

SUPPLEMENTARY FILE

Table S1: Search Strategy: Database Research

Data base	Search strategy	Applied filters
PubMed, Scopus, Google Scholar	("Mental Health Problems" OR "Mental Health disorder" OR "Mental Health" OR "Anxiety" OR "Stress" OR "Depression" OR "Suicide Ideation") AND ("MBBS students", "Undergraduate Medical Students", "Medical Students") AND India	No filters were applied to any of the data bases

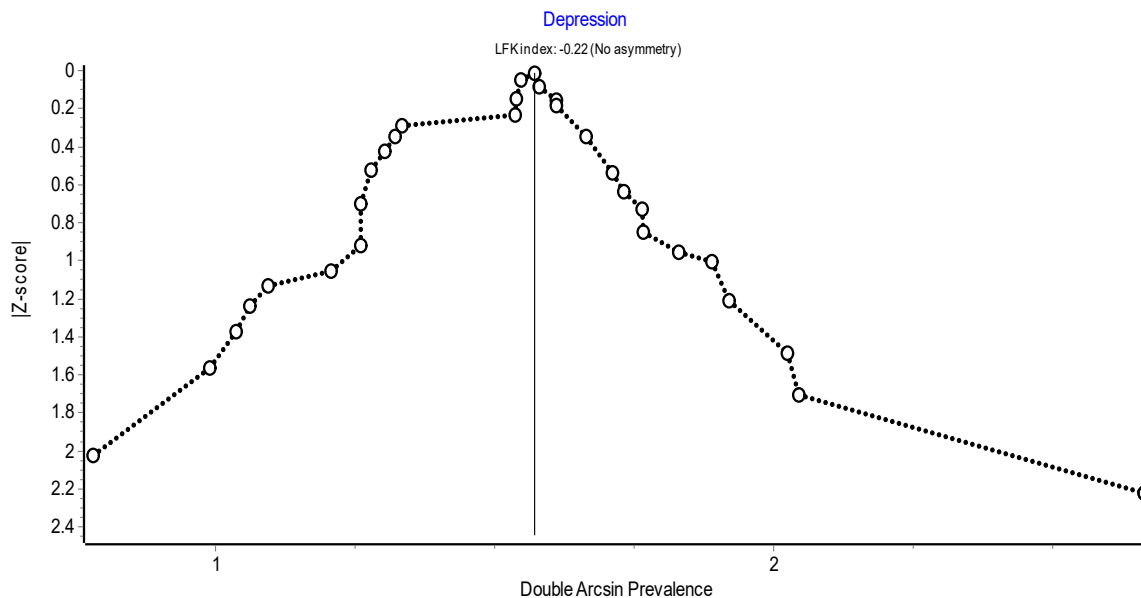


Figure S1: Publication Bias for included studies for prevalence of Depression using DOI plot

