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Suicidal Ideation Amid COVID-19 Pandemic: A Cross-sectional Study Among Healthcare Workers During the First Wave of COVID-19 in Pakistan

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Letter to the Editor

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Suicide is a complex public health problem. Healthcare workers (HCWs) have historically been at disproportionate risk of suicide.[1] HCWs are experiencing high level of stress and mental health problems during the ongoing pandemic (COVID-19).[2,3] Globally, suicides associated with COVID-19 have been reported among HCWs.[4] However, research studies with regards to suicidal behavior (ideation, non-fatal and fatal attempt) in this high-risk population is limited. Therefore, the objective of this study was to assess suicidal ideation and its predictors among Pakistani HCWs during the early phase of the COVID-19 pandemic.

We conducted an online cross-sectional survey among registered HCWs (doctors, nurses, and pharmacists) of the Punjab province of Pakistan during the first wave of COVID-19.[5] The study was approved by the Research Ethics Committee, Discipline of Pharmacy Practice, Faculty of Pharmacy, University of Lahore. Moreover, the research was conducted in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and all its amendments. An anonymous, self-completed questionnaire was designed on the Google Form® (Google Inc, Mountain View, CA) and disseminated among HCWs by snowball sampling technique. HCWs were screened for anxiety and depression using the generalized anxiety scale (GAD-7) and patient health questionnaire (PHQ-9), respectively.[6,7] Suicidal ideation was determined from the ninth item (score ≥1) of PHQ-9. This item is frequently used in research studies to evaluate suicidal behavior.[8–10] Earlier studies have also reported that high level of suicidal ideation, indicated by the ninth item of PHQ-9, is a robust predictor of suicide attempts and deaths.[11–13] In the present analysis, PHQ-8 scores were calculated using all the PHQ-9 items except for item-9. In addition, the scores were classified identically to PHQ-9 scores.[14] In order to assess the impact of suicidal ideation on the quality of life of HCWs, we used the final question of the scales that asks "how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?" This question is not used in calculating PHQ or GAD scores or diagnosis of anxiety and depression, but rather signifies symptom-related deterioration of quality of life.

All data were entered and analyzed in SPSS 22.0 for Windows (IBM-SPSS Inc, Armonk, NY). Continuous data were expressed as mean ± standard deviation (SD) whereas categorical data were presented as frequency and percentage. Binary logistic regression was performed to determine the predictors of suicidal ideation. A P value of less than 0.05 was considered statistically significant.

A total of 398 willing HCWs were included in the study. Mean age of HCWs was 28.67 ± 4.15 years, with preponderance of females (56%) and medical doctors (52%). Around 33% were frontline workers (HCWs directly engaged with COVID-19 patients). Our analysis revealed a 14.3% prevalence of suicidal ideation among Pakistani HCWs. Regarding the severity of suicidal ideation, 7.3% reported it to be occurring 'several days (less than a week),' 4% reported 'over 50% of the days,' and 3.0% had it 'nearly every day' in the past 2 weeks.

The predictors of suicidal ideation are shown in Table 1. In univariate analysis, participants' occupation, their duty during the pandemic, working experience, anxiety and depression were found to be associated with suicidal ideation ($P < 0.05$). Our multivariate logistic regression model was statistically significant, χ^2 (6) = 82.656, $P < 0.001$. The model explained 33.5% (NegelKerke R^2) of the variance and correctly classified 86.9% of the cases. Finding of Hosmer and Lemeshow test for goodness-of-fit revealed that our model predicted values not significantly different from what we observed [χ^2 (8) = 11.768, $P = 0.162$]. In multivariable adjusted model, the odds ratio indicated that for every 1 score increase in the depression score, the likelihood of suicidal ideation increases by approximately 1.26 times. Furthermore,

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Table 1. Predictors of suicidal ideation among healthcare workers amid COVID-19 pandemic

	Univariate		Multivariate	
Variables	COR (95% CI)	*P* - value	AOR (95% CI)	*P* - value
Age (years)	0.935 (0.864-1.011)	0.093		
Gender				
Male	1.00 (Reference)	–		
Female	0.795 (0.454-1.394)	0.423		
Occupation				
Medical doctor	1.00 (Reference)	–	1.00 (Reference)	–
Nurse	0.482 (0.240-0.966)	**0.040**	0.479 (0.216-1.061)	0.070
Pharmacist	0.971 (0.450-2.099)	**0.941**	1.228 (0.471-3.199)	0.674
Duty during the pandemic				
Second-line HCWs	1.00 (Reference)	–	1.00 (Reference)	–
Frontline HCWs	2.567 (1.453-4.535)	**0.001**	2.249 (1.155-4.380)	**0.017**
Experience (years)	0.888 (0.793-0.994)	**0.038**	0.923 (0.812-1.050)	0.225
Anxiety (GAD-7 score)*	1.183 (1.10-1.262)	< **0.001**	1.016 (0.927-1.113)	0.739
Depression (PHQ-8 score)**	1.298 (1.210-1.392)	< **0.001**	1.264 (1.158-1.380)	< **0.001**

