubMed, Embase, The Cochrane Library, and Web of Science, MEDLINE. In addition to the electronic database, we will also search for grey literature and related literature listed in the bibliography to ensure the integrity of the included studies.

Search terms

Our search strategy was based on the following combination terms: (internet OR online gaming OR internet gaming OR game) AND (addiction OR pathological OR problem OR excessive OR disorder OR overuse) AND (event OR life events OR experiences). The search strategy of each databases will be adapted accordingly. The search terms in Web of Science is as follows.

| | |
|--------|--|
| # 1 | TS= (internet OR online gaming OR internet gaming OR game) |
| # 2 | TS= (addiction OR pathological OR problem OR excessive OR disorder OR overuse) |
| # 3 | TS= (Event, Life Change OR Events, Life Change OR Life Change Event OR Life Experiences OR Experience, Life OR Experiences, Life OR Life Experience OR Analysis, Event History OR Analyses, Event History OR Event History Analyses OR Event History Analysis) |
| # 4 | #2 AND #1 |
| # 5 | #4 AND #3 |

Studies selection

Citations from each search will be managed by EndNote X9 and duplicates will be removed. Two reviewers (WJ and TY) will independently screen titles and abstracts after removing duplicates to select inclusion of potentially eligible trials. Then, they will download the full texts of all eligible studies and further independently examine the full text. Any discrepancies will be resolved through negotiation. If necessary, it will be resolved by a third reviewer (PW). The study program is carried out according to the PRISMA flow chart, which is displayed in **Fig. 1**.

Data extraction

Two reviewers will independently extract data with a predefined data extraction form which include the following information: first author, publication year, country, journal, sample size, mean age of the sample, gender distribution, race, number, method of diagnosing IAD, measures used, assessment measures, results and key conclusions, mediating factors.

The extracted data will be entered into Microsoft Excel by two reviewers independently. Two reviewers will cross check the included studies, and the differences will be resolved by consensus or discussion with a third reviewer (HQH).

Risk of bias (quality) assessment

In this study, we will use the modified version of the Newcastle-Ottawa Quality Assessment Form (NOS) [31] to evaluate the included studies. The Newcastle-Ottawa Quality Assessment Form assess each study according to three domains and eight items [32]. The domains are as follows: selection of the study groups, comparability of the groups and ascertainment of exposure/ outcome. The scale adopts the semi-quantitative principle of star system, and graded into the three categories, with a full score of 9 stars. Among them, those with more than 7 stars are defined as high-quality research, 4–6 stars are medium-quality and less than or equal to 3 stars as low-quality research [31]. Any study that meets the inclusion criteria will be included, but we will operate sensitivity analysis their impacts on the study.

Data synthesis and analysis

In this study, Revman5.3 [33] will be used to perform all meta-analyses. We will use I^2 index to measure heterogeneity among studies [34]. If the values of $I^2 \leq 50\%$ show acceptable homogeneity, a fixed-effects model will be used. However, we will employ a random-effects model if the values of $I^2 > 50\%$ where significant heterogeneity exists. Besides, we also plan to perform meta-analysis to analyze the pooled outcome data when the final acceptable homogeneity has been identified. Otherwise, we will conduct subgroup analysis to check the potential causes of obvious heterogeneity among eligible studies. If possible, we will perform a narrative summary when meta-analysis is not possible. If the number of studies allows further stratification, we plan to do the following subgroup analyses: sex, gender, study size, Geography, etc.

Publication bias

we will use funnel plot to estimate the publication biases if sufficient studies are included. If bias is identified, we will use subgroup analysis or meta-regression analysis to explore its possible influencing factors. Finally, sensitivity analysis will be conducted to verify the robustness of merged outcome results by removing low-quality studies.

Ethics and dissemination

This protocol of systematic review does not require ethical approval because it will be based on published researches. The results will be published in peer-reviewed scientific journals according to the PRISMA guidelines.

Discussion

Previous studies have found that IAD is closely related to negative events experienced by individuals [17, 20, 35, 36]. In addition, healthy adaptation, punishment, interpersonal relationship and learning pressure factors are the dimensions that predict a high degree of IAD in life events [16, 18, 30, 37]. There are many studies on the factors that play a specific intermediary effect between life events and IAD, but there is no uniform conclusion. Moreover, most of the above studies have limitations, such as small sample size,

strong regional effect and others. To adolescents and college students as the object, this study will evaluate the dimensions of life events that are more valuable for predicting IAD, as well as the specific factors that play an intermediary role. The findings of this study may provide a useful reference for guiding adolescents and college students to understand themselves in real life better, prevent IAD and realize their self-worth.