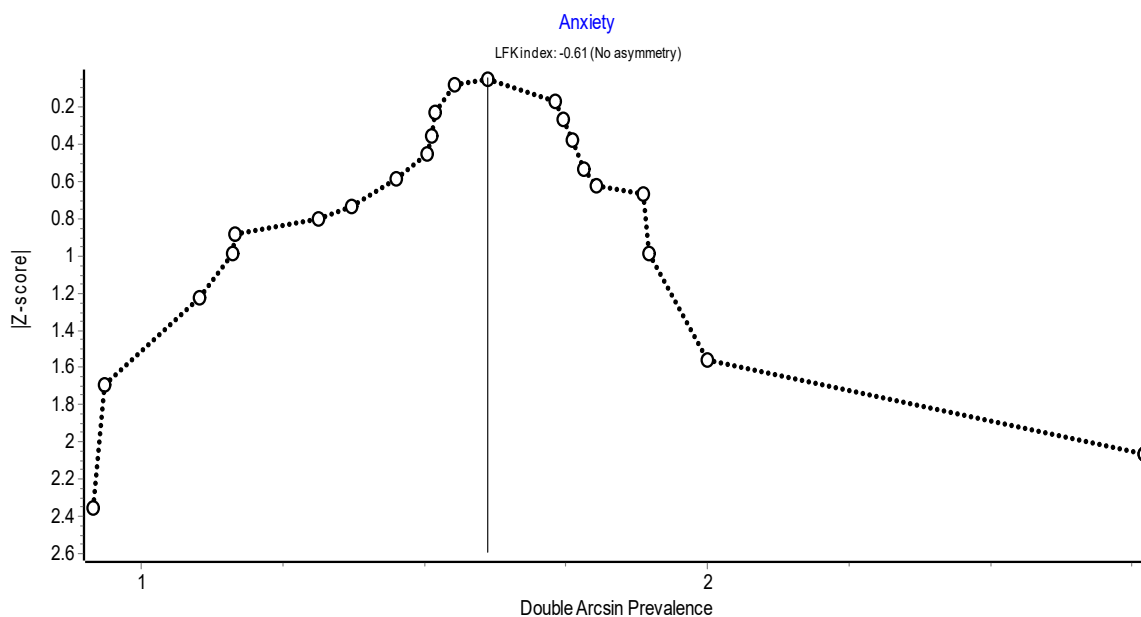
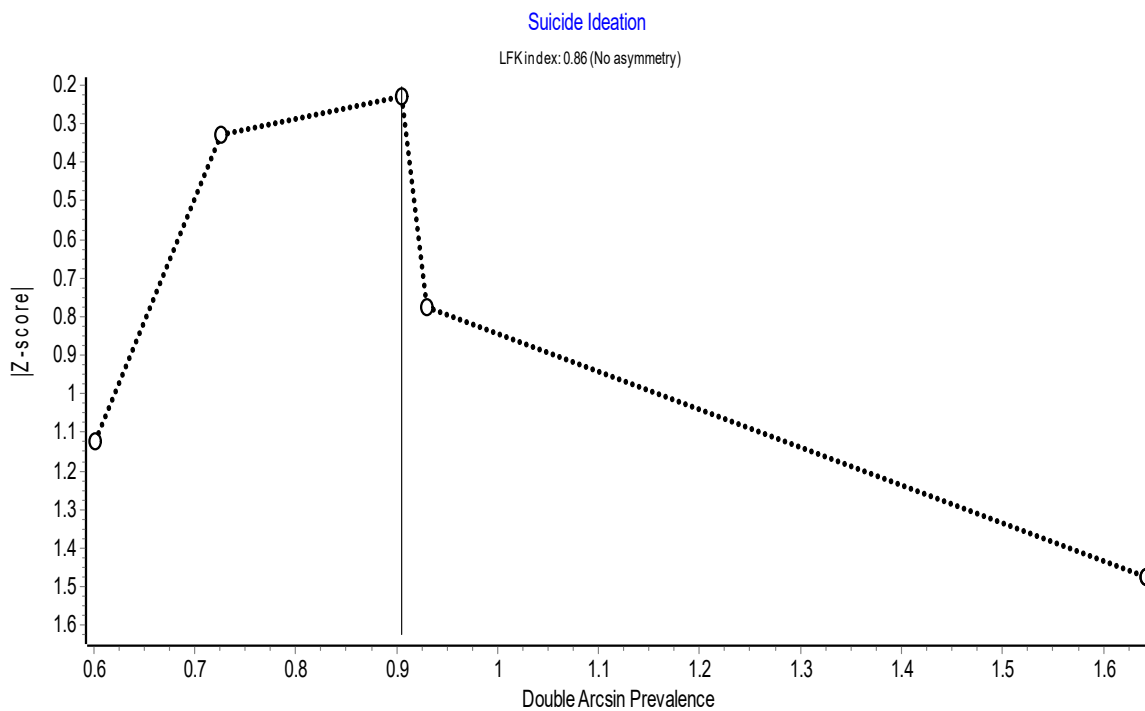
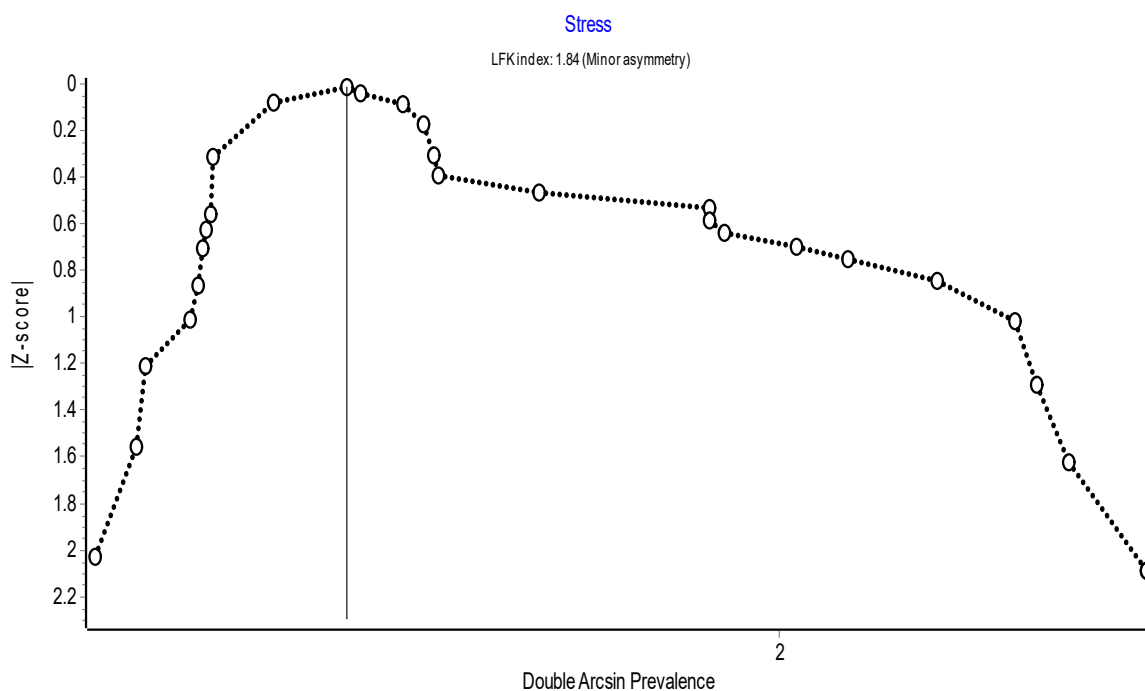


