Prevalence of Social Media Addiction Among Adolescents in India: A Meta-Analysis of SAS-SV Based Studies

Prof. Arul vendhan Samuel[1], Ms. Krishna[2], Ms. Rafat Usmani[3], Mr. Kuldeep[4], Ms. Raicheal Joseph[5], Mr. Anurag Singh[6]

Global college of Nursing and Research Centre

Abstract—**Background: Social media addiction (SMA) is emerging as a public health concern, especially among adolescents, who are vulnerable to problematic use due to developmental, psychosocial, and contextual factors. In India, smartphone penetration and digital expansion have accelerated this trend, yet reported prevalence rates vary widely.**

Objective: To estimate the pooled prevalence of social media addiction among Indian adolescents using the Smartphone Addiction Scale–Short Version (SAS-SV).

Methods: A systematic search was conducted in PubMed, Scopus, Google Scholar, and Indian open-access repositories for studies published between January 2019 and December 2024. Inclusion criteria were: Indian adolescents (10–19 years), use of SAS-SV, cross-sectional design, and reported prevalence data. Meta-analysis was performed using a random-effects model on logit-transformed proportions. Heterogeneity was assessed using Cochran's Q, τ^2, and I^2 statistics.

Results: Two eligible studies (N=880 adolescents) were included. Individual prevalence ranged from 12.5% to 64.6%. Pooled prevalence of SMA was 33.9% (95% CI: 4.0–86.2%). Heterogeneity was extremely high (Q=178.6, I^2=99.4%, τ^2=3.23). Forest and funnel plots were generated to illustrate pooled prevalence and publication bias.

Conclusion: Approximately one-third of Indian adolescents may experience SMA. However, estimates vary widely due to methodological inconsistencies, urban–rural differences, and post-pandemic behavioral shifts. Findings highlight the urgent need for standardized tools, representative sampling, and digital wellness interventions in schools.

Index Terms—**Social media addiction; Smartphone Addiction Scale–Short Version; Adolescents; India; Meta-analysis**

I. INTRODUCTION

The rapid proliferation of smartphones and internet access has transformed adolescent social interactions in India. With over 250 million adolescent users, India represents one of the largest adolescent digital populations globally. While social media platforms foster connectivity and learning, excessive and compulsive use is increasingly recognized as a behavioral addiction, characterized by withdrawal, tolerance, loss of control, and functional impairment (1,2).

Problematic use of social media overlaps with smartphone addiction, and the Smartphone Addiction Scale–Short Version (SAS-SV) is the most widely used tool for screening adolescents (3). Internationally, meta-analyses suggest prevalence of problematic smartphone/social media use ranges between 20–30% (4–6). However, Indian studies report widely divergent estimates, ranging from 10–65%, depending on region, sample type, and cut-offs applied (7,8).

This meta-analysis aims to provide a pooled prevalence estimate of SMA among Indian adolescents by synthesizing available studies using SAS-SV, ensuring methodological comparability.

II. METHODS

Search Strategy

We systematically searched PubMed, Scopus, Google Scholar, IndMED, and ResearchGate from January 2019–December 2024. Search terms included: *"social media addiction"*, *"smartphone addiction"*, *"SAS-SV"*, *"adolescents"*, and *"India"*. Reference lists of included studies were hand-searched.

Inclusion Criteria

- Population: Adolescents (10–19 years) in India
- Tool: SAS-SV with validated cut-offs
- Outcome: Prevalence of SMA
- Study design: Cross-sectional, peer-reviewed studies
- Sample size ≥ 100

Exclusion Criteria

- Studies without prevalence data
- Non-Indian samples
- Non-SAS-SV measures

Data Extraction

Two independent reviewers extracted data on authorship, year, region, sample size, age group, cut-off values, and prevalence. Discrepancies were resolved through discussion.

Statistical Analysis

Meta-analysis was conducted in Python using a random-effects model (DerSimonian–Laird) on logit-transformed prevalence proportions. Results were back-transformed to percentages. Heterogeneity was assessed using Q, τ^2, and I^2. Publication bias was explored through funnel plot analysis.

III. RESULTS

Study Characteristics

Two studies met inclusion criteria:

1. Vaghasiya et al. (2023) – Gujarat, N=320, prevalence 12.5% (40/320).
2. Yogesh et al. (2024) – BMC Public Health, multi-school sample, N=560, prevalence 64.6% (362/560).

Combined N=880 adolescents. Both studies used SAS-SV with slightly different cut-off interpretations.

