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Insomnia in Bangladesh

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Systematic Review

Keywords: insomnia, sleep disorder, Bangladesh, prevalence, meta-analysis, review

Posted Date: September 22nd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11116876/v1

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Additional Declarations: The authors declare no competing interests.

Abstract

Background:

Insomnia has emerged as a significant public health issue in Bangladesh, affecting various demographic groups. The rising prevalence highlights the need for targeted interventions and mental health support to address the contributing factors and improve overall well-being.

Methods:

We pooled the prevalence data using a random-effects model and evaluated heterogeneity with the Q-test and I^2 statistics. Subgroup analyses were conducted based on gender, age group, profession, and study year. To assess publication bias, we utilized a funnel plot and performed Egger's test, while meta-regression helped identify potential sources of heterogeneity. Sensitivity analysis was conducted to evaluate the robustness of our findings. All analyses were conducted using STATA 17.

Results

The estimated pooled prevalence of insomnia in Bangladesh was 46.35%. The pooled odds ratio for females was 0.90, indicating that females had 10% lower odds of experiencing insomnia than males. The subgroup analysis showed that the pooled prevalence of insomnia was 47.57% for males, 41.79% for females, and 50.97% for students, with adults aged 18 and older at 49.92%. The data showed a consistent increase in prevalence over time, with rates of 38.61% for 2010–2014, rising to 46.73% for 2015–2019, and further increasing to 48.85% for 2020–2024.

Conclusion

To address the rising prevalence of insomnia, interventions should focus on raising awareness and promoting mental health resources, particularly for adults and students. Targeted programs to manage sleep hygiene and stress could help reduce the increasing trends over time.

Introduction

Sleep is crucial for health and well-being. It supports cognitive functioning, emotional management, and general physical health[1]. Sleep is an essential part of human equilibrium. Sleep difficulties are frequently linked to severe physical, psychological, and social problems[2]. These sleep disturbances have a wide range of negative health and financial effects, including a higher chance of hospitalization, absenteeism at work, traffic accidents, mortality, and mental illness[3]. Most sleep specialists agree that the human sleep requirement ranges between 6 and 10 hours every 24 hours, with most people requiring around 8 hours of sleep per day. The allowed minimum sleep time is about 6 hours[4]. Insomnia is characterized by early morning awakenings or trouble falling asleep or staying asleep that occurs at least three nights a week for three months and results in clinically significant distress and/or decreased performance[5]. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) fifth edition criteria, insomnia disorder is characterized as the subjective experience of having trouble falling asleep, staying asleep, and/or waking up early, occurring at least three nights per week for at least three months[6].

A recent study found that exposure to night noise may impact blood cortisol levels; subjective reports of poorer mood and sleep quality were linked with reduced cortisol levels after waking[7]. Insomnia sufferers frequently report a lower quality of life, use sleeping drugs disproportionately, and experience higher rates of illness and death[8]. It is now commonly known that having underlying insomnia raises the risk of somatic illnesses like diabetes, hypertension, and cardiovascular diseases as

well as psychological morbidity like depression, stress, anxiety, mood disorders, and even suicidality[9,10]. Epidemiological research investigating the impact of insomnia symptoms on daytime functioning has found that only around half of those reporting insomnia symptoms three nights per week or more also experience daily impairment[11].

According to several studies conducted throughout the world, 10% to 30% of people suffer from insomnia, with some estimates as high as 50% to 60%[12]. The following risk factors for insomnia have been examined in research studies: age, gender, socioeconomic status, health, quality of life, environmental variables, job schedules, and psychological stress[13]. Acute insomnia might be short-lived, but chronic insomnia can linger for a long time. On the other hand, chronic insomnia can also last a lifetime, and those who experience it frequently develop mental health issues[14]. Sleep disturbances are one of the most common health problems among adults that remain unidentified and untreated[15]. The general prevalence of insomnia symptoms in older persons is between 30 and 48 percent[16]. Approximately 20% of adults aged 65 and up have substantial and persistent sleep disorders[4]. According to a meta-analysis, 52.1% of university students in the South Asian region had insomnia[17]. In Bangladesh, around 39% of elderly individuals reported having trouble sleeping[18]. Recent data from Bangladesh indicate that insomnia affects between 18% and 46.3% of individuals[19]. This study aimed to investigate the overall prevalence of insomnia in Bangladesh through a detailed meta-analysis. It aimed to examine insomnia rates across different demographic groups, with a focus on males, females, and students, to uncover population-specific differences. The study further aimed to conduct a trend analysis to track changes in insomnia prevalence over recent years.

Methods

Data sources and search strategy

A comprehensive search was conducted in MEDLINE/PubMed, Google Scholar, Bangladesh Journals Online, EMBASE, Web of Science, and reference lists of prior studies to identify articles on the prevalence of insomnia in Bangladesh and the associated risks based on gender. Our approach involved testing all possible combinations of keywords to ensure a comprehensive collection of relevant research. In the advanced search phase, we applied the Boolean operators "OR" and "AND" to enhance the specificity and breadth of our search results.

Inclusion Criteria

The study applied specific inclusion criteria to ensure the selection of relevant research. It included studies reporting the prevalence of insomnia and involving participants of any age. Studies had to provide adequate data to calculate prevalence and could follow cross-sectional or other noninterventional designs. Only articles published in English with full-text availability were considered.

Exclusion Criteria

The study applied specific exclusion criteria to eliminate irrelevant or unreliable research. Studies were excluded if they lacked data on the prevalence of insomnia or did not provide enough information to calculate it. Research with unclear reporting of essential details, such as study period, sample size, or sampling techniques, was also excluded. Case reports, editorial remarks, interventional studies, and letters to the editor were not considered. Articles were omitted if their full texts were unavailable, if they were preprints, or if they had not undergone peer review. Additionally, studies related to COVID-19 were excluded to avoid pandemic-specific biases.

Data extraction

The chosen studies were all cross-sectional. The author and the year of publication, study year, age range, sample size, the prevalence of male insomnia, the prevalence of female insomnia, the prevalence of overall insomnia, participants' profession, measurement scale, and the odds ratio of insomnia of females (OR, Male (reference category)) were all taken from the included studies. Key features of the extracted studies are shown in Table 1.

