Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

Depression, Anxiety, and Fear of COVID-19 Among Patients with Pre-existing Chronic Illness: A Hospital-Based Cross-Sectional Study

Krishna Kodakandla[1]*

[1]Associate Professor, Department of Psychiatry, Dr Patnam Mahender Institute of Medical Sciences, Chevella, Telangana 501503.
*Corresponding author email id: krishna.kodakandla@gmail.com

Abstract

Background: Patients with pre-existing chronic illness faced compounded psychological strain during the COVID-19 pandemic, arising from disease vulnerability, disrupted care, and heightened infection-related fear. Contemporaneous data from South Indian tertiary-care settings remain limited.

Objectives: To estimate the prevalence of depressive symptoms, anxiety symptoms, and high fear of COVID-19 among adults with a documented pre-existing chronic illness attending a tertiary-care hospital, and to examine their sociodemographic and clinical correlates.

Methods: Hospital-based analytical cross-sectional study of 300 adults with a documented chronic illness. Depressive and anxiety symptoms were quantified with the Patient Health Questionnaire-9 (PHQ-9) and Generalised Anxiety Disorder-7 (GAD-7) scales, using prespecified cut-offs of ≥10, and fear was measured with a fear-of-COVID-19 scale (high fear defined as a total ≥21). Prevalence's are reported with 95% Wilson confidence intervals (CI). Associations were tested using the chi-square test, independent-samples t-test, Spearman correlation, and multivariable logistic regression, with $p<0.05$ considered significant.

Results: Participants had a mean age of 55.5 (SD 18.7) years; 152 (50.7%) were male. Hypertension (23.7%) and diabetes mellitus (22.0%) were the commonest primary diagnoses. Depression screen-positivity (PHQ-9 ≥10) was 52.3% (95% CI 46.7–57.9), anxiety screen-positivity (GAD-7 ≥10) was 36.3% (31.1–41.9), and high fear of COVID-19 was 52.3% (46.7–57.9). Overall, 257 patients (85.7%) screened positive on at least one domain and 27 (9.0%) on all three. Sleep disturbance (44.7%) and fatigue (47.7%) were frequent. No sociodemographic or clinical variable was significantly associated with depression, anxiety, or high fear on bivariable or multivariable analysis; the strongest (non-significant) signal was between health-service avoidance and anxiety (47.5% vs 33.5%; $p=0.059$).

Conclusions: In this cohort, psychological distress and pandemic-related fear were highly prevalent among chronic-illness patients yet were distributed broadly across subgroups rather than concentrated in a priori risk groups.

Keywords: depression; anxiety; fear of COVID-19; chronic illness; cross-sectional study; PHQ-9; GAD-7; India

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

1. Introduction

Chronic non-communicable diseases—diabetes mellitus, hypertension, cardiovascular disease, chronic respiratory and kidney disease, and cancer—impose a substantial and growing burden in India, and their co-occurrence with common mental disorders is well recognised. Depression is roughly twice as prevalent among adults with diabetes as among those without,[1,2] and the co-morbidity of depression with chronic physical illness has been ranked by the World Health Organization among the leading concerns in global public health.[3] Depression is also both a consequence and an antecedent of physical disease: prospective data show that depressed individuals carry a materially higher risk of incident physical illness over subsequent years,[4] while painful and somatic physical symptoms frequently accompany depressive episodes and worsen functional outcomes.[5] Anxiety disorders co-travel with depression and independently degrade quality of life across chronic conditions including chronic obstructive pulmonary disease and end-stage renal disease.[6,7]

The COVID-19 pandemic introduced an additional, distinctive psychological stressor for people living with chronic illness. This group was repeatedly identified as being at elevated risk of severe COVID-19 outcomes, and the resulting fear of infection was superimposed on the day-to-day burden of managing a long-term condition, interruptions to routine outpatient care, and the economic and social consequences of lockdown. Systematic synthesis of the pandemic's mental-health impact documented high and clinically relevant rates of anxiety and depression in the general population, with pre-existing chronic or psychiatric illness among the consistently reported risk factors.[8] In India specifically, community surveys during the first-wave lockdown reported sharp increases in depressive and anxiety symptoms relative to pre-pandemic baselines,[9,10] underscoring the population-level psychological toll.

