

Research Article

Effect of Covid-19 Pandemic on Female Primary School Teachers Work and Social Life Induced Anxiety in District East of Karachi, Pakistan

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ABSTRACT

The aim of this study was to assess the impact and association of various COVID-19 pandemic related factors on the anxiety levels of female primary school teachers. This analytical cross-sectional study was conducted from September to December 2023 in 20 randomly selected private primary schools of District East, Karachi, using non-probability convenient sampling. Female teachers of grades 1-5 were included. Anxiety was assessed using the validated Generalized Anxiety Disorder-7 (GAD-7) scale, categorizing severity as minimal, mild, moderate, or severe. Data on demographic, professional, familial, and social factors were collected through a structured proforma. Statistical analysis was performed using SPSS v26, with chi-square test applied ($p \leq 0.05$). Among 357 female primary school teachers (mean age 34.7 ± 6.3 years), moderate (54.6%) and severe anxiety (24.9%) predominated, with a mean GAD score of 12.8 ± 5.4 . Anxiety severity showed no significant association with age, education, marital status, or school location, but was higher with greater teaching experience ($p = 0.047$). Significant associations were observed with social and emotional impacts ($p = 0.030$), poor school support ($p = 0.010$), lack of technical/professional support ($p < 0.001$), weak social/family support ($p < 0.001$), high screen time ($p = 0.005$), and loss of relatives/friends due to COVID-19 ($p = 0.003$). Anxiety was highly prevalent among female primary school teachers in Karachi during the COVID-19 pandemic. Institutional support, online teaching challenges, classroom management difficulties, family responsibilities, and social support networks showed strong associations with anxiety severity.

Keywords: Anxiety, COVID-19, Mental Health, Pandemic, Social Life.

INTRODUCTION

The emergence of the novel coronavirus (SARS-CoV-2) in late 2019 marked the onset of an unprecedented global health crisis. The rapid transmission, asymptomatic carriers, and wide clinical variability of the virus posed major challenges for public health authorities across the world¹. In January 2020, the World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern, acknowledging its far-reaching implications beyond the domain of public health². As of late 2021, COVID-19 had claimed millions of lives and disrupted nearly every aspect of daily living, including global

healthcare systems, economies, and educational institutions^{3,4}.

The psychological and social consequences of COVID-19 contributed to increased anxiety, depression, and stress levels in both general populations and specific occupational groups^{5,6}. The sudden imposition of lockdowns, social distancing, and quarantine measures had a marked effect on mental health globally. As mental health services were limited, many individuals, particularly frontline workers and educators, were left vulnerable to psychological distress.⁷ According to UNESCO, the closure of schools in 172 countries at the height of the pandemic affected nearly one billion learners globally⁸. Subsequently, the

shift to online education, while necessary, created new challenges such as digital inequities, limited access to devices, and technological illiteracy, particularly in developing countries⁹. These issues were especially severe for primary school students and their families, who relied on schools not only for learning but also for essential services such as healthcare, and emotional support¹⁰. With approximately 22.8 million children out of school, Pakistan holds the second-highest number of out-of-school children globally¹¹. Regional data showed that school teachers confronted several obstacles during the transition to remote teaching during COVID-19, and faced increased workloads, low digital literacy, and the pressure to adapt quickly to unfamiliar platforms without adequate institutional support¹². For female teachers in particular, the pandemic compounded pre-existing gender roles and responsibilities, requiring them to manage household duties, childcare, and professional obligations simultaneously¹³. Given the dual roles of female teachers as educators and caregivers, they represent a particularly vulnerable population. This study wanted to examine how pandemic-related stressors particularly those related to online teaching, domestic responsibilities, and social isolation influenced anxiety levels among female educators. The aim was to assess the impact and association of various COVID-19 pandemic related factors on the anxiety levels of female primary school teachers.