Measurement scale

In this meta-analysis, we reviewed studies that utilized various insomnia measurement tools, including the Insomnia Severity Index (ISI), Athens Insomnia Scale (AIS), Pittsburgh Sleep Quality Index (PSQI), etc. Most studies in our analysis assessed insomnia using the Pittsburgh Sleep Quality Index (PSQI) scale. Although the PSQI is primarily known for assessing general sleep quality, its global application extends to measuring insomnia risk[20,21,22]. One research study revealed that summary estimates across ISI, AIS, and PSQI did not differ significantly, indicating each was a valuable tool for insomnia measurement[20]. Additionally, findings from another study suggested that the PSQI is particularly effective in distinguishing individuals with insomnia from those without, highlighting its utility in clinical and research settings[23].

Evaluation of study quality

The critical assessment checklist created by the Joanna Briggs Institute (JBI) was used to evaluate the methodological quality of the studies included in the analysis that provided prevalence data[24,25]. The checklist consists of nine questions divided into three categories. A study was rated as high quality if it met all three criteria outlined in the checklist.

Statistical analysis

We pooled the prevalence data using a restricted maximum likelihood (REML) random-effects model[26]. The heterogeneity among the included studies was evaluated using the Q-test and I^2 statistics[27]. Subgroup analyses were conducted based on gender, age group, profession, and study year. To assess potential publication bias, we employed a funnel plot and performed Egger's test[28]. Furthermore, meta-regression was utilized to explore possible sources of heterogeneity. The robustness of our findings was assessed through sensitivity analysis[29]. All analyses were executed using STATA 17.

Results

Literature search

A total of 921 relevant papers were initially identified. After eliminating duplicates, 564 unique articles remained. Screening of titles and abstracts led to the exclusion of 439 irrelevant publications, narrowing the list to 125 articles for further assessment. However, the full texts of 18 articles could not be retrieved, resulting in 107 articles being assessed for eligibility. A detailed evaluation of these 107 articles resulted in the exclusion of 89 articles. Finally, we included 18 studies for the meta-analysis. Figure 1 displays a flow diagram based on the PRISMA guidelines, outlining the process of article identification and selection. The PRISMA checklist has been included as a supplementary file.

The pooled estimates

The estimated pooled prevalence of insomnia in Bangladesh was found to be 46.35%, derived from 18 studies involving 9867 individuals. The 95% confidence interval (CI) ranged from 35.83% to 56.87%. Significant heterogeneity among the studies indicated by $I^2 = 99.35\%$, $Q = \chi^2 (17) = 3735.56$, and $P < 0.001$. The forest plot illustrating the pooled prevalence is presented in Fig. 2.

The pooled odds ratio for females was calculated to be .90 (95% CI: 0.71–1.08), with $I^2 = 0.00\%$, taking males as the reference category (OR = 1.00) for insomnia risk. The forest plot showing the pooled odds ratio for females is presented in S6 Figure.

Table 1
Characteristics of the included studies.

Author	Study year	Age	Sample size	Male	Male Insomnia (%)	Female	Female Insomnia (%)	Overall Insomnia (%)	Female (OR)
Firoj Al-Mamun et al. (2024)[30]	2023	≥ 18	1496	648	26	848	25.1	25.5	0.91
Rajat Sanker Roy Biswas et al.(2015)[31]	2013	-	977	-	-	-	-	17.7	-
Syeda Mushrefa Jahan et al.(2019)[32]	2018	18–26	390	157	71.34	233	68.24	69.49	0.82
Md. Sabab Zulfiker et al.(2021)[33]	2020	12.09	453	-	-	-	-	16.56	-
Md. Masudur Rahman et al.(2021)[34]	2019	≥ 18	385	-	-	-	-	52	-
Md Nuruzzaman Khan et al.(2014)[18]	2013	≥ 60	250	168	33.92	82	48.78	39.2	-
Zohurul Islam et al. (2021)[35]	2019	18–26	400	279	73.7	121	26.3	48.5	1.45
Md Mahbubul Alam Shaun et al.(2022)[36]	2021	15–49	481	-	-	481	38.88	38.88	-
Muhammad Shamsul Alam et al.(2019)[37]	2013	≥ 55	100	-	-	-	-	60	0.67
Mohammed A. Mamun et al.(2020)[38]	2018	≥ 18	279	112	66.96	167	52.69	58.42	
Md.Sabbir Ahmed et al.(2020)[39]	2019	18–25	332	214	58.4	118	81.4	66.6	-
Simanta Roy et al. (2024)[40]	2023	18.62	771		-	-	-	27.97	-
Md. Hasan Al Banna et al.(2023)[41]	2022	≥ 18	390	210	51.9	180	48.9	50.5	-
Arman Hossain Chowdhury et al. (2023)[42]	2022	≥ 18	1250	635	66.4	322	33.6	76.5	1.5
Israt Irean Ria et al. (2024)[43]	2019	10–19	289	150	13	139	22.7	18	
Md Rizwanul Karim et al.(2023)[44]	2022	≥ 18	720	-		-	-	86.5	-
Seyyed Mansour Kashfi et al.(2023)[45]	2018	≥ 18	402	157	14.65	245	14.28	14.42	-
Md Shafiqul Islam Khan et al.(2024)[46]	2023	≥ 18	502	-	-	-	-	68.3	-

- Indicates studies do not contain the information.

Subgroup analysis

The subgroup analysis (Table 2) reveals variations in the pooled prevalence of insomnia across gender, profession, age, and study periods, with associated 95% confidence intervals (CI) for each category. The forest plots for the subgroup analyses are shown in the S1 Figure, S2 Figure, S3 Figure, S4 Figure, and S5 Figure.

Table 2
Subgroup analysis.