Figure S2: Publication Bias for included studies for prevalence of Anxiety using DOI plot



**Figure S3. Publication Bias for included studies for prevalence of Suicide Ideation using DOI plot**



**Figure S4. Publication Bias for included studies for prevalence of Stress using DOI plot**

**Table S2: Table Sensitivity Analysis for included studies for Depression among undergraduate medical students**

Excluded study	Pooled Prevalence (%CI)	Cochran Q	p	I <sup>2</sup> (95%CI)
Mandyam 2023	0.48(0.42,0.55)	1519.88	0.00	98.16(97.83,98.44)
Merchant 2023	0.48(0.41,0.55)	1537.67	0.00	98.18(97.86,98.45)
Arun 2022	0.48(0.42,0.55)	1536.70	0.00	98.18(97.85,98.45)
Karthik 2022	0.48(0.41,0.55)	1564.31	0.00	98.21(97.89,98.48)
Lepcha 2022	0.49(0.42,0.56)	1450.05	0.00	98.07(97.72,98.37)
Chakraborty 2021	0.48(0.41,0.55)	1564.18	0.00	98.21(97.89,98.48)
Desai 2021	0.49(0.43,0.56)	1269.06	0.00	97.79(97.37,98.15)
Jose 2021	0.47(0.41,0.54)	1545.91	0.00	98.19(97.87,98.46)
Karmakar 2021	0.46(0.40,0.52)	1153.83	0.00	97.57(97.10,97.97)
Kukreja 2021	0.49(0.42,0.52)	1497.24	0.00	98.13(97.79,98.41)
Pandey 2021	0.48(0.41,0.55)	1563.31	0.00	98.21(97.89,98.48)
Solanki 2021	0.48(0.41,0.55)	1543.50	0.00	98.19(97.86,98.46)
Haritay 2020	0.47(0.41,0.54)	1550.76	0.00	98.19(97.87,98.47)
Kumar 2020	0.49(0.42,0.56)	1526.15	0.00	98.17(97.84,98.44)
Luthra 2020	0.49(0.42,0.56)	1508.88	0.00	98.14(97.81,98.43)
Nizam 2020	0.48(0.41,0.55)	1493.05	0.00	98.12(97.79,98.41)
Pattnaik 2020	0.47(0.41,0.54)	1415.08	0.00	98.02(97.66,98.33)
Singh 2020	0.48(0.41,0.55)	1563.31	0.00	98.21(97.89,98.48)
Gupta 2018	0.47(0.40,0.54)	1448.54	0.00	98.07(97.72,98.36)
Taneja 2018	0.49(0.49,0.55)	1544.62	0.00	98.19(97.87,98.46)
Chellaiyan 2017	0.48(0.41,0.55)	1562.88	0.00	98.21(97.89,98.48)
Chenganakkattil 2017	0.47(0.47,0.54)	1526.98	0.00	98.17(97.84,98.44)
Hakim 2017	0.48(0.41,0.55)	1546.18	0.00	98.19(97.87,98.46)
Kumar 2017	0.48(0.41,0.55)	1564.29	0.00	98.21(97.89,98.48)
Kumar 2016	0.48(0.41,0.55)	1549.81	0.00	98.19(97.87,98.47)
Rawat 2016	0.48(0.41,0.54)	1547.08	0.00	98.19(97.87,98.46)
Singh 2016	0.48(0.41,0.55)	1533.77	0.00	98.17(97.85,98.45)
Yadav 2016	0.48(0.41,0.55)	1553.07	0.00	98.20(97.88,98.47)
Naveen 2015	0.48(0.41,0.55)	1558.48	0.00	98.20(97.89,98.47)
Suman 2015	0.48(0.41,0.55)	1564.12	0.00	98.21(97.89,98.48)