METHODOLOGY

This analytical, cross-sectional study was executed involving 20 private primary educational institutions in Karachi, Pakistan, utilizing a non-probability convenient sampling technique, during September 2023 to December 2023. Private primary educational institutions situated in the Gulshan-e-Iqbal and Safoora Goth regions of District East, Karachi were randomly selected, subsequent to receiving ethical authorization from the Institutional Review Board (letter number: JSMU/IRB/2023/719, dated: 25/05/2023) of Jinnah Sindh Medical University. Informed written consents were sought from all participants prior to the commencement of data collection. To uphold confidentiality, all data were anonymized. Participants were duly informed of their right to voluntarily withdraw from the study at any time without facing any adverse repercussions. The study protocol was

executed in accordance with the ethical standards outlined in the Declaration of Helsinki. Inclusion criteria were women educators teaching Grade 1 to 5 and working on a continuous and uninterrupted basis of minimum six months before the onset of the COVID-19 pandemic. Participants were included if they consented to participate voluntarily. Participants were excluded if they had recently joined the teaching workforce or chose not to participate due to any reasons.

A minimum required sample size of 303 was determined using OpenEpi online software, based on the prevalence estimates of anxiety among teachers as 73%¹⁴, with 95% confidence level and 5% margin of error. For this study, a total of 357 participants were enrolled who fulfilled eligibility criteria. Generalized Anxiety Disorder 7-item (GAD-7) scale was utilized for the evaluation of anxiety. GAD-7 scale contains seven questions which measure on a 4-point likert scale and the overall score is zero to 21¹⁵. The magnitude of the anxiety was categorized into four levels as a minimum (0-4), mild (5-9), moderate (10-14) and extreme (15-21)¹⁵. The primary study variable was anxiety severity. Factors associated with screen time, prior experience with virtual instruction, the existence and characteristics of support systems, as well as alterations encountered in both familial and professional domains as a consequence of the COVID-19 pandemic were studied. A special proforma was designed to record study data. Data were analyzed utilizing IBM-SPSS Statistics, Version 26. Frequency and percentages were shown for categorical data, while mean and standard deviation (SD), or median and interquartile range (IQR) were calculated for numeric data (depending upon the normality distribution). Chi-square test was performed to investigate the relationships among severity of anxiety and various study variables taking $p \leq 0.05$ as statistically significant.

RESULTS

A total of 357 female primary school teachers were enrolled from 20 private educational institutions in Karachi. The mean age of participants was 34.7 ± 6.3 years. Regarding age distribution, 118 (33.1%) were aged below 30 years, 163 (45.7%) between 30–40 years, and 76 (21.3%) were older than 40 years. In terms of educational attainment, 141 (39.5%) were graduates or below, while 216 (60.5%) were above graduation level. Marital

status analysis revealed that 225 (63.0%) participants were married, 111 (31.1%) were unmarried, and 21 (5.9%) were divorced. The majority of participants, 210 (58.8%), belonged to schools located in Gulshan-e-Iqbal, while 147 (41.2%) were from Safoora Goth. Teaching experience was less than 5 years in 95 (26.6%) participants, 5–10 years in 137 (38.4%), and more than 10 years in 125 (35.0%). Social and emotional impacts of the pandemic were reported by 285 (79.8%) teachers, while 72 (20.2%) denied such impacts.

The mean GAD score was 12.8 ± 5.4 . Evaluation of anxiety severity revealed that 35 (9.8%)

participants had minimal anxiety, 38 (10.6%) mild, 195 (54.6%) moderate, and 89 (24.9%) severe anxiety. When stratified by socio-demographic characteristics, age ($p=0.688$), educational status (0.129), marital status ($p=0.222$), and location of school ($p=0.875$) did not shown any significant association with anxiety severity. Higher teaching experience was associated with relatively higher anxiety severity ($p=0.047$). Anxiety severity was having significant association with social and emotional impact ($p=0.030$), and the details are shown in table-1.

Table 1. Association of Anxiety Severity with Socio-Demographic Characteristics of Study Participants (N = 357)