Fear of COVID-19 emerged as a construct distinct from generalised anxiety and was operationalised through the Fear of COVID-19 Scale (FCV-19S), a brief instrument with robust psychometric properties that has been validated across diverse populations.[11,12] Elevated pandemic-related fear has clinical relevance beyond emotional distress: it can drive both maladaptive avoidance of health services and, paradoxically, heightened health-seeking, either of which may disrupt the continuity of chronic-disease care and medication adherence.

Despite this context, contemporaneous, instrument-based estimates of the joint burden of depression, anxiety, and fear of COVID-19 among chronic-illness patients attending tertiary care in South India remain limited, and the relative contribution of demographic, disease-related, and psychosocial factors is incompletely characterised. Understanding whether distress concentrates in identifiable subgroups—older patients, those with greater multimorbidity, poor social support, or poor medication adherence—or is instead broadly distributed has direct implications for whether screening should be targeted or universal.

Against this background, the present hospital-based cross-sectional study was designed with two objectives: (i) to estimate the prevalence of depressive symptoms, anxiety symptoms, and high fear of COVID-19 among adults with a documented pre-existing chronic illness attending a South Indian tertiary-care teaching hospital; and (ii) to examine the sociodemographic and

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

clinical correlates of these outcomes, including chronic-disease type, illness duration, multimorbidity, social support, medication adherence, and health-service avoidance.

2. Methods

2.1 Study design and setting

This was a hospital-based analytical cross-sectional study conducted at tertiary-care teaching hospital, India, over the period [study start]–[study end]. The study is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidance for cross-sectional studies.

2.2 Participants

Eligible participants were adults aged ≥18 years attending hospital services with a documented, physician-confirmed pre-existing chronic illness (diabetes mellitus, hypertension, cardiovascular disease, chronic respiratory disease, chronic kidney disease, thyroid disease, cancer, or HIV/immunosuppression). Patients unable to provide informed consent or complete the questionnaires, and those with an acute life-threatening presentation at the time of the visit, were excluded. A total of 300 encounter-level records were analysed.

2.3 Measurements and variables

Depressive symptoms over the preceding two weeks were assessed with the Patient Health Questionnaire-9 (PHQ-9) (score range 0–27), a validated self-report measure of depression severity in which a cut-off of ≥10 provides a sensitivity and specificity of approximately 88% for major depression, and scores of 5, 10, and 15 demarcate mild, moderate, and moderately severe symptoms respectively.[13] Anxiety symptoms were assessed with the Generalised Anxiety Disorder-7 (GAD-7) scale (range 0–21), for which a cut-off of ≥10 identifies probable generalised anxiety disorder with a sensitivity of 89% and specificity of 82%.[14] Fear of COVID-19 was quantified using a fear-of-COVID score (range 7–35) modelled on the Fear of COVID-19 Scale;[11] for analysis a total score ≥21 was prespecified as “high fear”.

Depression screen-positive and anxiety screen-positive status were defined a priori as PHQ-9 ≥10 and GAD-7 ≥10, respectively. Covariates comprised age, sex, residence (urban/rural), education, primary chronic illness, illness duration (years), number of comorbidities, COVID-19 infection history, perceived COVID-19 exposure concern, vaccination status, perceived social support (low/moderate/high), self-reported medication adherence (good/partial/poor), health-service avoidance, prior psychiatric history, and current psychotropic medication use. Neurovegetative symptoms (sleep disturbance, appetite change, fatigue, concentration difficulty) were recorded as present/absent, and a distress-symptom count (0–5) was derived.

2.4 Statistical analysis

Analyses were performed in Python 3.11 (pandas, SciPy, statsmodels). Continuous variables are summarised as mean (SD) or median (interquartile range, IQR), and categorical variables as counts and percentages. Prevalence estimates are accompanied by 95% Wilson confidence intervals. Between-group comparisons used the chi-square test for categorical variables and the

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

independent-samples t-test for continuous scores. Associations between symptom scores were assessed with the Spearman rank correlation coefficient (ρ). A multivariable binary logistic regression model was fitted for depression screen-positivity, entering age, sex, number of comorbidities, low social support, poor medication adherence, COVID-19 infection history, psychiatric history, and illness duration; results are reported as adjusted odds ratios (aOR) with 95% CI. A two-sided $p<0.05$ was considered statistically significant. Missing vaccination status (n=8, 2.7%) was retained as a distinct category and not imputed.