*All GAD-7 items were scored 0 (not at all) to 3 (nearly every day), yielding a 0 - 21 score.
**PHQ-8 scores were calculated using all the PHQ-9 items except for item-9. The scores were categorized identically to PHQ-9 scores.[14]
Abbreviations: AOR, Adjusted Odds Ratio; CI, Confidence Interval; COR, Crude Odds Ratio; GAD, Generalized Anxiety Disorder; PHQ-Patient Health Questionnaire.

healthcare workers directly engaged in managing COVID-19 patients were 2.25 times more likely to have suicidal ideation than the second-line health professionals. Regarding the impact of suicidal ideation on the quality of life, we observed that the suicidal ideation caused significant impairment of social, occupational, or other important areas of functioning among HCWs (0.59 ± 0.58 vs 1.26 ± 0.79; $P < 0.001$).

In conclusion, a significant proportion of HCWs were found to have suicidal ideation, with depression, and being at the frontlines of COVID-19 pandemic significant predictors of suicidal ideation. Our findings call for psychological interventions to mitigate risks of mental health issues in this high-risk population.

Conflicts of interest. None declared

References

1. **Davidson JE, Proudfoot J, Lee K, Terterian G, Zisook S.** A Longitudinal analysis of nurse suicide in the United States (2005-2016) with recommendations for action. *Worldviews Evid Based Nurs.* 2020;17(1):6-15. doi: 10.1111/wvn.12419
2. **Vizheh M, Qorbani M, Arzaghi SM, Muhidin S, Javanmard Z, Esmaeili M.** The mental health of healthcare workers in the COVID-19 pandemic: a systematic review. *J Diabetes Metab Disord.* 2020;19(2):1-12. doi: 10.1007/s40200-020-00643-9
3. **Li Y, Scherer N, Felix L, Kuper H.** Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: a systematic review and meta-analysis. *PloS One.* 2021;16(3): e0246454.
4. **Rahman A, Plummer V.** COVID-19 related suicide among hospital nurses; case study evidence from worldwide media reports. *Psychiatry Res.* 2020; 291:113272.
5. **Salman M, Mustafa ZU, Raza MH, *et al.*** Psychological effects of COVID-19 among healthcare workers and how they are coping: a web-based, cross-sectional study during the first wave of COVID-19 in Pakistan. *Disaster Med Public Health Prep.* 2022;10.1017. https://doi.org/10.1017/dmp.2022.4
6. **Spitzer RL, Kroenke K, Williams JB.** Generalized anxiety disorder 7-item (GAD-7) scale. *Arch Intern Med.* 2006; 166: 1092-7.
7. **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. https://doi.org/10.1046/j.1525-1497.2001.016009606.x
8. **Bauer AM, Chan YF, Huang H, Vannoy S, Unützer J. Characteristics,** management, and depression outcomes of primary care patients who endorse thoughts of death or suicide on the PHQ-9. *J Gen Intern Med.* 2013;28(3):363-9.
9. **Denneson LM, Corson K, Helmer DA, Bair MJ, Dobscha SK.** Mental health utilization of new-to-care Iraq and Afghanistan veterans following suicidal ideation assessment. *Psychiatry Res.* 2014;217(3):147-53.
10. **Mackelprang JL, Bombardier CH, Fann JR, Temkin NR, Barber JK, Dikmen SS.** Rates and predictors of suicidal ideation during the first year after traumatic brain injury. *Am J Public Health.* 2014;104(7):e100-7.
11. **Louzon SA, Bossarte R, McCarthy JF, Katz IR.** Does suicidal ideation as measured by the PHQ-9 predict suicide among VA patients? *Psychiatr Serv.* 2016;67(5): 517-22.
12. **Kim S, Lee HK, Lee K.** Which PHQ-9 items can effectively screen for suicide? Machine learning approaches. *Int J Environ Res Public Health.* 2021;18(7):3339.
13. **Rossom RC, Coleman KJ, Ahmedani BK, *et al.*** Suicidal ideation reported on the PHQ9 and risk of suicidal behavior across age groups. *J Affect Disord.* 2017; 215:77-84.
14. **Kroenke K, Strine TW, Spitzer RL, Williams JB, Berry JT, Mokdad AH.** The PHQ-8 as a measure of current depression in the general population. *J Affect Disord.* 2009;114(1-3):163-73.