Characteristics	Total (%)	Anxiety severity				P- value
		Minimal (n=35)	Mild (n=38)	Moderate (n=195)	Severe (n=89)	
Age groups (years)						
<30	118 (33.1%)	15 (42.9%)	14 (36.8%)	65 (33.3%)	24 (27.0%)	0.688
30-40	163 (45.7%)	12 (34.3%)	16 (42.1%)	90 (46.2%)	45 (50.6%)	
>40	76 (21.3%)	8 (22.9%)	8 (21.1%)	40 (20.5%)	20 (22.5%)	
Educational Status						
Graduation or below	141 (39.5%)	10 (28.6%)	12 (31.6%)	76 (39.0%)	43 (48.3%)	0.129
Above graduation	216 (60.5%)	25 (71.4%)	26 (68.4%)	119 (61.0%)	46 (51.7%)	
Marital Status						
Married	225 (63.0)	18 (51.4%)	20 (52.6%)	124 (63.6%)	63 (70.8%)	0.222
Unmarried	111 (31.1)	13 (37.1%)	14 (36.8%)	61 (31.3%)	23 (25.8%)	
Divorced	21 (5.9)	4 (11.4%)	4 (10.5%)	10 (5.1%)	3 (3.4%)	
Location of School						
Gulshan e Iqbal	210 (58.8)	22 (62.9%)	24 (63.2%)	112 (57.4%)	52 (58.4%)	0.875
Safoora	147 (41.2)	13 (37.1%)	14 (36.8%)	83 (42.6%)	37 (41.6%)	
Teaching experience (years)						
<5	95 (26.6%)	14 (40.0%)	15 (39.5%)	40 (20.5%)	26 (29.2%)	0.047
5-10	137 (38.4%)	12 (34.3%)	13 (34.2%)	75 (38.5%)	37 (41.6%)	
>10	125 (35.0%)	9 (25.7%)	10 (26.3%)	80 (41.0%)	26 (29.2%)	
Social and Emotional Impacts						
Yes	285 (79.8)	25 (71.4%)	33 (86.8%)	148 (75.9%)	79 (88.8%)	0.030
No	72 (20.2)	10 (28.6%)	5 (13.2%)	47 (24.1%)	10 (11.2%)	

Among teachers who delivered online lectures during the lockdown, 151 (77.4%) had moderate anxiety and 60 (67.4%) severe anxiety compared with only 29 (82.8%) with minimal anxiety ($p<0.001$). Lack of personal laptop or computer access was linked with higher anxiety, as 41 (46.7%) participants had severe anxiety reported reliance on external devices ($p=0.004$). Teachers who reported inadequate school support for online classes were more likely to have higher severity levels of anxiety ($p=0.010$). Participation in skill development programmes was protective, with

only 16 (18.0%) of severely anxious teachers had access compared with 21 (60.0%) of minimally anxiety, and 29 (76.3%) of mild anxiety teachers ($p<0.001$). Professional and technical support reduced anxiety, as was reported by 24 (68.6%) participants with minimally anxiety and 25 (65.8%) with mild anxiety, compared with 18 (20.2%) having severe anxiety ($p<0.001$). Online teaching-related characteristics and their association with anxiety severity levels are shown in table-2.

Table 2. Association of Online Teaching Related Factors with Severity of Anxiety (N=357)

Online Teaching Related Factors	Severity Of Anxiety				P-Value
	Minimal (N=35)	Mild (N=38)	Moderate (N=195)	Severe (N=89)	
Online lectures during lockdown	29 (82.8%)	18 (47.4%)	151 (77.4%)	60 (67.4%)	<0.001
Personal laptop/computer	10 (28.6%)	8 (21.1%)	51 (26.2%)	41 (46.7%)	0.004
Online teaching	35 (100%)	29 (30.0%)	115 (59.0%)	64 (71.9%)	<0.001
School support for online class	19 (54.3%)	14 (36.8%)	99 (50.8%)	32 (36.0%)	0.010
Skill development program for online class	21 (60.0%)	29 (76.3%)	104 (53.3%)	16 (18.0%)	<0.001
Professional and technical support	24 (68.6%)	25 (65.8%)	94 (48.2%)	18 (20.2%)	<0.001

Difficulties in maintaining student attention were observed in 122 (62.6%) of those participants with moderate anxiety, and 53 (59.6%) with severe anxiety, compared with 28 (80.0%) and 33 (86.8%) among minimal and mild anxiety, respectively ($p=0.004$). Teachers who struggled with maintaining class discipline during online sessions were more likely to have severe anxiety (23.6%)

compared with those with minimal (48.6%), or mild anxiety (60.5%), with $p<0.001$. Parental support during online classes, did not show a statistically significant association with anxiety severity ($p=0.0853$). Patterns of classroom management and participation factors and their influence on anxiety severity are shown in table-3.