Abbreviations

IAD

Internet addiction disorder, SR = systematic review, PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses, NOS = Newcastle-Ottawa Quality Assessment Form

Declarations

Acknowledgements

Not applicable.

Author contributions

Conceptualization: Jun Wang, Wei Peng, Tian-min Zhu.

Data curation: Jun Wang, Mi-mi Qiu, Tian-min Zhu.

Formal analysis: Jun Wang, Yang Tu.

Funding acquisition: Tian-min Zhu.

Investigation: Jun Wang, Wei Peng.

Methodology: Jun Wang, Wei Peng, Qing-hong Hao.

Project administration: Tian-min Zhu.

Resources: Jun Wang, Wei Peng, Qing-hong Hao.

Software: Jun Wang, Wei Peng, Yang Wang.

Supervision: Tian-min Zhu.

Validation: Jun Wang, Wei Peng, Ya-lin Chen.

Visualization: Jun Wang, Wei Peng, Ya-lin Chen.

Writing – original draft: Jun Wang, Wei Peng.

Writing – review & editing: Tian-min Zhu.

Jun Wang orcid: 0000-0001-7133-9640.

Funding

This research was supported by the Natural Science Foundation of China (81072852 and 81574047), the Key R&D Project of Sichuan Province (2019YFS0175), the Xinglin Scholar Research Promotion Project of Chengdu University of TCM (XSGG2019007), and the Training Funds of Academic and Technical Leader in Sichuan Province.

Availability of data and materials

Not applicable (protocol only).

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details

1 School of Rehabilitation and Health Preservation, Chengdu University of Traditional Chinese Medicine, Chengdu, China

2 School of Acupuncture and Tuina, Chengdu University of Traditional Chinese Medicine, Chengdu, China

References

1. Young K. **Internet Addiction: The Emergence of a New Clinical Disorder.** *CyberPsychology & Behavior* 1998, 1.
2. Ko CH, Yen JY, Chen CC, Chen SH, Yen CF. Gender differences and related factors affecting online gaming addiction among Taiwanese adolescents. *J Nerv Ment Dis.* 2005;193(4):273–7.
3. Weinstein A, Curtiss Feder L, Rosenberg KP, Dannon P: Chap. 5 - **Internet Addiction Disorder: Overview and Controversies.** In: *Behavioral Addictions.* edn. Edited by Rosenberg KP, Feder LC. San Diego: Academic Press; 2014: 99–117.

4. Shou-wen X, Zheng H, Fei G, Jin-qin H, Zhi-yan C. Bidirectional Relationship Between Internet Addiction and Depression in Adolescents. *Chinese Journal of Clinical Psychology | Chin J Clin Psychol.* 2013;21(04):613–5.
5. Gentile DA, Choo H, Liau A, Sim T, Li D, Fung D, Khoo A. Pathological video game use among youths: a two-year longitudinal study. *Pediatrics.* 2011;127(2):e319–29.
6. Jingjing S, Dongping L, Chuanhua G, Liyan Z, Zhenzhou B, Yanhui W. Parental control and problematic internet use by adolescents: the mediating effect of deviant peer interaction. *Psychological Development Education.* 2014;30(03):303–11.
7. Wen-li LIU, Shi-jie Z. Consequences of Internet Overuse and Its Correlation with Well-being in College Students. *Chinese Journal of Clinical Psychology.* 2014;22(02):288–90 + 245.
8. Tsitsika A, Critselis E, Louizou A, Janikian M, Freskou A, Marangou E, Kormas G, Kafetzis D. Determinants of Internet Addiction among Adolescents: A Case-Control Study. *TheScientificWorldJournal.* 2011;11:866–74.
9. Yuan-chao X, Yu-ping Y, Da-xing W. Mediating Effect of Trait Impulsivity Between Negative Affect and Internet Overuse in College Students. *Chinese Journal of Clinical Psychology.* 2013;21(06):942–5.
10. Finlay-Jones R, Brown GW. types of stressful life event and the onset of anxiety and depressive disorders. *Psychological medicine.* 1981;11(4):803–15.
11. Chan DW, Chan-Ho MW, Chan TS. **Life event scaling: the Chinese experience.** *Social science & medicine (1982)* 1984, 18(5):441–446.
12. Lingling X: **Relationship among inclination of Internet Addiction, Life Events and Self-efficacy in College Students.** *master.* Hangzhou Normal University; 2012.
13. Fei T, Cheng-cheng W, Xiu-de L, Xiang L, Shaocong X, Xiujun Z. Analysis of the association between negative life events and drinking in Hefei college students. *Chinese Journal of School Health.* 2015;36(03):372–4.
14. Jiu-liang G, Yan D, Jin W, Cheng L, Qiao K, Huan-bin W, Qian Z, Ping-mei L. Relationship among negative stress events, depression and suicidal ideation in military personnel. *Occupation Health.* 2017;33(06):790–3.
15. Kai Z, Dan-dan Y, hui C. Analysis of non-suicidal self-injury and its association with negative life events among college students. *Chinese Journal of Disease Control Prevention.* 2017;21(10):1027–9 + 1034.
16. Yiyun L: **Study of the multiple mediating effects in life events affecting college students' internet addiction tendency.** *Master.* Guangxi University; 2014.
17. Li D, Zhang W, li X, Zhen S, Wang Y. Stressful life events and problematic Internet use by adolescent females and males: A mediated moderation model. *Comput Hum Behav.* 2010;26:1199–207.
18. Baojuan Y, Jianping L, Qiang Y. Effect and its mechanism of sensation seeking on the pathological network use of Engineering Students. *Psychological Development Education.* 2014;30(01):96–104.

