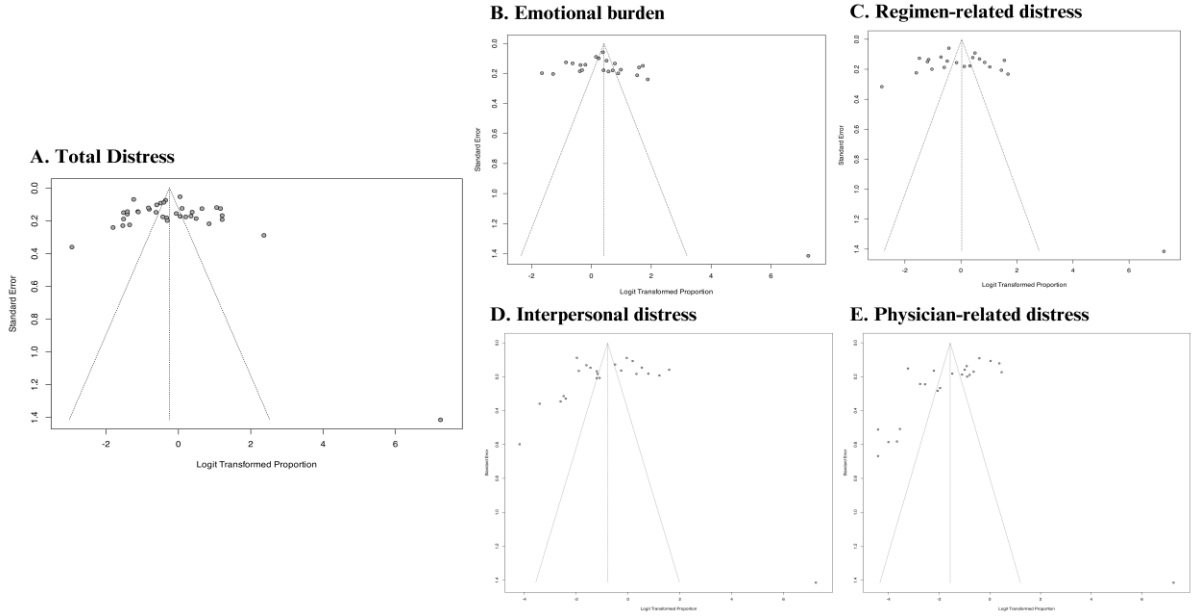
SUPPLEMENTARY MATERIALS

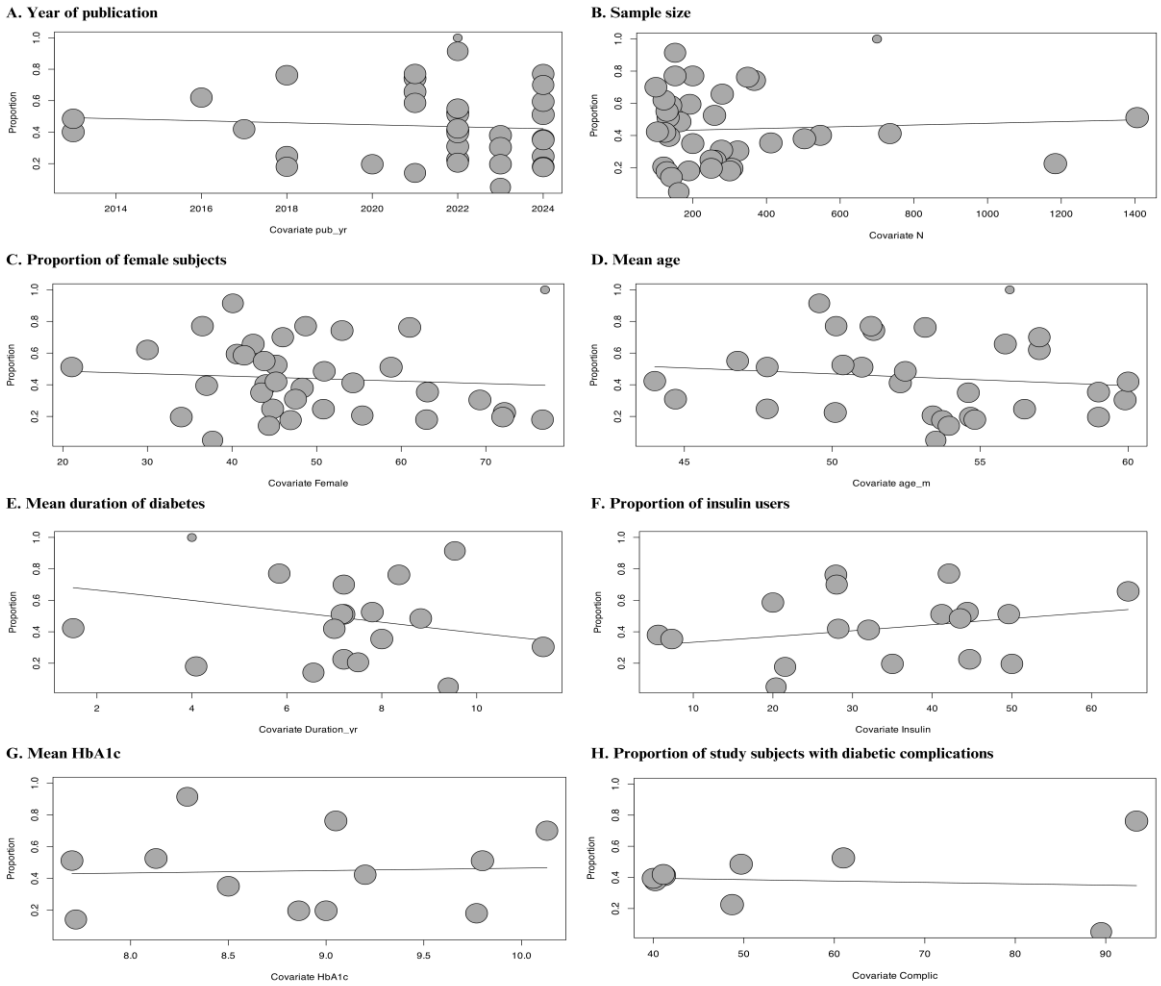
Search strategies for PubMed

("diabetes distress" OR "diabetes-specific distress") AND ("Diabetes Mellitus, Type 2"[MeSH] OR "type 2 diabetes" OR "T2DM" OR "type II diabetes" OR "T2D") AND ("South Asia" OR "India" OR "Bangladesh" OR "Bhutan" OR "Maldives" OR "Nepal" OR "Pakistan" OR "Sri Lanka")

.



Supplementary Figure 1 Funnel plot for the studies included in the meta-analysis. A: Total diabetes distress; B: Emotional burden; C: Regimen-related distress; D: Interpersonal distress; E: Physician-related distress.



Supplementary Figure 2 Meta-regression for the prevalence of diabetes distress. A: The year of publication; B: Sample size; C: Proportion of female subjects; D: Mean age; E: Mean duration of diabetes; F: Proportion of insulin users; G: Mean glycated hemoglobin; H: Proportion of study subjects with diabetic complications.

Supplementary Table 1 The summary of the excluded studies

Ref.	Country	Sample size	Reason of exclusion	Main findings
Mohsin et al., 2025 [58]	United States of America	414	The study was conducted among immigrants of south Asian descent living in New York City.	Frequencies of high total, emotional burden, physician-related, and regimen-related distress were 15.9%, 25.9%, 6.2%, and 21.9%, respectively.
Naidu et al., 2020 [59]	India	250	Included patients with both T1D and T2D.	Frequencies of high total distress, emotional burden, physician-related, regimen-related, and interpersonal distress were 64.4%, 46.6%, 13.4%, 21.6, and 18.4%, respectively.
Batool et al., 2018 [60]	Pakistan	200	- Included patients with both T1D and T2D. - Did not report the frequency of DD.	Patients with T2D have more emotional burden and poorer psychological well-being than those with T1D.