Table3. Association of Classroom Management Participation Related Factors with Severity of Anxiety (N=357)

Classroom Management and Participation Factors	Severity of Anxiety				P-value
	Minimal (n=35)	Mild (n=38)	Moderate (n=195)	Severe (n=89)	
Online meeting software for online classes	-	-	8 (2.2%)	-	0.079
Student attention in classes	28 (80.0%)	33 (86.8%)	122 (62.6%)	53 (59.6%)	0.004
Maintaining class discipline in online sessions	17 (48.6%)	23 (60.5%)	69 (35.4%)	21 (23.6%)	<0.001
Parental support during online class	12 (34.3%)	10 (26.3%)	55 (28.2%)	26 (29.2%)	0.853

Poor online teaching experience corresponded to higher levels of anxiety, with 22 (24.7%) of severely anxious teachers falling into this category, though differences were not statistically significant ($p=0.199$). Maintaining

social connections during the pandemic showed that 47 (52.8%) of severely anxious participants reported only "fair" social connections, compared with 16 (45.7%), and 14 (36.8%) among minimal and mild anxiety

participants, respectively ($p < 0.001$). Poor family support for conducting online classes was reported by 37 (41.6%) of severely anxious teachers, compared with only 15 (42.9%) in the minimal group, while excellent support was least common among those with severe anxiety (7.9%), with $p < 0.001$. High personal screen time (> 2 hours excluding professional work) was reported by 22 (24.7%) of severely anxious teachers, and 60 (30.8%) of those with moderate anxiety, compared with 3 (8.6%) with minimal anxiety participants ($p = 0.005$). Poor family support for household work during the pandemic was significantly related to higher anxiety, being reported by 35 (39.3%) with severe anxiety teachers, compared with 9 (25.7%) having the minimal anxiety ($p < 0.001$). Social media was

the predominant medium among those with mild anxiety (100%), whereas those with moderate or severe anxiety more often used audio calls or video calls ($p < 0.001$). Lack of emotional support from friends was significantly higher among those with moderate anxiety (68.7%), and severe anxiety (27.0%), compared with full support with minimal anxiety (100%), with $p < 0.001$. Loss of close relatives or friends due to COVID-19 was significantly linked to severe anxiety, reported by 52 (58.4%) with severe anxiety teachers compared with 15 (42.9%) with minimal anxiety, and 24 (63.2%) with mild anxiety ($p = 0.003$). Details about personal, family, and social factors, and their associations with anxiety severity are given in table 4.

Table 4. Association of Personal, Family and Social Factors with Severity of Anxiety (N=357)

Personal, Family And Social Factors		Severity Of Anxiety				P-Value
		Minimal (N=35)	Mild (N=38)	Moderate (N=195)	Severe (N=89)	
Online teaching experience during COVID-19	Poor	8 (22.9%)	9 (23.7%)	52 (26.7%)	22 (24.7%)	0.199
	Fair	23 (65.7%)	25 (65.8%)	91 (46.7%)	46 (51.7%)	
	Good	3 (8.6%)	-	22 (11.3%)	10 (11.2%)	
	Excellent	1 (2.9%)	4 (10.5%)	30 (15.4%)	11 (12.4%)	
Maintaining social connections during COVID-19	Poor	4 (11.4%)	4 (10.5%)	45 (23.1%)	8 (9.0%)	<0.001
	Fair	16 (45.7%)	14 (36.8%)	82 (42.1%)	47 (52.8%)	
	Good	14 (40.0%)	20 (52.6%)	43 (22.1%)	16 (18.0%)	
	Excellent	1 (2.9%)	-	23 (11.8%)	18 (20.2%)	
Family support for conducting online classes	Poor	15 (42.9%)	9 (23.7%)	100 (51.3%)	37 (41.6%)	<0.001
	Fair	2 (5.7%)	-	36 (18.5%)	10 (11.2%)	
	Good	17 (48.6%)	29 (76.3%)	47 (24.1%)	35 (39.3%)	
	Excellent	1 (2.9%)	-	12 (6.2%)	7 (7.9%)	
Personal screen time excluding professional/teaching work	<30 minutes	21 (60.0%)	29 (76.3%)	120 (61.5%)	39 (43.8%)	0.005
	>30 minutes to 2 hours	3 (8.6%)	-	35 (18.0%)	16 (18.0%)	
	>2 hours	3 (8.6%)	5 (13.2%)	60 (30.8%)	22 (24.7%)	
Family support for work at home during COVID-19	Poor	9 (25.7%)	9 (23.7%)	85 (46.6%)	35 (39.3%)	<0.001
	Fair	2 (5.7%)	4 (10.5%)	38 (19.5%)	5 (5.6%)	