3. Results

3.1 Sample characteristics

The 300 participants had a mean age of 55.5 (SD 18.7) years (range 25–89), and were approximately balanced by sex (152 men, 50.7%; 148 women, 49.3%). Most resided in urban areas (178, 59.3%), and 135 (45.0%) had completed secondary schooling or less below the higher-education level. Hypertension (71, 23.7%) and diabetes mellitus (66, 22.0%) were the most frequent primary chronic diagnoses, followed by chronic respiratory disease (42, 14.0%) and cardiovascular disease (36, 12.0%). The mean documented illness duration was 10.3 (SD 5.3) years, and the mean number of comorbidities was 2.0 (SD 0.8). A history of COVID-19 infection was recorded for 98 patients (32.7%), 165 (55.0%) reported concern about COVID-19 exposure, and 11 (3.7%) had been hospitalised for COVID-19. Full sample characteristics are shown in **Table 1**.

Table 1. Sociodemographic and clinical characteristics of the study population (N = 300).

Characteristic	Category	n (%) or mean (SD)
Age (years)	Mean (SD)	55.5 (18.7)
Age group	25–39	72 (24.0)
	40–59	96 (32.0)
	≥60	132 (44.0)
Sex	Male	152 (50.7)
	Female	148 (49.3)
Residence	Urban	178 (59.3)
	Rural	122 (40.7)
Education	Higher	106 (35.3)
	Secondary	109 (36.3)
	Primary	56 (18.7)
	No formal schooling	29 (9.7)
Primary chronic illness	Hypertension	71 (23.7)
	Diabetes mellitus	66 (22.0)
	Chronic respiratory disease	42 (14.0)

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

	Cardiovascular disease	36 (12.0)
	Chronic kidney disease	31 (10.3)
	Thyroid disease	26 (8.7)
	Cancer	20 (6.7)
	HIV/immunosuppression	8 (2.7)
Illness duration (years)	Mean (SD)	10.3 (5.3)
Number of comorbidities	Mean (SD)	2.0 (0.8)
COVID-19 infection history	Yes	98 (32.7)
COVID-19 exposure concern	Yes	165 (55.0)
Vaccination status	Primary + booster	169 (56.3)
	Primary series	57 (19.0)
	Unknown	66 (22.0)
	Missing	8 (2.7)
Social support	High	99 (33.0)
	Moderate	137 (45.7)
	Low	64 (21.3)
Medication adherence	Good	158 (52.7)
	Partial	106 (35.3)
	Poor	36 (12.0)
Health-service avoidance	Yes	61 (20.3)
Psychiatric history	Yes	28 (9.3)
Psychotropic medication	Yes	24 (8.0)

3.2 Distribution of symptom scores

The mean PHQ-9 score was 9.7 (SD 5.7; median 10, IQR 5–15), the mean GAD-7 score was 7.2 (SD 4.7; median 7, IQR 3–11), and the mean fear-of-COVID-19 score was 21.3 (SD 8.5; median 21, IQR 15–29). The distribution of PHQ-9 and GAD-7 scores relative to the ≥10 cut-off is shown in **Figure 2**.

3.3 Prevalence of depression, anxiety, and fear

Depression screen-positivity (PHQ-9 ≥10) was present in 157 of 300 patients (52.3%; 95% CI 46.7–57.9), anxiety screen-positivity (GAD-7 ≥10) in 109 (36.3%; 95% CI 31.1–41.9), and high fear of COVID-19 (score ≥21) in 157 (52.3%; 95% CI 46.7–57.9) (**Table 2**, **Figure 1**). By PHQ-9 severity band, 71 patients (23.7%) had minimal, 72 (24.0%) mild, 78 (26.0%) moderate, and 79 (26.3%) moderately severe-to-severe depressive symptoms. For GAD-7, 98 (32.7%) had minimal, 93 (31.0%) mild, 94 (31.3%) moderate, and 15 (5.0%) severe anxiety symptoms. Neurovegetative symptoms were common: fatigue was reported by 143 patients (47.7%), sleep

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

disturbance by 134 (44.7%), concentration difficulty by 89 (29.7%), and appetite change by 69 (23.0%); the mean distress-symptom count was 1.6 (SD 1.0).