Subgroup Analysis				
			95% C. I	
Subgroup		Pooled Prevalence (%)	Lower Limit	Upper Limit
	Male	47.57	32.86	62.27
Gender	Female	41.79	29.64	53.94
Profession	Student	50.97	38.32	63.62
Age	≥ 18	49.92	39.35	60.50
	2010–2014	38.61	14.73	62.5
Study Year	2015–2019	46.73	30.27	63.19
	2020–2024	48.85	30.89	66.80

The subgroup analysis of insomnia prevalence presented important findings across various demographics and time periods. The pooled prevalence for males was 47.57% (95% CI: 32.86% − 62.27%), indicating a notable occurrence of insomnia among this group. In contrast, females showed a prevalence of 41.79% (95% CI: 29.64% − 53.94%), suggesting that while both genders were affected, males may have experienced higher rates. Among students, the prevalence was alarmingly high at 50.97% (95% CI: 38.32% − 63.62). For adults aged 18 and older, the prevalence was 49.92% (95% CI: 39.35% − 60.50%), indicating that nearly half of this population struggled with insomnia. Examining the study years, the prevalence of insomnia showed a consistent increase, starting at 38.61% for 2010–2014. This figure rose to 46.73% for 2015–2019 and further increased to 48.85% for 2020–2024. The upward trend indicated a growing concern regarding insomnia over the years.

Publication bias

Egger's test for insomnia prevalence yielded a P-value of 0.407, indicating no publication bias, supported by the symmetric funnel plot (Fig. 3). Similarly, for the pooled odds ratio, Egger's test showed no evidence of publication bias with a P-value of 0.202, and the funnel plot was also symmetric (S7 Figure).

Meta-regression

The meta-regression results indicate that neither sample size nor study year significantly affects the effect size. The coefficient for sample size was − 0.0108 (p = 0.531), suggesting no meaningful association. Similarly, the coefficient for the study year was 1.6049 (p = 0.402), indicating that the year does not predict effect size.

Sensitivity analysis

A sensitivity analysis was conducted by systematically removing each study to assess its impact on the overall effect size. The plot for the sensitivity analysis is shown in Fig. 4.

Quality of evidence

The quality and risk of bias for the studies included in the analysis are outlined in Table S3, based on the JBI assessment tools. Some studies were deemed high quality, whereas others presented several limitations. In our meta-analysis, most of the studies showed evidence of high methodological quality and low risk of bias. S1 Table shows the assessment of the quality of the included studies.

Discussion

The goal of this systematic review was to summarize the literature on insomnia in Bangladesh to provide a complete estimation of the prevalence of the disorder in the nation's population. Our findings indicated a pooled prevalence of insomnia was 46.35%. The prevalence varied by gender, with rates of 41.79% for females and 47.57% for males, showing males were more affected. The pooled odds ratio (OR) of 0.90 for females suggested that females had a 10% lower odds of experiencing insomnia than males (taken as the reference category). Insomnia prevalence was notably high among students, reaching 50.97%, and among those aged ≥ 18, where it was 49.92%. By time, insomnia rates increased steadily: 38.61% from 2010 to 2014, 46.73% from 2015 to 2019, and 48.85% from 2020 to 2024, indicating a rising trend.

When compared to particular population subgroups in Bangladesh, our results are consistent with evidence from other cross-sectional studies. For instance, a study of 1,496 entrance exam takers at Jahangirnagar University in 2023 found an overall prevalence of 25.5%, with 26% of males and 25.1% of females experiencing insomnia. The findings also showed that women had 9% lower odds of experiencing insomnia compared to males[30]. Another cross-sectional study of 1,250 Bangladeshi students reported a significantly higher prevalence of 76.5% overall, with males (66.4%) more affected than females (33.6%)[47]. Additionally, among elderly individuals aged ≥ 60 in Pabna district, the prevalence was 39.2%, with females (48.78%) showing a higher rate than males (33.92%)[18]. Similar findings were found in a cross-sectional study of 390 university students from Bangladesh, which revealed a 50.5% prevalence of insomnia overall, with rates of 51.9% among males and 48.9% among females[48].

International comparisons show that the prevalence of insomnia is lower in several countries. For example, a study of 1,050 South Indians aged 15 to 59 found a prevalence of 18.6%, significantly lower than in Bangladesh[49]. Similarly, a cross-sectional study of 232 people aged 18 to 35 in North-West Punjab, India, revealed a 33% prevalence of insomnia[50]. A systematic review and meta-analysis of 17 studies with 115,988 participants of the Chinese general population revealed a 15.0% (95% CI: 12.1%-18.5%) pooled prevalence of insomnia[51]. Consistent with our findings, a systematic review of 7 studies assessing insomnia among South Asian university students found a pooled prevalence of 52.1% (95% CI: 41.1–63.1%)[17]. In a Korean epidemiologic study, out of 5,000 adults aged 20 to 69, 22.8% reported having insomnia[52]. Other Asian countries like Japan, South Korea, and Taiwan reported prevalence rates ranging from 4% to 10.3% in specific surveys[53], while in Turkey, a survey indicated a prevalence of 12.2%[54]. In a large multicenter study with 57,298 participants in France and 12 other countries, the prevalence of insomnia disorder was 11.3%[55]. Furthermore, a meta-analysis of 16 studies involving 18,270 participants among older adults showed an overall rate of 19.6% (95% CI: 12.3%; 28.3%)[56]. These results suggest that insomnia was significantly more common in Bangladesh than in many other areas, suggesting that regional or cultural factors may influence insomnia prevalence, particularly among particular subgroups like adults and students who were 18 years of age or older.

The meta-analysis on insomnia prevalence in Bangladesh provided valuable insights by synthesizing data from multiple studies, which increased statistical power and produced more reliable estimates. By examining variations across gender, age groups, temporal trends, and specifically among students, the study offered a comprehensive view of demographic and temporal patterns. The study had some limitations that may have influenced its findings. One limitation of this study was that the protocol was not registered. Variability in study designs and measurement tools across included studies may have introduced heterogeneity, potentially affecting the consistency of the findings. Limited access to recent, high-quality data from all demographic groups reduced the generalizability of the results to the entire population. The approach also

depended heavily on the quality of the included studies, meaning any methodological flaws in those studies could impact the overall findings.

Future studies should explore insomnia's links to specific lifestyle factors, mental health conditions, and socioeconomic disparities in Bangladesh to provide a more comprehensive view. Longitudinal research could clarify how insomnia prevalence changes over time and identify causal relationships.