**Table S3: Sensitivity Analysis for included studies for Anxiety among undergraduate medical students**

Excluded study	Pooled Prevalence(95%CI)	Cochran Q	p	I <sup>2</sup> (95%CI)
Mandyam 2023	0.50(0.41,0.59)	1169.12	0.00	98.29(97.93,98)
Merchant 2023	0.49(0.40,0.58)	1049.23	0.00	98.09(97.68,98.43)
Shah 2023	0.51(0.43,0.59)	1014.87	0.00	98.03(97.60,98.38)
Arun 2022	0.51(0.43,0.59)	982.9	0.00	97.97(97.51,98.33)
Karthik 2022	0.49(0.41,0.58)	1171.61	0.00	98.29(97.94,98.59)
Lepcha 2022	0.50(0.41,0.59)	1180.49	0.00	98.31(97.95,98.60)
Chakraborty 2021	0.50(0.41,0.58)	1175.89	0.00	98.30(97.95,98.59)
Karmakar 2021	0.47(0.40,0.54)	742.65	0.00	97.31(96.65,97.84)
Jose 2021	0.49(0.41,0.58)	1172.17	0.00	98.29(97.94,98.59)
Haritay 2020	0.50(0.41,0.58)	1180.68	0.00	98.31(97.95,98.60)
Kumar 2020	0.51(0.42,0.59)	1143.57	0.00	98.25(97.88,98.55)
Luthra 2020	0.51(0.42,0.59)	1139.35	0.00	98.24(97.88,98.55)
James 2018	0.51(0.42,0.59)	1172.06	0.00	98.29(97.94,98.59)
Taneja 2018	0.50(0.42,0.59)	1173.53	0.00	98.30(97.94,98.59)
Chellaiyan 2017	0.50(0.41,0.59)	1182.38	0.00	98.31(97.96,98.60)
Chenganakkattil 2017	0.51(0.43,0.60)	1111.19	0.00	98.20(97.82,98.52)
Hakim 2017	0.50(0.41,0.59)	1180.56	0.00	98.31(97.95,98.60)
Kumar 2016	0.50(0.41,0.59)	1183.73	0.00	98.31(97.96,98.60)
Singh 2016	0.49(0.41,0.58)	1169.83	0.00	98.29(97.93,98.59)
Yadav 2016	0.49(0.40,0.57)	1129.33	0.00	98.23(97.86,98.54)
Naveen 2015	0.50(0.41,0.59)	1182.26	0.00	98.31(97.96,98.60)
Suman 2015	0.49(0.41,0.58)	1178.82	0.00	98.30(97.95,98.60)