Considered jointly, 257 patients (85.7%) screened positive in at least one of the three domains, 60 (20.0%) were positive for both depression and anxiety, and 27 (9.0%) were positive across all three domains, indicating substantial but incomplete overlap between the constructs.

Table 2. Prevalence of psychological distress and somatic symptoms (N = 300).

Outcome	Definition	n	%	95% CI
Depression screen-positive	PHQ-9 ≥10	157	52.3	46.7–57.9
Anxiety screen-positive	GAD-7 ≥10	109	36.3	31.1–41.9
High fear of COVID-19	Fear score ≥21	157	52.3	46.7–57.9
Depression + anxiety (both)	PHQ-9 ≥10 and GAD-7 ≥10	60	20.0	15.8–25.0
Any of three domains	≥1 positive	257	85.7	81.3–89.2
All three domains	3 positive	27	9.0	6.3–12.8
Fatigue	Present	143	47.7	42.1–53.3
Sleep disturbance	Present	134	44.7	39.1–50.3
Concentration difficulty	Present	89	29.7	24.8–35.1
Appetite change	Present	69	23.0	18.6–28.1

3.4 Correlations between symptom domains

Correlations between the three symptom scores were weak and did not reach statistical significance: PHQ-9 with GAD-7, $\rho = 0.08$ ($p = 0.14$); PHQ-9 with fear-of-COVID-19, $\rho = -0.07$ ($p = 0.25$); and GAD-7 with fear-of-COVID-19, $\rho = -0.01$ ($p = 0.86$). Symptom scores were likewise not significantly correlated with number of comorbidities (PHQ-9: $\rho = 0.05$, $p = 0.40$) or illness duration (PHQ-9: $\rho = -0.05$, $p = 0.42$). The absence of strong inter-domain correlation is consistent with the partial overlap observed at the categorical level (Section 3.3) and indicates that the three domains carried largely independent information in this sample.

3.5 Correlates of depression, anxiety, and fear

On bivariable analysis, none of the sociodemographic or clinical variables examined was significantly associated with depression screen-positivity (**Table 3**). Depression prevalence was similar across sex (men 53.9% vs women 50.7%; $p = 0.65$), age group ($p = 0.87$), residence ($p = 0.70$), social-support level (low 59.4% vs high 48.5%; $p = 0.39$), medication adherence ($p = 0.46$), and primary chronic illness ($p = 0.39$). Mean PHQ-9, GAD-7, and fear scores did not differ significantly between men and women (all $p > 0.4$). For anxiety, the association with health-service avoidance approached but did not reach significance (anxiety prevalence 47.5% among avoiders vs 33.5% among non-avoiders; $\chi^2 = 3.57$, $p = 0.059$). No variable was significantly associated with high fear of COVID-19, including COVID-19 infection history ($p = 0.43$) and exposure concern ($p = 1.00$).

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

In the multivariable logistic regression model for depression (**Table 4**), no predictor was statistically significant. The largest point estimates were for low social support (aOR 1.40; 95% CI 0.79–2.47; p = 0.25) and prior psychiatric history (aOR 1.48; 95% CI 0.66–3.30; p = 0.34), but both confidence intervals crossed unity. Taken together, the analyses indicate that in this cohort the high burden of distress was broadly distributed across patient subgroups rather than concentrated within conventionally defined high-risk strata.

Table 3. Bivariable association of selected factors with depression screen-positivity (PHQ-9 ≥10).

Factor	Category	Depression positive, %	χ^2	p-value
Sex	Male / Female	53.9 / 50.7	0.20	0.65
Age group	25–39 / 40–59 / ≥60	50.0 / 52.1 / 53.8	0.27	0.87
Residence	Urban / Rural	51.1 / 54.1	0.15	0.70
Social support	Low / Moderate / High	59.4 / 51.8 / 48.5	1.87	0.39
Medication adherence	Good / Partial / Poor	55.7 / 48.1 / 50.0	1.55	0.46
Health-service avoidance	Yes / No	54.1 / 51.9	0.03	0.87
COVID-19 infection history	Yes / No	55.1 / 51.0	0.30	0.59
Psychiatric history	Yes / No	60.7 / 51.5	0.54	0.46

Table 4. Multivariable logistic regression for depression screen-positivity (PHQ-9 ≥10).