Conclusion

The meta-analysis identified a high prevalence of insomnia in Bangladesh, with males exhibiting a significantly greater rate than females. Additionally, students demonstrated an even higher prevalence, highlighting a critical area for intervention. The analysis indicated an increasing trend in insomnia rates over time, underscoring the urgency for effective public health strategies. These findings emphasize the need for targeted approaches to address insomnia and its potential impacts on mental health. Future research should further investigate these trends to inform comprehensive public health policies.

Declarations

Acknowledgments

We want to show our gratitude to all of the data sources.

Funding

This research was conducted without external funding. The authors declare that they did not receive any financial support or grants for the design, execution, analysis, or writing of this study.

Data availability

Not applicable

Ethics approval and consent to participants

Not applicable

Consent for publication

Not applicable

Competing interests

The authors declare no competing interests.

References

1. Al-Mamun F, Mamun MA, Hasan ME, Almerab MM, Gozal D (2024) Exploring Sleep Duration and Insomnia Among Prospective University Students: A Study with Geographical Data and Machine Learning Techniques. Nat Sci Sleep 16:1235–1251. 10.2147/NSS.S481786
2. Han KS, Kim L, Shim I (2012) Stress and Sleep Disorder. Exp Neurobiol 21(4):141. 10.5607/EN.2012.21.4.141
3. Valdez-Santiago R, Solórzano EH, Iñiguez MM, Burgos LÁ, Gómez Hernández H, Martínez González Á (2018) Attempted suicide among adolescents in Mexico: prevalence and associated factors at the national level. Inj Prev 24(4):256–261. 10.1136/INJURYPREV-2016-042197

4. Ma U (2017) Research Article Volume 3 • Issue 2 • 1000143 J Ment Disord Treat, an open access journal Citation: Uddin MA Sleep Problems of Older People in Bangladesh. *J Ment Disord Treat*. 2015;3:143. 10.4172/2471-271X.1000143
5. Montgomery MC, Baylan S, Gardani M (2022) Prevalence of insomnia and insomnia symptoms following mild-traumatic brain injury: A systematic review and meta-analysis. Sleep Med Rev 61:101563. 10.1016/J.SMRV.2021.101563
6. Bjorøy I, Jørgensen VA, Pallesen S, Bjorvatn B (2020) The Prevalence of Insomnia Subtypes in Relation to Demographic Characteristics, Anxiety, Depression, Alcohol Consumption and Use of Hypnotics. Front Psychol 11:532721. 10.3389/FPSYG.2020.00527/BIBTEX
7. Kawada T, Yosiaki S, Yasuo K, Suzuki S (2003) Population study on the prevalence of insomnia and insomnia-related factors among Japanese women. Sleep Med 4(6):563–567. 10.1016/S1389-9457(03)00109-6
8. Wang YM, Chen HG, Song M et al (2016) Prevalence of insomnia and its risk factors in older individuals: a community-based study in four cities of Hebei Province, China. Sleep Med 19:116–122. 10.1016/J.SLEEP.2015.10.018
9. al Mamun F, Gozal D, Hosen I, Misti JM, Mamun MA (2022) Predictive factors of insomnia during the COVID-19 pandemic in Bangladesh: a GIS-based nationwide distribution. Sleep Med 91:219–225. 10.1016/J.SLEEP.2021.04.025
10. Zailinawati AH, Mazza D, Teng CL (2012) Prevalence of insomnia and its impact on daily function amongst Malaysian primary care patients. Asia Pac Fam Med 11(1). 10.1186/1447-056X-11-9
11. Ohayon MM, Sagales T (2010) Prevalence of insomnia and sleep characteristics in the general population of Spain. Sleep Med 11(10). 10.1016/j.sleep.2010.02.018
12. Bhaskar S, Hemavathy D, Prasad S (2016) Prevalence of chronic insomnia in adult patients and its correlation with medical comorbidities. J Fam Med Prim Care 5(4). 10.4103/2249-4863.201153
13. Nakata A, Haratani T, Takahashi M et al (2004) Job stress, social support, and prevalence of insomnia in a population of Japanese daytime workers. Soc Sci Med 59(8). 10.1016/j.socscimed.2004.02.002
14. Islam MM, Masum AKM, Abujar S, Hossain SA A systematic way of collecting data of insomniac patients: An analytical survey. In: (2020) *11th International Conference on Computing, Communication and Networking Technologies, ICCCNT 2020*.; 2020. 10.1109/ICCCNT49239.2020.9225485
15. Kiejna A, Wojtyniak B, Rymaszewska J, Stokwiszewski J (2003) Prevalence of insomnia in Poland - Results of the National Health Interview Survey. Acta Neuropsychiatr 15(2). 10.1034/j.1601-5215.2003.00011.x
16. Patel D, Steinberg J, Patel P (2018) Insomnia in the elderly: A review. J Clin Sleep Med 14(6). 10.5664/jcsm.7172
17. Chowdhury AI, Ghosh S, Hasan MF, Siam KKA, Azad F (2021) Prevalence of insomnia among university students in South Asian Region: A systematic review of studies. J Prev Med Hyg 61(4). 10.15167/2421-4248/jpmh2020.61.4.1634
18. Khan MN (2014) A Study on Quality of Life of Elderly Population in Bangladesh. Am J Heal Res 2(4). 10.11648/j.ajhr.20140204.18
19. Hasan M, Maliha Z, Rahman A, Mamun MA (2021) Insomnia in Bangladeshi Young Adults During the COVID-19 Pandemic: The Role of Behavioral Factors, COVID-19 Risk and Fear, and Mental Health Issues. Sleep Vigil 5(2). 10.1007/s41782-021-00161-5
20. Chiu HY, Chang LY, Hsieh YJ, Tsai PS (2016) A meta-analysis of diagnostic accuracy of three screening tools for insomnia. J Psychosom Res 87. 10.1016/j.jpsychores.2016.06.010
21. Backhaus J, Junghanns K, Broocks A, Riemann D, Hohagen F (2002) Test-retest reliability and validity of the Pittsburgh Sleep Quality Index in primary insomnia. J Psychosom Res 53(3). 10.1016/S0022-3999(02)00330-6
22. Tsai PS, Wang SY, Wang MY et al (2005) Psychometric evaluation of the Chinese version of the Pittsburgh Sleep Quality Index (CPSQI) in primary insomnia and control subjects. Qual Life Res 14(8). 10.1007/s11136-005-4346-x
23. Niu S, Wu Q, Ding S, Wu L, Wang L, Shi Y (2023) Comparison of three measures for insomnia in ischemic stroke patients: Pittsburgh sleep quality index, insomnia severity index, and Athens insomnia scale. Front Neurol 14. 10.3389/fneur.2023.1118322