**Table S4. Sensitivity Analysis for included studies for Stress among undergraduate medical students**

Excluded study	Pooled Prevalence (95%CI)	Cochran Q	p	I <sup>2</sup> (95%CI)
Mandyam 2023	0.55(0.46,0.64)	1620.21	0.00	98.46(98.18,98.69)
Merchant 2023	0.55(0.45,0.64)	1557.74	0.00	98.40(98.11,98.64)
Karthik 2022	0.55(0.46,0.64)	1644.51	0.00	98.48(98.21,98.71)
Chakraborty 2021	0.55(0.45,0.64)	1674.38	0.00	98.51(98.24,98.73)
Jose 2021	0.53(0.44,0.62)	1703.26	0.00	98.53(98.28,98.75)
Karmakar 2021	0.52(0.44,0.61)	1484.99	0.00	98.32(98.01,98.58)
Khan 2021	0.52(0.44,0.61)	1570.23	0.00	98.41(98.12,98.65)
Pandey 2021	0.53(0.44,0.62)	1723.17	0.00	98.55(98.30,98.76)
Haritay 2020	0.53(0.44,0.62)	1721.53	0.00	98.55(98.29,98.76)
Kamthan 2020	0.54(0.45,0.63)	1735.85	0.00	98.56(98.31,98.77)
Kumar 2020	0.54(0.45,0.63)	1732.3	0.00	98.56(98.31,98.77)
Luthra 2020	0.55(0.45,0.64)	1710.21	0.00	98.54(98.28,98.76)
Singh 2020	0.53(0.44,0.62)	1723.17	0.00	98.55(98.30,98.76)
Gupta 2018	0.54(0.45,0.63)	1736.75	0.00	98.56(98.31,98.77)
Nivetha 2018	0.53(0.44,0.62)	1620.38	0.00	98.46(98.18,98.69)
Rebello 2018	0.55(0.45,0.64)	1722.71	0.00	98.55(98.30,98.76)
Taneja 2018	0.54(0.45,0.63)	1733.71	0.00	98.56(98.31,98.77)
Aggarwal 2017	0.54(0.45,0.63)	1737.65	0.00	98.56(98.31,98.77)
Chellaiyan 2017	0.52(0.44,0.61)	1440.92	0.00	98.27(97.94,98.54)
Chenganakkattil 2017	0.53(0.44,0.62)	1710.2	0.00	98.54(98.28,98.76)
Kumar 2017	0.53(0.44,0.61)	1499.27	0.00	98.33(98.03,98.59)
Samanta 2017	0.54(0.45,0.63)	1721.91	0.00	98.55(98.30,98.76)
Chaudhary 2016	0.54(0.45,0.63)	1735.88	0.00	98.56(98.31,98.77)
George 2016	0.55(0.46,0.64)	1678.63	0.00	98.51(98.25,98.73)
Kumar 2016	0.55(0.45,0.64)	1693.89	0.00	98.52(98.27,98.74)
Naveen 2015	0.55(0.46,0.64)	1716.33	0.00	98.54(98.29,98.76)
Suman 2015	0.54(0.45,0.63)	1736.93	0.00	98.56(98.31,98.77)

**Table S5: Sensitivity Analysis for included studies for Suicide Ideation among undergraduate medical students**

Excluded study	Pooled Prevalence(95%CI)	Cochran Q	p	I <sup>2</sup> (95%CI)
Arun 2022	0.21(0.06,0.41)	204.01	0.00	98.53(97.67,99.07)
Desai 2021	0.24(0.10,0.42)	145.94	0.00	97.94(96.57,98.77)
Nesan 2020	0.23(0.07,0.42)	189.50	0.00	98.42(97.46,99.01)
Goyal 2012	0.15(0.09,0.20)	30.75	0.00	90.25(77.99,95.68)
Jain 2012	0.20(0.06,0.40)	203.59	0.00	98.53(97.66,99.07)