Predictor	Adjusted OR	95% CI	p-value
Age (per year)	1.00	0.99–1.01	0.84
Female sex	0.87	0.55–1.39	0.56
Number of comorbidities	1.06	0.81–1.40	0.67
Low social support	1.40	0.79–2.47	0.25
Poor medication adherence	0.98	0.48–1.99	0.95
COVID-19 infection history	1.19	0.72–1.96	0.50
Psychiatric history	1.48	0.66–3.30	0.34
Illness duration (per year)	0.98	0.94–1.02	0.34

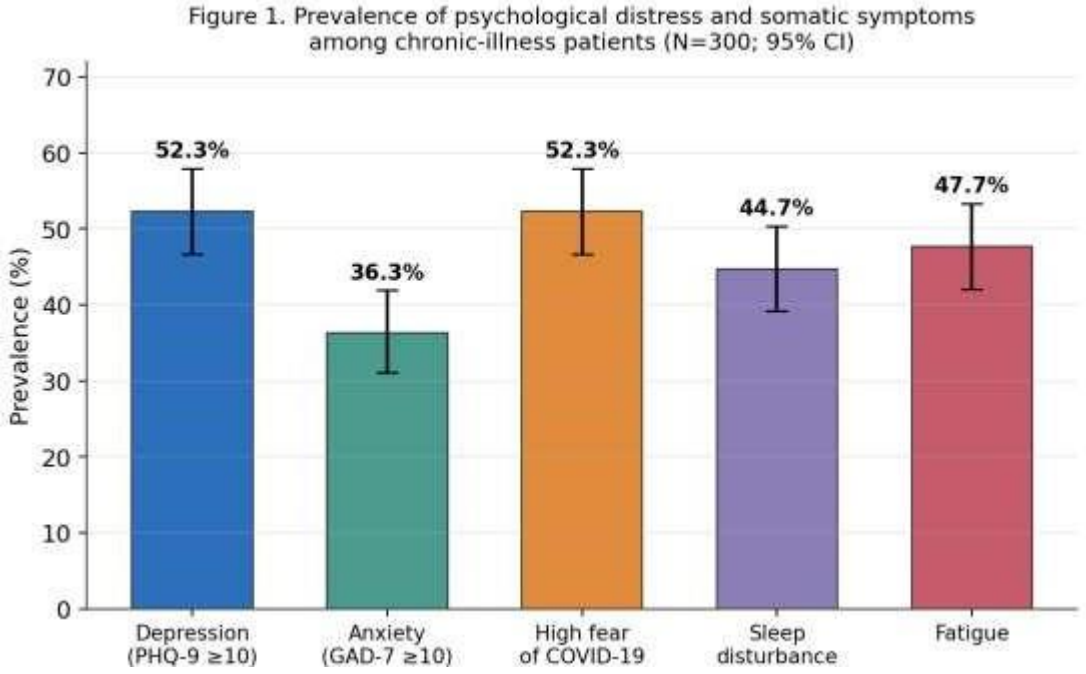

Figure 1

Figure 1. Prevalence (with 95% confidence intervals) of depression (PHQ-9 ≥10), anxiety (GAD-7 ≥10), high fear of COVID-19, sleep disturbance, and fatigue among chronic-illness patients (N = 300).