24. Munn Z, MClinSc SM, Lisy K, Riitano D, Tufanaru C (2015) Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and cumulative incidence data. Int J Evid Based Healthc 13(3). 10.1097/XEB.0000000000000054
25. What quality assessment tool should I use for studies included in my review? - Ask HSL. Accessed October 4 (2024) https://asklib.hsl.unc.edu/faq/366855
26. Tanriver-Ayder E, Faes C, Van De Casteele T, McCann SK, Macleod MR (2021) Comparison of commonly used methods in random effects meta-analysis: Application to preclinical data in drug discovery research. BMJ Open Sci Published online. 10.1136/bmjos-2020-100074
27. Mahmud S, Mohsin M, Hossain S, Islam MM, Muyeed A (2022) The acceptance of COVID-19 vaccine at early stage of development and approval: A global systematic review and meta-analysis. Heliyon Published online. 10.1016/j.heliyon.2022.e10728
28. Higgins JPT, Thompson SG (2002) Quantifying heterogeneity in a meta-analysis. *Stat Med*. Published online. 10.1002/sim.1186
29. Deeks JJ, Higgins JPT, Altman DG (2020) Chapter 1*0: Analysing Data and Undertaking Meta-Analyses. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (Editors)*
30. Al-Mamun F, Mamun MA, Hasan ME, Almerab MM, Gozal D (2024) Exploring Sleep Duration and Insomnia Among Prospective University Students: A Study with Geographical Data and Machine Learning Techniques. Nat Sci Sleep 16:1235–1251. 10.2147/NSS.S481786
31. Biswas RSR, Bhattacharjee B (2015) Patient profile and sleep abnormalities among the patients visiting a general physician in an urban slum area, Chittagong, Bangladesh. Indian J Sleep Med 10(1). 10.5005/ijsm-10-1-37
32. Jahan SM, Hossain SR, Sayeed UB, Wahab A, Rahman T, Hossain A (2019) Association between internet addiction and sleep quality among students: a cross-sectional study in Bangladesh. Sleep Biol Rhythms 17(3). 10.1007/s41105-019-00219-y
33. Zulfiker MS, Kabir N, Biswas AA, Chakraborty P (2021) Predicting Insomnia Using Multilayer Stacked Ensemble Model. In: *Communications in Computer and Information Science*. Vol 1440 CCIS.; 10.1007/978-3-030-81462-5_31
34. Zakaria M, Rahman MM (2021) Facebook Use and its Relationship with Physical and Mental Health among University Students in Bangladesh. C 2021. ;4(2)
35. Islam Z, Hsan K, Islam S, Gozal D, Hossain M (2021) Assessment of sleep quality and its association with problematic internet use among university students: A crosssectional investigation in bangladesh. Sleep Sci 14. 10.5935/1984-0063.20200069
36. Shaun MMA, Nizum MWR, Shuvo MA et al (2022) Association between depressive symptoms and poor sleep quality among pregnant women in Northern Rural Bangladesh: a community-based cross-sectional study. BMC Psychiatry 22(1). 10.1186/s12888-022-03839-w
37. Alam MS, Binni SY, Khan MZR, Hossain ZMM, Tasmia NTZ, Tuba F (2019) Sleep disorder in elderly and their association to anxiety, depression and stress. Bangladesh J Psychiatry 33(1):11–15. 10.3329/BJPSY.V33I1.71924
38. Mamun MA, Hossain MS, Kamruzzaman M et al (2020) Prevalence of Poor Sleep Quality and Its Determinants Among Bangladeshi Students: A Pilot Study. Sleep Vigil 4(2). 10.1007/s41782-020-00109-1
39. Ahmed MS, Khan S, Hsan K, Sen LC, Yunus FM, Griffiths MD (2020) Factors Affecting Sleep Quality Among the University Students in Bangladesh: A Cross-Sectional Structured Interview Study. Sleep Vigil 4(2). 10.1007/s41782-020-00106-4
40. Roy S, Iktidar MA, Chowdhury S, Pulock OS, Pinky SD, Sharif A, Bin (2024) Increased screen time and its association to migraine and tension-type headache: a cross-sectional investigation among Bangladeshi students. BMJ Neurol Open 6(1):656. 10.1136/BMJNO-2024-000656
41. Banna MH, Al, Brazendale K, Hamiduzzaman M et al (2023) Exposure to secondhand smoke is associated with poor sleep quality among non-smoking university students in Bangladesh: a cross-sectional survey. Sci Rep 13(1).