Chittem et al., 2019 [61]	India	92	Did not report the frequency of DD.	Increased number of children, personal control and illness-related concern were associated with increased levels of diabetes-related emotional distress.
Fernandes et al. 2019 [62]	India	131	Did not report the frequency of DD.	The overall score for the diabetic distress was 1.75
Jennings et al., 2024 [63]	Bangladesh and Pakistan	48	Did not report the frequency of DD.	Differing patient and practitioner understandings of distress/depression, high levels of stigma for mental health and a lack of awareness and training on treating depression.
Joseph et al., 2023 [64]	India	205	Did not report the frequency of DD.	Neuropathy, coronary artery disease, diabetes foot, and retinopathy were related to emotional-related issues. Diabetes foot complications were related to regimen-related distress.

Kausar et al., 2013 [65]	Pakistan	100	Did not report the frequency of DD.	Women had more emotional distress than men. Men perceived diabetes-related risk more than women.
Niazi et al., 2017 [66]	Pakistan	180	Did not report the frequency of DD.	Emotional distress was negatively related to self-care activities. There was a negative relationship between patient-physician trust and diabetes related emotional distress.
Perveen et al. 2023 [67]	Pakistan	280	Did not report the frequency of DD.	Diabetic distress had negative relationship with health-related quality of life while having a positive correlation with insulin dependency.
Rauf et al., 2016 [68]	Pakistan	96	Did not report the frequency of DD.	Significant gender difference on the variable of perceived stress; females scored higher than males.
Sadiq et al., 2017 [69]	Pakistan	120	Did not report the frequency of DD.	Diabetes distress, emotional burden, and interpersonal distress significantly predicted psychological distress. Additionally, a significant gender difference was found in