Figure S5: Subgroup analysis by Screening Tool, Depression prevalence

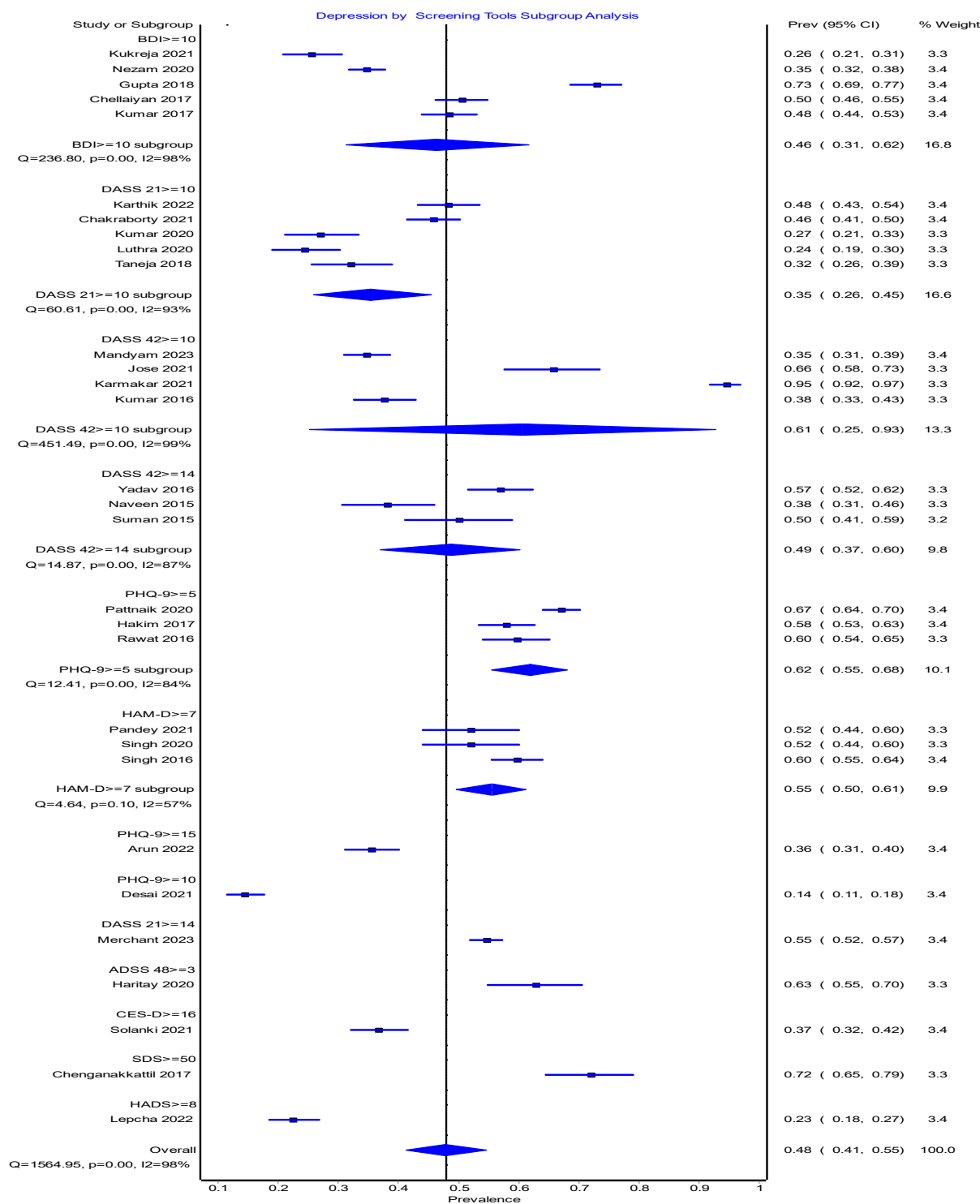


Figure S6: Subgroup analysis by Screening Tool, Anxiety prevalence

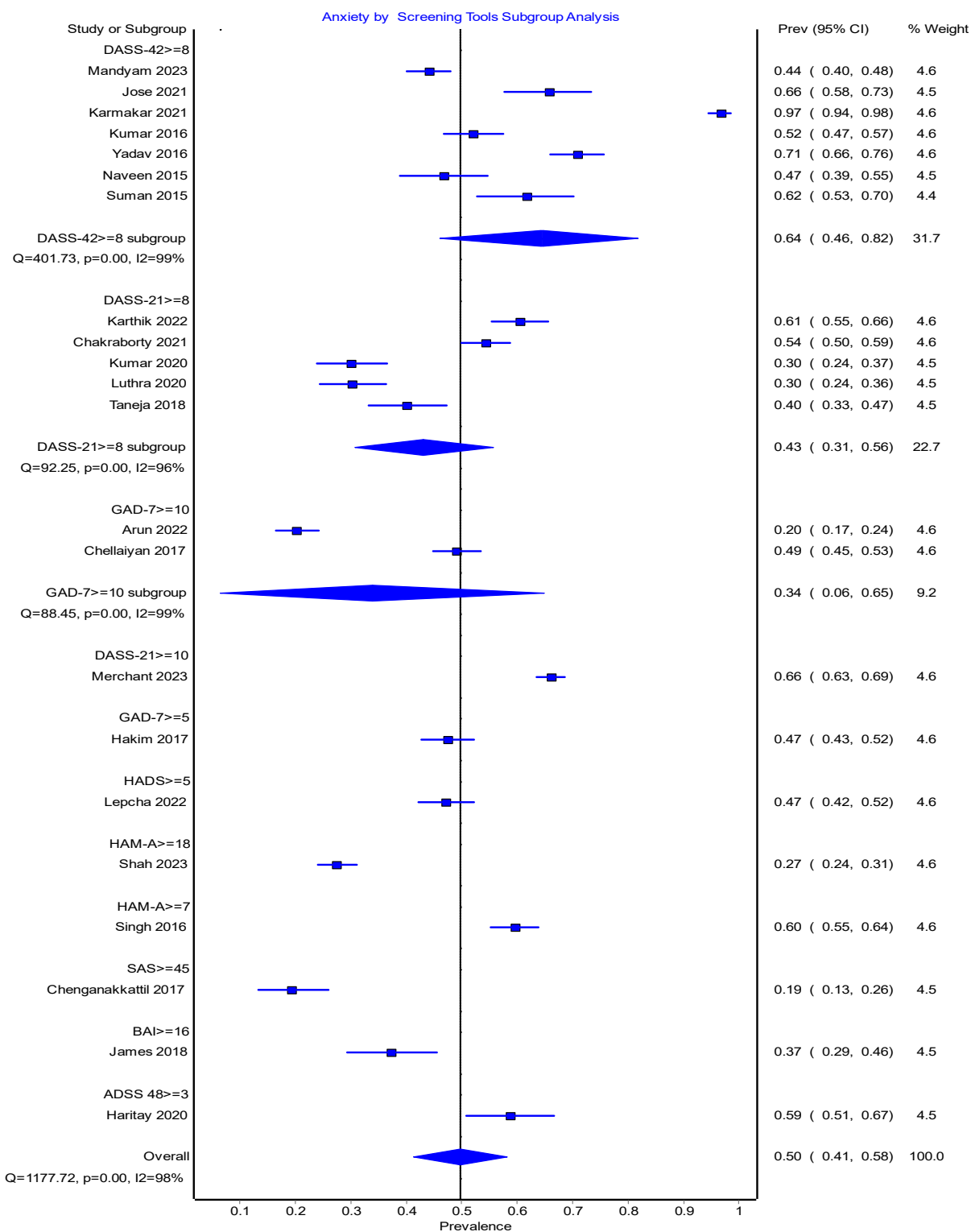
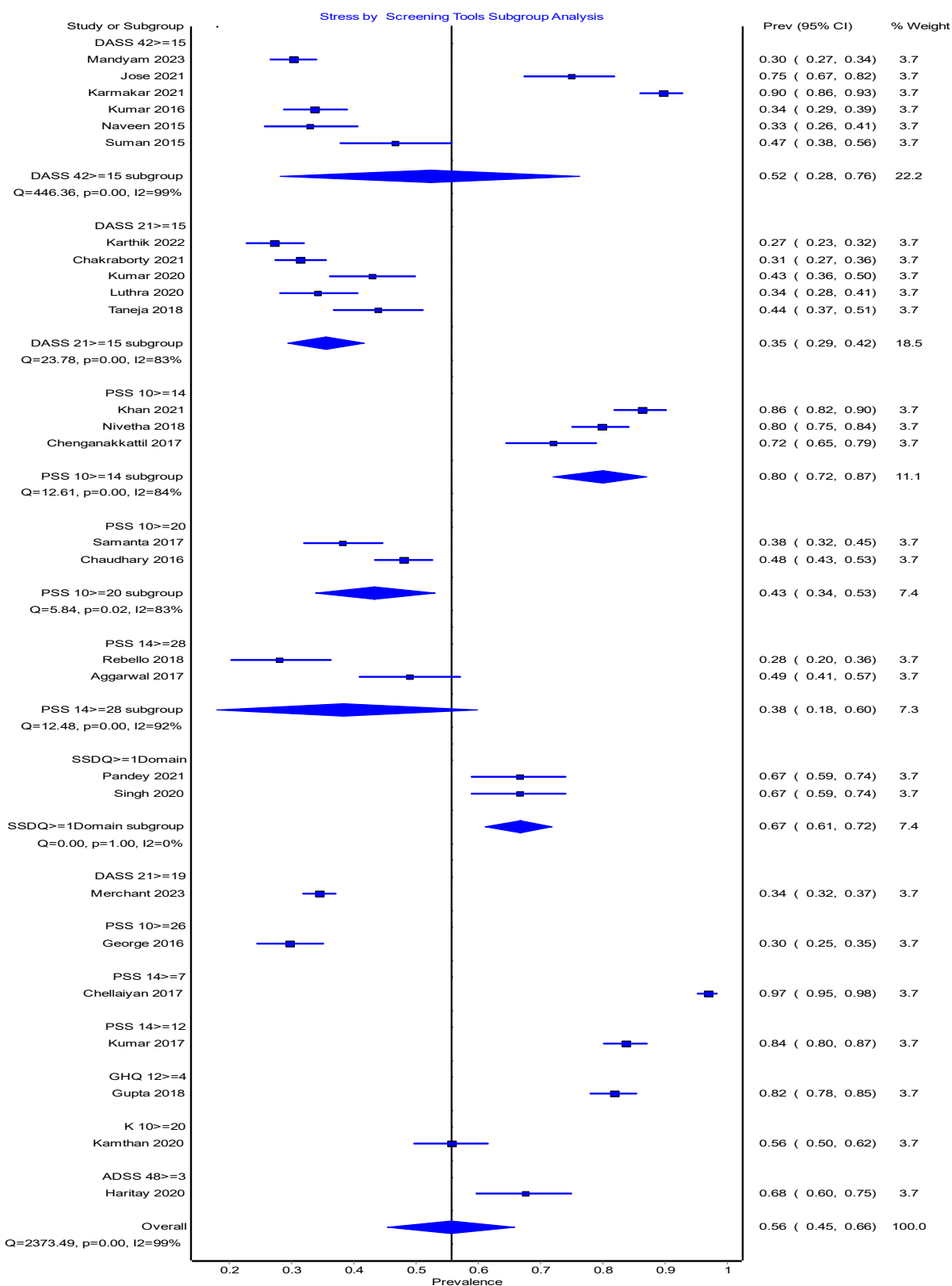


Figure S7: Subgroup analysis by Screening Tool, Stress prevalence



**Table 1: PRISMA checklist**

Section/ topic	#	Checklist item	Reported on page #
<b>TITLE</b>			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Page no. 1
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	Page no. 1
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known.	Page no. 2,3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	Page no. 3
<b>METHODS</b>			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	Page no. 3
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	Page no. 3,4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	Page no. 3,4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Page no. 4
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	Page no. 5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	Page no. 5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Page no. 5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	Page no. 6
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	Page no. 6
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I <sup>2</sup> ) for each meta-analysis.	Page no. 6,7
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	Page no 6,7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	Page no 6,7
<b>RESULTS</b>			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	Fig 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Table 1
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Table 2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Figure 2-5
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Page no 8
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Fig 6-9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	Table S2-S5, Figure 10-13, Figure S1-S3



<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	Discussion
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	Limitations
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	Conclusion
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	None

*From:* Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097