10.1038/s41598-023-43970-6

42. Chowdhury AH, Rad D, Rahman MS (2024) Predicting anxiety, depression, and insomnia among Bangladeshi university students using tree-based machine learning models. Heal Sci Rep 7(4):e2037. 10.1002/HSR2.2037
43. Ria II, Biswas RK, Alam A, Rakshit PV, Tahsin S (2024) Depressive Symptoms Among Adolescents in Bangladesh. Int J Ment Health Addict 22(1). 10.1007/s11469-022-00860-8
44. Karim MR, Haque MJ, Akhter S, Ahmed HU (2023) Facebook addiction and its related factors among medical students; a cross- sectional study in Bangladesh. PLOS Glob Public Heal 3(2). 10.1371/journal.pgph.0001597
45. Kashfi SM, Karami H, Jafari F et al (2023) Internet Addiction and Sleep Disorders among Medical Students. *Sci World J*. ;2023. 10.1155/2023/6685676
46. Khan MSI, Paul T, Al Banna MH et al (2024) Skipping breakfast and its association with sociodemographic characteristics, night eating syndrome, and sleep quality among university students in Bangladesh. BMC Nutr 10(1). 10.1186/s40795-024-00860-y
47. Chowdhury AH, Rad D, Rahman MS (2024) Predicting anxiety, depression, and insomnia among Bangladeshi university students using tree-based machine learning models. Heal Sci Rep 7(4). 10.1002/HSR2.2037
48. Khanam R, Ahmed S, Rahman S et al (2019) Prevalence and factors associated with hypertension among adults in rural Sylhet district of Bangladesh: a cross-sectional study. BMJ Open 9(10). 10.1136/BMJOPEN-2018-026722
49. Panda S, Taly AB, Sinha S, Gururaj G, Girish N, Nagaraja D (2012) Sleep-related disorders among a healthy population in South India. Neurol India 60(1). 10.4103/0028-3886.93601
50. Shah AF, Patil RK, Gupta R (2022) Assessment of the prevalence, risk factors of insomnia, and its effect on quality of life among young population of North region. Int J Community Med Public Heal 9(10). 10.18203/2394-6040.ijcmph20222575
51. Cao XL, Wang S, Bin, Zhong BL et al (2017) The prevalence of insomnia in the general population in China: A meta-analysis. PLoS ONE 12(2). 10.1371/journal.pone.0170772
52. Cho YW, Shin WC, Yun CH, Hong SB, Kim J, Earley CJ (2009) Epidemiology of Insomnia in Korean Adults: Prevalence and Associated Factors. J Clin Neurol 5(1). 10.3988/jcn.2009.5.1.20
53. Nomura K, Yamaoka K, Nakao M, Yano E (2005) Impact of insomnia on individual health dissatisfaction in Japan, South Korea, and Taiwan. Sleep 28(10). 10.1093/sleep/28.10.1328
54. Benbir G, Demir AU, Aksu M et al (2015) Prevalence of insomnia and its clinical correlates in a general population in Turkey. Psychiatry Clin Neurosci 69(9). 10.1111/pcn.12252
55. Aernout E, Benradia I, Hazo JB et al (2021) International study of the prevalence and factors associated with insomnia in the general population. Sleep Med 82. 10.1016/j.sleep.2021.03.028
56. Endomba FT, Tchebegna PY, Chiabi E, Angong Wouna DL, Guillet C, Chauvet-Gélinier JC (2023) Epidemiology of insomnia disorder in older persons according to the Diagnostic and Statistical Manual of Mental Disorders: a systematic review and meta-analysis. Eur Geriatr Med 14(6). 10.1007/s41999-023-00862-2

Figures

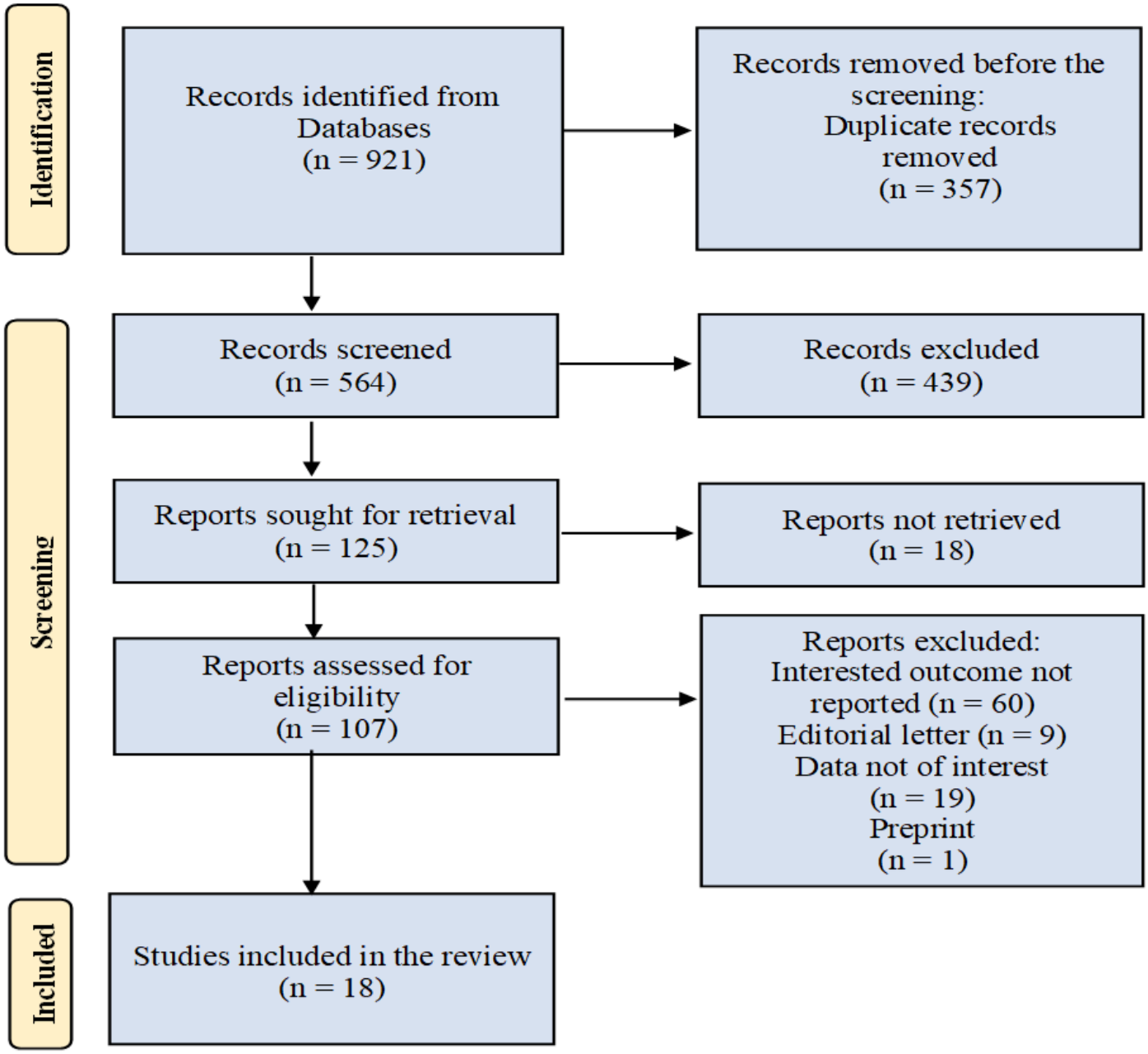


Figure 1

PRISMA flow diagram.