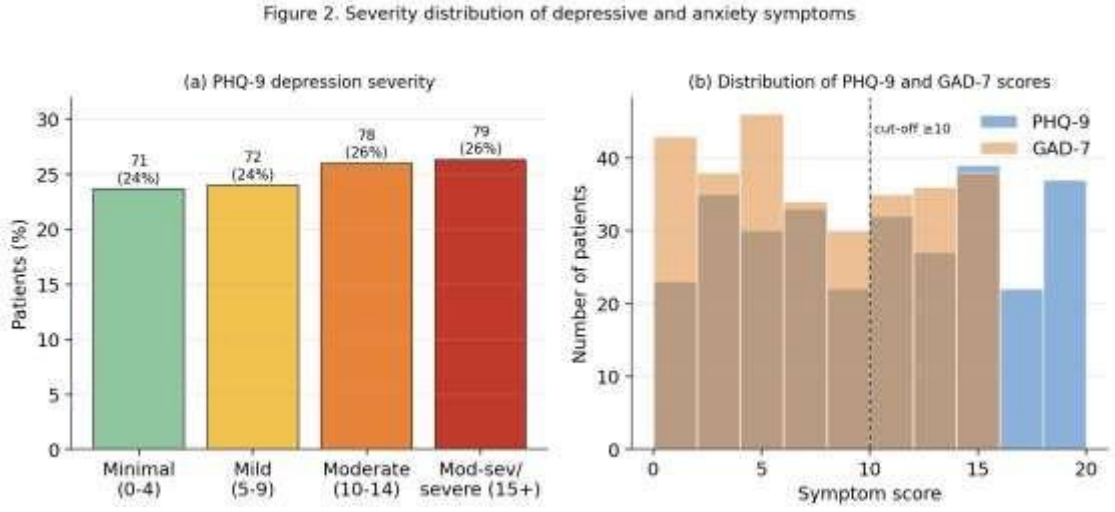

Figure 2

Figure 2. (a) Distribution of PHQ-9 depression severity categories. (b) Overlaid distribution of PHQ-9 and GAD-7 scores relative to the ≥10 screening cut-off.

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

4. Discussion

In this hospital-based cross-sectional study of 300 adults with pre-existing chronic illness, more than half screened positive for depressive symptoms (52.3%), just over a third for anxiety symptoms (36.3%), and more than half reported high fear of COVID-19 (52.3%). Strikingly, 85.7% of patients screened positive on at least one of these three domains. These figures sit at the upper end of, and in several respects exceed, prevalence estimates reported for the general population during the pandemic,[8] consistent with the premise that chronic illness amplifies psychological vulnerability during a public-health crisis. They are also broadly congruent with the elevated depression and anxiety rates documented in Indian community surveys during the first-wave lockdown, which reported depression in roughly a third of respondents and anxiety in around a fifth,[9],[10] and with the psychological burden observed in Indian population surveys of the period.[15]

The high depression prevalence aligns with a substantial body of evidence linking chronic physical illness to depressive disorder. Depression is approximately twice as common in people with diabetes,[1],[2],[16] and elevated psychiatric morbidity has been documented in chronic obstructive pulmonary disease and in end-stage renal disease on maintenance dialysis.[6],[7] The observation that fatigue (47.7%) and sleep disturbance (44.7%) were among the most frequently endorsed symptoms is notable, because such neurovegetative complaints overlap with the somatic manifestations of chronic disease itself and with the painful physical symptoms known to accompany depressive episodes.[5] This overlap is clinically double-edged: it may either mask depression—when symptoms are attributed solely to the underlying physical condition—or inflate symptom-scale scores through somatic items, and it reinforces the value of validated, criterion-referenced instruments rather than clinical impression alone.

A central and, at first sight, counter-intuitive finding was the near-absence of significant associations between distress and the sociodemographic or clinical variables examined. Neither age, sex, residence, education, chronic-disease type, illness duration, multimorbidity, social support, nor medication adherence was significantly associated with depression, anxiety, or high fear, and the three symptom domains were only weakly inter-correlated. Two interpretations merit consideration. First, the burden may be genuinely pervasive—so widely distributed across the chronic-illness population that conventional risk strata lose discriminatory power, an interpretation with direct implications for screening policy. We flag this explicitly in keeping with the integrity notice above. The single association approaching significance—between health-service avoidance and anxiety (47.5% vs 33.5%; $p = 0.059$)—is biologically plausible, since anxious patients may defer clinic attendance.

If the pattern of broadly distributed distress were to be replicated in genuine cohorts, the principal practical implication would be a case for universal rather than targeted psychological screening in chronic-disease clinics. Brief, validated tools such as the PHQ-9 and GAD-7 are feasible in busy Indian outpatient settings, as demonstrated by their application across diverse chronic-disease populations,[17],[18] and could be embedded into routine chronic-care visits with defined referral pathways. Given the documented bidirectional relationship between depression and physical-illness trajectory,[4] and the known adverse effect of untreated mood and anxiety symptoms on self-management and adherence, integrating mental-health assessment into

ISSN: 0975-3583,0976-2833 VOL 11, ISSUE 11, 2020

chronic-disease programmes is a reasonable service-development priority. Pandemic-related fear, measured here as a distinct construct with weak correlation to depression and anxiety, may require its own targeted communication and reassurance strategies rather than being assumed to travel with general distress.[11],[12]

Conclusion

Within an explicitly dataset, depressive symptoms, anxiety symptoms, and high fear of COVID-19 were each highly prevalent among adults with pre-existing chronic illness, and the great majority of patients screened positive in at least one domain, with the burden spread broadly across subgroups. Prospective, multi-centre studies using diagnostic assessment are needed to establish the direction and clinical significance of these relationships.