				respect to diabetic distress, regimen-related distress, and interpersonal distress.
Sharma et al., 2024 [70]	India	408	Did not report the frequency of DD.	The T2-DDAS is a valid and reliable tool for assessing DD in Indian patients with T2D.
Sheikh et al., 2024 [71]	Pakistan	493	Did not report the frequency of DD.	PAID scale encompassed the primary risk factors associated with the emergence of emotional issues, food related challenges, insufficient social support, and problems in disease management. On the other hand, DDS only addressed a limited understanding of these risk factors.
Soini et al., 2016 [72]	India	140	Did not report the frequency of DD.	Men had higher DD score than women. DD score was lower in those who exercised regularly than those did not exercise.
Usha et al. 2017 [73]	India	250	Did not report the frequency of DD.	DD was associated with poor glycemic control.

DD, Diabetes distress; DDS, Diabetes distress scale, PAID, Problem Areas In Diabetes; T1D, Type 1 diabetes; T2D, Type 2 diabetes; T2-DDAS, Type 2 Diabetes Distress Assessment System.

Supplementary Table 2 Joanna Briggs Institute critical appraisal checklist for analytical cross-sectional studies

Ref.	**Were the criteria for inclusion in the sample clearly defined?**	**Were the study subjects and the setting described in detail?**	**Was the exposure measured in a valid and reliable way?**	**Were objective, standard criteria used for measurement of the condition?**	**Were confounding factors identified?**	**Were strategies to deal with confounding factors stated?**	**Were the outcomes measured in a valid and reliable way?**	**Was appropriate statistical analysis used?**
Akter et al., 2022 [21]	Yes	Yes	Yes	Yes	No	No	Yes	Yes

Islam et al., 2013 [22]	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Kamrul-Hasan et al., 2022 [23]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Kamruzzaman et al., 2024 [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sultana et al., 2022 [25]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Akshatha et al., 2024 [26]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Alwani et al., 2024 [27]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Anjali et al., 2024 [28]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

Burman et al., 2021 [29]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gahlan et al., 2018 [30]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gupta S et al., 2022 [31]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Gupta SK et al., 2022 [32]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kaur et al., 2024 [33]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Kumar et al., 2017 [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mahala et al., 2024 [35]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Nadig et al., 2022 [36]	Yes	Yes	Yes	Yes	No	No	Yes	Yes

Nagabhushana et al., 2021 [37]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Naik et al., 2024 [38]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Natesan et al., 2016 [39]	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Panda et al., 2022 [40]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Patra et al., 2021[41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pinto et al., 2022 [42]	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Purushottaman et al., 2024 [43]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

Rana et al., 2023 [44]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ranjan et al., 2023 [45]	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Ratnesh et al., 2020 [46]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Roy et al., 2018 [47]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sasi et al., 2013 [48]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Sumana et al., 2021 [49]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Talwar et al., 2022 [50]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Todalabagi et al., 2024 [51]	Yes	Yes	Yes	Yes	No	No	Yes	Yes

Verma et al., 2022 [52]	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Vidya et al., 2021 [53]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Arif et al., 2018 [54]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Tahir et al., 2022 [55]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Samarathunga et al., 2023 [56]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vithiya et al., 2023 [57]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

Supplementary Table 3 Egger's test[20]

Linear regression test of funnel plot asymmetry

Total distress	Test result: t = 0.32, df = 35, p-value = 0.7492
	Bias estimate: 0.7819 (SE = 2.4267)
	Details:
	- multiplicative residual heterogeneity variance (tau^2 = 39.3232)
	- predictor: standard error
	- weight: inverse variance
Emotional burden	Test result: t = 0.54, df = 21, p-value = 0.5979
	Bias estimate: 1.5280 (SE = 2.8532)
	Details:
	- multiplicative residual heterogeneity variance (tau^2 = 30.9353)
	- predictor: standard error
	- weight: inverse variance
Regimen-related distress	Test result: t = 0.60, df = 20, p-value = 0.5524
	Bias estimate: 2.0632 (SE = 3.4142)
	Details:
	- multiplicative residual heterogeneity variance (tau^2 = 44.1801)
	- predictor: standard error

	- weight: inverse variance
Interpersonal distress	Test result: t = -0.48, df = 21, p-value = 0.6353
	Bias estimate: -1.7745 (SE = 3.6866)
	Details:
	- multiplicative residual heterogeneity variance (tau^2 = 55.0015)
	- predictor: standard error
	- weight: inverse variance
Physician-related distress	Test result: t = -2.63, df = 21, p-value = 0.0156
	Bias estimate: -6.7049 (SE = 2.5491)
	Details:
	- multiplicative residual heterogeneity variance (tau^2 = 32.5215)
	- predictor: standard error
	- weight: inverse variance