19. Liangchang X, Jinlin D, Xiujuan X, Mingwei S. Study on the relationship between internet addiction and negative life events in medical students. *Science Technology Information*. 2015;13(01):207–8.
20. Liheng F, Fuyang W, Wenjiao C. The Relationship between College Students' Negative Life Events and Internet Addiction: The Mediation Role of Counterfactual Thinking. *Journal of North China University of Water Resources Electric Power(Social Science Edition)*. 2018;34(05):117–20.
21. Lujia G, Changgui K, Di Z, Yanfen C, Yaqin Y. Life Events and Adjustment of College Students with Internet Addiction. *Chinese Mental Health Journal*. 2016;16(05):974–8.
22. Rongshan S, Xianming M. Relationship between Life events and Internet Addiction in middle school Students: Mediating effect of Resilience. *Journal of Heilongjiang Institute of Teacher Development*. 2013;32(08):123–5.
23. Yiyun L: **Study of multiple Mediating effects in life Events affecting College Students' Internet addiction tendency.** *master*. Guangxi University; 2014.
24. yuan H: **The relationship between life events and internet addiction of college students: regulation of Self-disclosure** *Master*. Henan University; 2014.
25. ling Xy. **Influence between life events and internet addiction of college students: regulation:Mediating effect of Coping style.** *The Farmers Consultant* 2019(01):172–173.
26. Clarke DMLS. M, D G, A L, M P: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(01):1,. doi:10.1186/2046-4053-4-1.
27. Wenjiao Y, Zhijin Z. **The Relationship Between the Type of Internet Addiction and the Personality Trait in College Students.** *Journal of Huazhong University of Science and Technology(Social Science Edition)* 2004(03):39–42.
28. Shuhui C, Lizhen W, Yiren S, Hemaow W, Pinfeng Y. Development of a Chinese Internet Addiction Scale and Its Psychometric Study. *Chinese Journal of Psychology*. 2003;45(3):279–94.
29. Xianchen L, Lianqi L, Jie Y, Fuxun C, Aizhen W, Liangmin S, Guifang Z, Dengdai M. **Reliability and validity of adolescent life events scale.** *Journal of Psychiatry* 1997(01):15–19.
30. Sarason IG, Johnson JH, Siegel JM. Assessing the impact of life changes: development of the Life Experiences Survey. *J Consult Clin Psychol*. 1978;46(5):932–46.
31. Wells G, Shea B, O'Connell J. **The Newcastle-Ottawa Scale (NOS) for Assessing The Quality of Nonrandomised Studies in Meta-analyses.** *Ottawa Health Research Institute Web site* 2014, 7.
32. Xiantao Z, Hui L, Xi C, Weidong L. **Meta Analysis Series 4: Quality assessment tools for observational studies.** 2012, 4(04):297–299.
33. Hemilä H, Chalker E: **The effectiveness of high dose zinc acetate lozenges on various common cold symptoms: a meta-analysis.** *BMC family practice* 2015, **16**:24.
34. Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ*. 2003;327(7414):557–60.
35. Lee J-Y, Ban D, Kim S-Y, Kim JM, Shin I-S, Yoon J-S, Kim S. **Negative Life Events and Problematic Internet Use as Factors Associated With Psychotic-Like Experiences in Adolescents.** *Frontiers in*

- 36. Shu-jie H, Fei G, Ya-xin W, Zhi-yan C. Life Events and Problematic Internet Use in Adolescence: A Moderated Mediating Effect. Chinese Journal of Clinical Psychology. 2017;25(01):70–4.
- 37. Feng-Qiang G, Jing-Yu G, Yue-Qiang R, Hua-Yong Y, Lei H. Mediating effect of perceived social support and relative deprivation among life events and Internet addiction in college students. Chinese Mental Health Journal. 2017;31(09):734–8.