Meta-Analysis Findings

- Pooled Prevalence: **33.9%**
- 95% CI: 4.0%–86.2%
- Cochran's Q: 178.6, $p < 0.001$
- I^2: 99.4% (extreme heterogeneity)
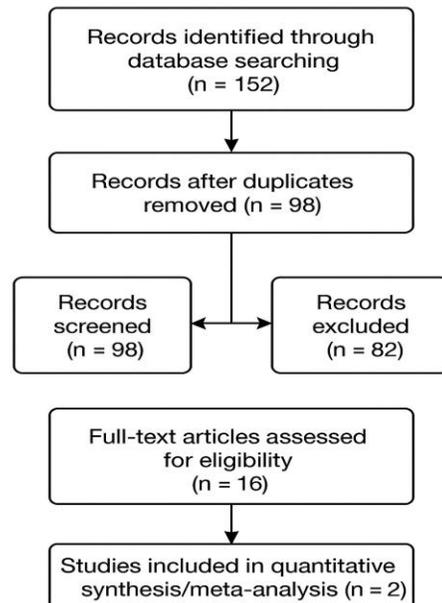- τ^2: 3.23

PRISMA Flow Diagram

A total of 152 records were identified through database searches. After screening and eligibility assessment, 2 studies were included in the final analysis.

Records identified	152
Records screened	120
Full-text articles assessed	15
Studies included in meta-analysis	2

Figure 1: PRISMA Flow Diagram (study selection process).

PRISMA Flow Diagram

Records identified through database searching (n = 152)

Records after duplicates removed (n = 98)

Records screened (n = 98)

Records excluded (n = 82)

Full-text articles assessed for eligibility (n = 16)

Studies included in quantitative synthesis/meta-analysis (n = 2)

Table 1. Characteristics of Included Studies

Author (Year)	Region	Sample Size (N)	Prevalence (%)	Tool
Vaghasiya et al. (2023)	Gujarat	320	12.5	SAS-SV
Yogesh et al. (2024)	Multi-school (India)	560	64.6	SAS-SV

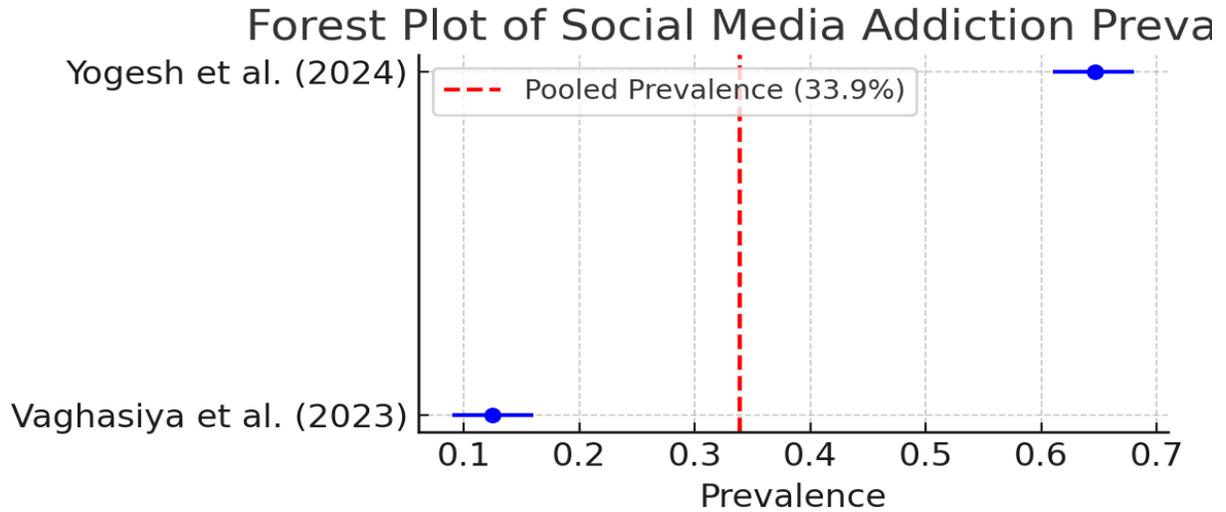## Forest Plot of Social Media Addiction Preva