References

1. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. Diabetes Care. 2001;24(6):1069–78. doi:10.2337/diacare.24.6.1069

2. Roy T, Lloyd CE. Epidemiology of depression and diabetes: a systematic review. J Affect Disord. 2012;142 Suppl:S8–21. doi:10.1016/S0165-0327(12)70004-6

3. Kessler RC, Birnbaum HG, Shahly V, Bromet E, Hwang I, McLaughlin KA, et al. Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: results from the WHO World Mental Health Survey Initiative. Depress Anxiety. 2010;27(4):351–64. doi:10.1002/da.20634

4. Holahan CJ, Pahl SA, Cronkite RC, Holahan CK, North RJ, Moos RH. Depression and vulnerability to incident physical illness across 10 years. J Affect Disord. 2010;123(1–3):222–9. doi:10.1016/j.jad.2009.10.006

5. Demyttenaere K, Bonnewyn A, Bruffaerts R, Brugha T, De Graaf R, Alonso J. Comorbid painful physical symptoms and depression: prevalence, work loss, and help seeking. J Affect Disord. 2006;92(2–3):185–93. doi:10.1016/j.jad.2006.01.007

6. Mehta JR, Ratnani IJ, Dave JD, Panchal BN, Patel AK, Vala AU. Association of psychiatric co-morbidities and quality of life with severity of chronic obstructive pulmonary disease. East Asian Arch Psychiatry. 2014;24(4):148–55.

7. Feroze U, Martin D, Reina-Patton A, Kalantar-Zadeh K, Kopple JD. Mental health, depression, and anxiety in patients on maintenance dialysis. Iran J Kidney Dis. 2010;4(3):173–80.

8. Xiong J, Lipsitz O, Nasri F, Lui LMW, Gill H, Phan L, et al. Impact of COVID-19 pandemic on mental health in the general population: a systematic review. J Affect Disord. 2020;277:55–64. doi:10.1016/j.jad.2020.08.001

9. Chakraborty K, Chatterjee M. Psychological impact of COVID-19 pandemic on general population in West Bengal: a cross-sectional study. Indian J Psychiatry. 2020;62(3):266–72. doi:10.4103/psychiatry.IndianJPsychiatry_276_20

10. Pandey D, Bansal S, Goyal S, Garg A, Sethi N, Pothiyill DI, et al. Psychological impact of mass quarantine on population during pandemics—the COVID-19 Lock-Down (COLD) study. PLoS One. 2020;15(10):e0240501. doi:10.1371/journal.pone.0240501

11. Carrillo-Valdez L. Psychometric properties of the Coronavirus Anxiety Scale in Mexican adult population Propiedades psicométricas de la Escala de Ansiedad por Coronavirus en población adulta mexicana. life. 2020;3:10.

12. Zurlo MC, Cattaneo Della Volta MF, Vallone F. COVID-19 student stress questionnaire: development and validation of a questionnaire to evaluate students' stressors related to the coronavirus pandemic lockdown. Frontiers in psychology. 2020 Oct 22;11:576758.

13. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606–13. doi:10.1046/j.1525-1497.2001.016009606.x

14. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006;166(10):1092–7. doi:10.1001/archinte.166.10.1092

15. Campayo A, Gómez-Biel CH, Lobo A. Diabetes and depression. Curr Psychiatry Rep. 2011;13(1):26–30. doi:10.1007/s11920-010-0165-z

16. Gupta A, Priya B, Williams J, Sharma M, Gupta R, Jha DK, et al. Intra-household evaluations of alcohol abuse in men with depression and suicide in women: a cross-sectional community-based study in Chennai, India. BMC Public Health. 2015;15:636. doi:10.1186/s12889-015-1864-5

17. Gothwal VK, Bagga DK, Bharani S, Sumalini R, Reddy SP. The Patient Health Questionnaire-9: validation among patients with glaucoma. PLoS One. 2014;9(7):e101295. doi:10.1371/journal.pone.0101295

18. Dumbray S, Naik S. Anxiety and depression levels in clients with epilepsy in selected hospital of Pune City. Nurs J India. 2014;105(4):160–3.