Figures

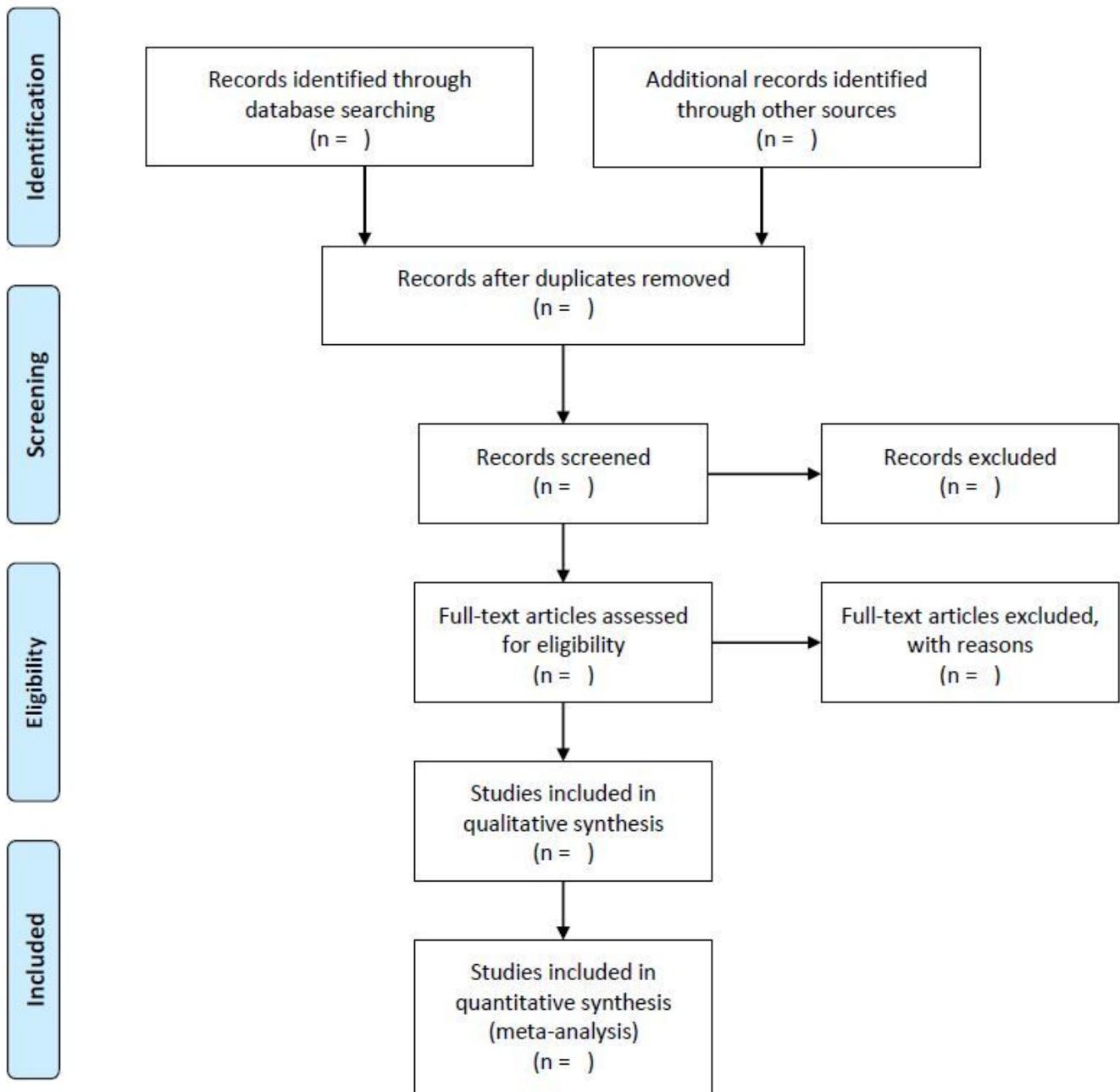


Figure 1

PRISMA flowchart.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table1PRISMAP2015checklist.pdf](#)
- [PersonalCover.docx](#)
- [Fig1PRISMAflowchart.pdf](#)