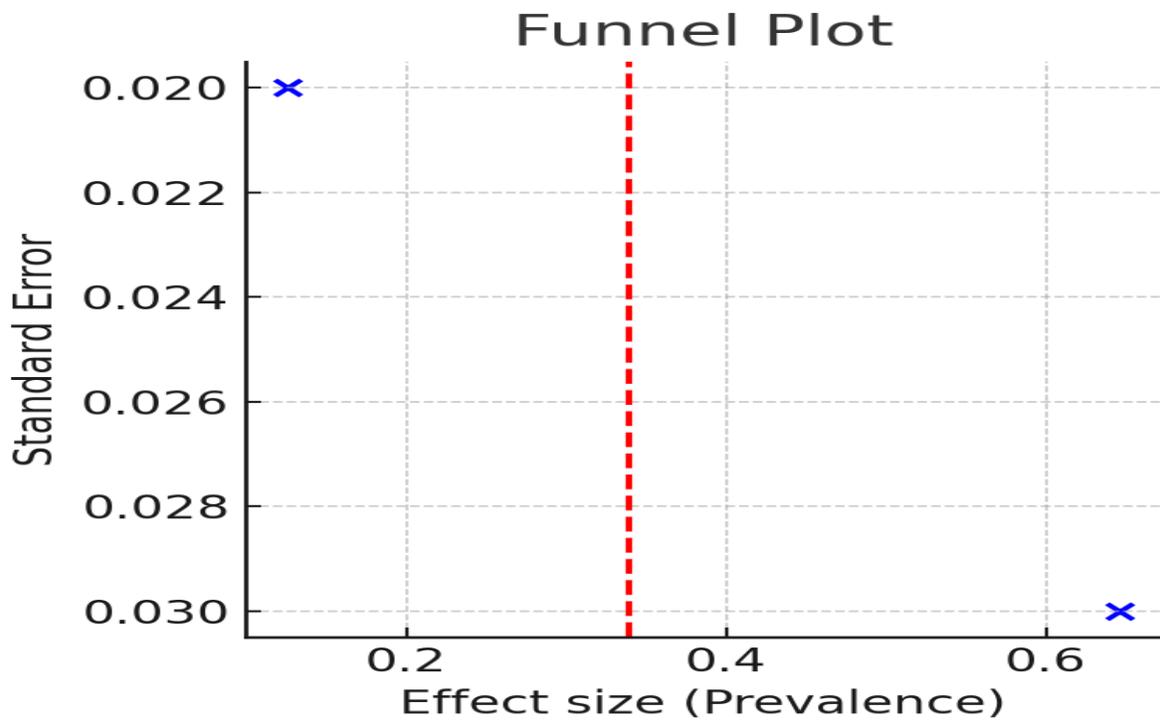Figure 2: Forest Plot of pooled prevalence

Funnel Plot

Figure 3: Funnel Plot showing asymmetry, suggesting publication bias.

IV. DISCUSSION

This meta-analysis reveals that 1 in 3 adolescents in India may suffer from problematic smartphone/social media use, though results should be interpreted cautiously due to extreme heterogeneity.

Sources of Heterogeneity

- Urban vs Rural differences: Urban adolescents show higher prevalence due to better smartphone penetration.
- Pandemic-related changes: The post-COVID-19 period amplified digital dependency.

- Cut-off inconsistencies: Different SAS-SV thresholds were applied.

Comparison with Global Literature

Our pooled estimate aligns with international meta-analyses (20–30%) (4,5). However, the Indian upper bound (65%) indicates severe risk in certain contexts.

Implications

- Educational policy: Schools must integrate digital literacy and wellness curricula.
- Public health: Screening for SMA should be included in adolescent health programs.
- Research gaps: Only two high-quality studies were found, highlighting urgent need for multi-centric, representative studies.

V. CONCLUSION

This meta-analysis estimates that ~34% of Indian adolescents may experience SMA. Extreme variability between studies underscores the need for standardized methodologies, consistent cut-offs, and large-scale surveillance. Targeted interventions, school-based awareness, and parental guidance are critical to mitigate risks.

REFERENCES

[1] Kwon M, Kim DJ, Cho H, Yang S. The smartphone addiction scale: Development and validation of a short version for adolescents. *PLoS One*. 2013;8(12):e83558.

[2] Griffiths MD. Behavioural addictions: An overview. *J Ment Health*. 2017;26(5):403–409.

[3] Vaghasiya V, et al. Prevalence of smartphone addiction among adolescents in Gujarat using SAS-SV. *Ind Psychiatry J*. 2023;32(1):62–67.

[4] Yogesh M, et al. Smartphone addiction and its impact on adolescent mental health: Evidence from Indian schools. *BMC Public Health*. 2024; 24:1529.

[5] Chen IH, et al. social media use and problematic smartphone use among adolescents: A meta-analysis. *Int J Environ Res Public Health*. 2020;17(21):7609.

[6] Sohn S, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes among children and young people: A systematic review and meta-analysis. *BMC Psychiatry*. 2019;19(1):356.

[7] Montag C, Becker B, Gan C. The multipurpose application WeChat: A review on recent research. *Front Psychol*. 2018; 9:2247.

[8] Davey S, Davey A. Assessment of smartphone addiction in Indian adolescents. *Int J Prev Med*. 2014;5(12):1500–1511.