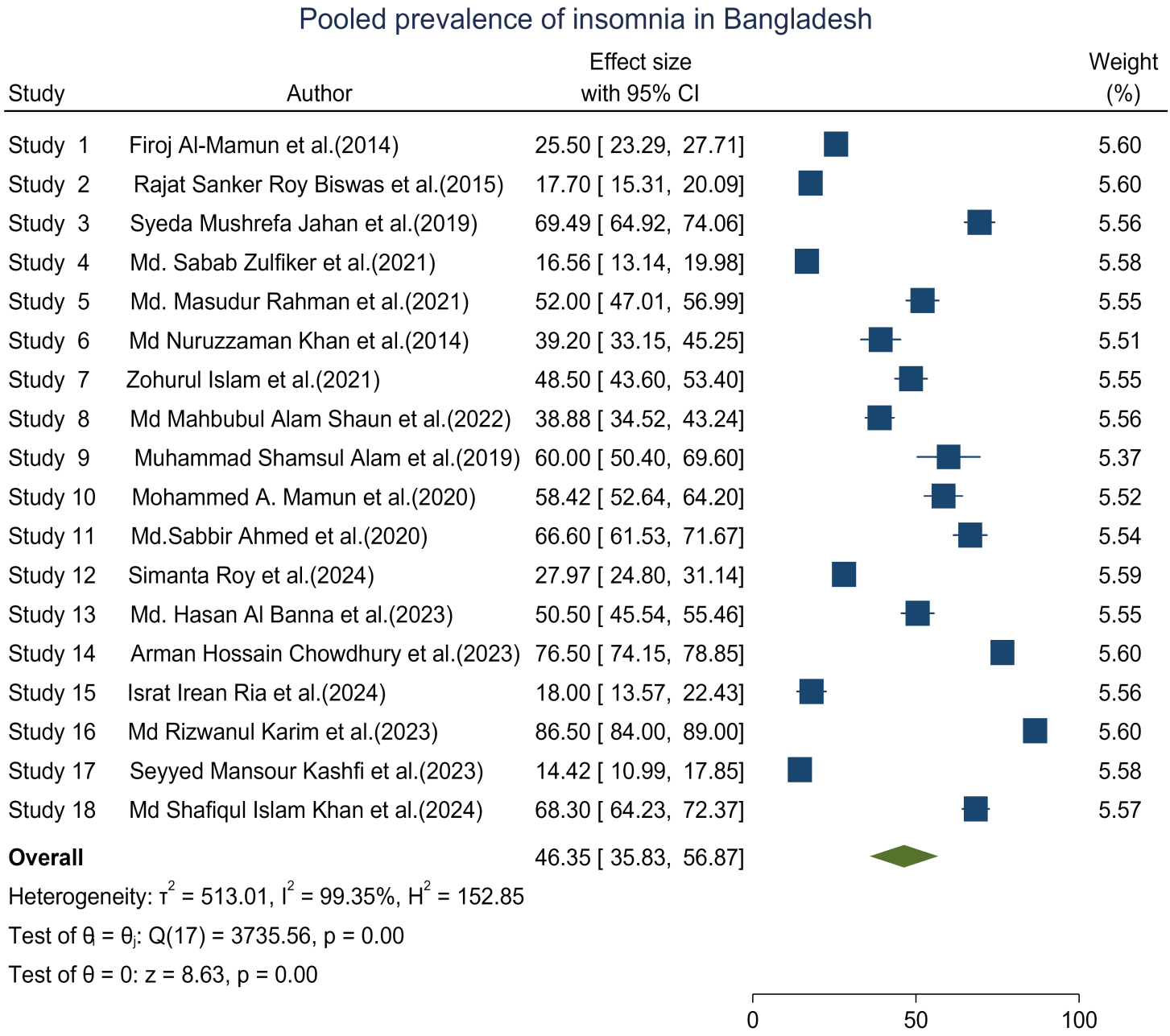


Figure 2

Pooled prevalence of insomnia in Bangladesh.

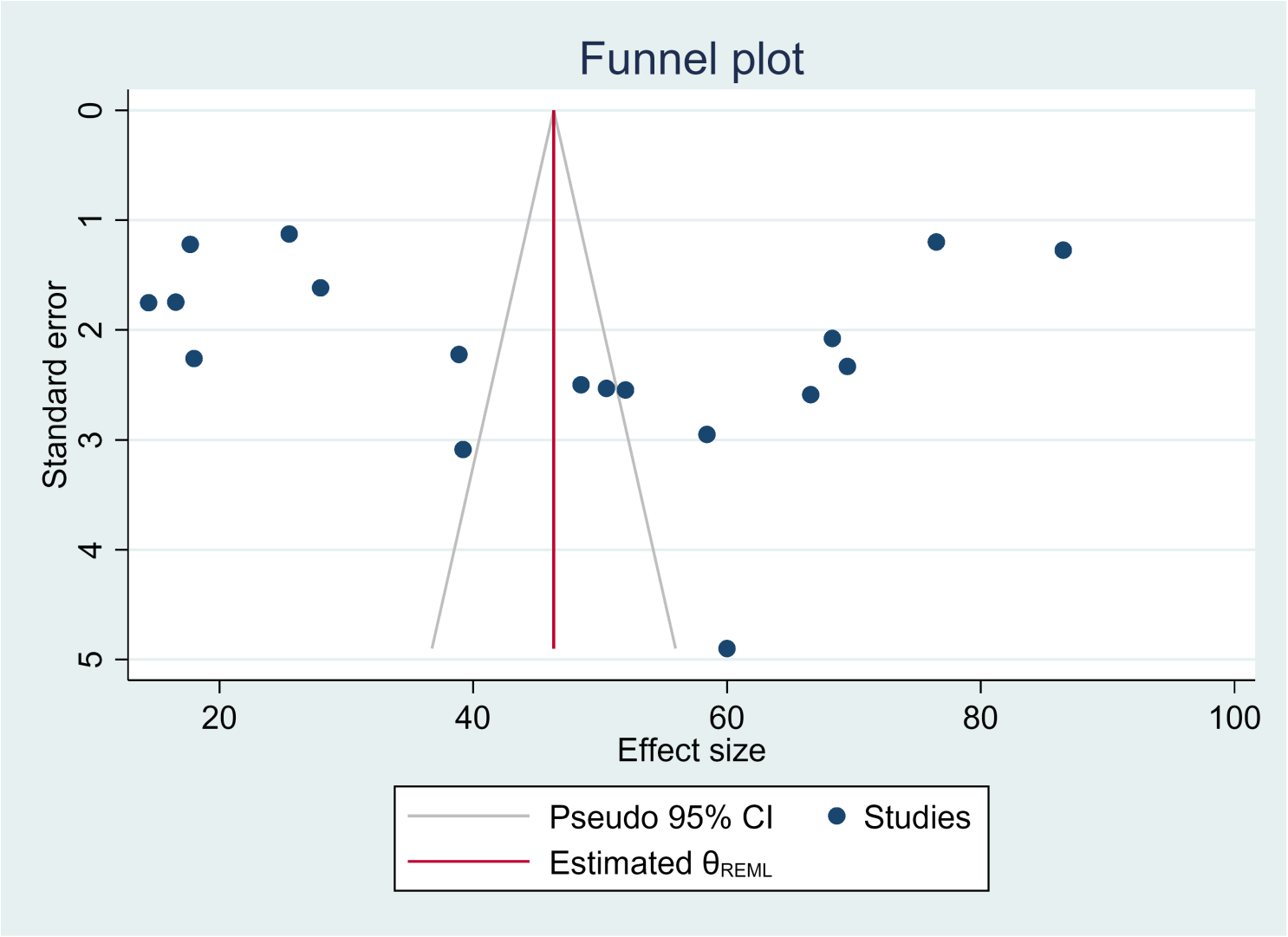


Figure 3

Funnel plot.

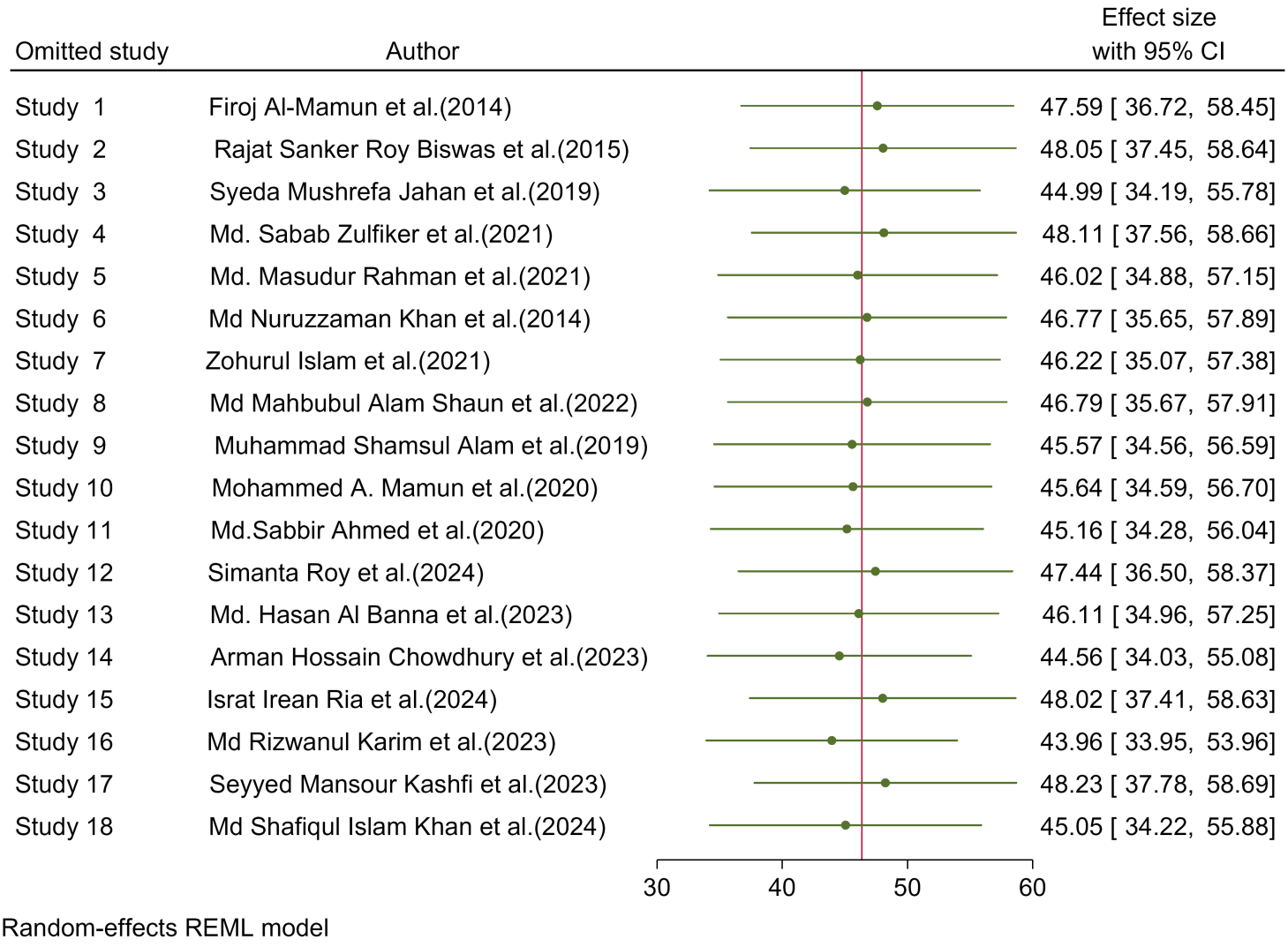


Figure 4

Sensitivity analysis plot.

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