	Good	15 (42.9%)	20 (52.6%)	33 (16.9%)	11 (12.4%)	
	Excellent	9 (25.7%)	5 (13.2%)	39 (20.0%)	38 (42.7%)	
Predominant social connection medium	Social media	24 (68.6%)	38 (100.0%)	88 (45.1%)	46 (51.7%)	<0.001
	Audio calls	5 (14.3%)	-	54 (27.7%)	24 (27.0%)	
	Video calss	6 (17.1%)	-	53 (27.2%)	19 (21.3%)	
Emotional support from friends during the pandemic		35 (100%)	34 (39.%)	61 (31.3%)	65 (73.0%)	<0.001
Loss of close relatives/friends due to COVID-19		15 (42.9%)	24 (63.2%)	76 (39.0%)	52 (58.4%)	0.003

DISCUSSION

The prevalence of moderate (54.6%) and severe (24.9%) anxiety was notable among female primary school educators during the COVID-19 pandemic. A study from Germany found higher levels of anxiety and stress among teachers than in the general population¹⁶. A systematic review reported anxiety prevalence ranging from 10% to 49.4%, with schoolteachers experiencing higher levels than university faculty¹⁷. The proportion of severe anxiety in this study is comparatively higher, resembling findings from Spain and Bangladesh, where schoolteachers reported more distress than other professional groups^{17,18}. These differences may reflect the greater job insecurity and weaker institutional support in low- and middle-income settings.

No significant association was observed between socio-demographic characteristics and anxiety severity. This differs from studies in Iran and Slovakia, where younger and less experienced teachers reported higher stress^{19,20}. In this study, relatively higher teaching experience was linked to higher anxiety, possibly because longer-serving teachers had more entrenched routines disrupted by the abrupt transition to online teaching, along with heavier family responsibilities. The contrasting findings suggest that context, type of education system, and cultural expectations influence which demographic groups are most vulnerable. Teaching-related factors emerged as the strongest predictors of anxiety. Teachers who delivered online lectures reported markedly higher anxiety, with 77.4% of them experiencing moderate anxiety and 67.4% severe anxiety. These results mirror findings from Japan, where teachers conducting face-to-face classes under infection risk reported

high anxiety²¹. A study from China documented that teleworking was linked with social anxiety due to work intensity and lack of support among primary and secondary school teachers²². The Pakistani context magnifies these challenges as many private schools had limited digital infrastructure, leaving teachers to adapt quickly without sufficient preparation. Nearly half of severely anxious teachers lacked a personal computer, a finding consistent with research from Turkey, where insufficient technological readiness negatively affected teachers' psychological wellbeing²³. Similar financial and resource limitations were highlighted by the local data from rural Pakistan, where it was reported that 81% of teachers struggled to manage daily expenses during the COVID-19 pandemic²⁴. In this study, lack of resources combined with job insecurity likely contributed to heightened anxiety.

Only 18.0% of teachers with severe anxiety had access to skill development programs compared with 60.0% of those with minimal anxiety. Professional and technical support reduced anxiety considerably, being reported by nearly two-thirds of teachers with minimal anxiety but only 20.2% of those with severe anxiety. These findings echo with the published literature where supportive school leadership was reported as protective against burnout, highlighting the role of professional recognition and support in reducing teacher stress²⁵. The results emphasise the importance of targeted institutional interventions to mitigate anxiety during emergencies.

Classroom management difficulties also increased anxiety as teachers struggling to maintain student attention or discipline during online sessions were more likely to experience severe anxiety. This association aligns with regional and international data showing student behaviour as a determinant of anxiety,

and linking online teaching demands with heightened stress^{19,26}. Parental support did not significantly affect anxiety in this study, differing from European reports where parental engagement buffered stress²¹. This may reflect structural differences in Pakistan, where parents often have limited involvement in digital education.

This study has limitations. The cross-sectional design precludes causal inference, and longitudinal studies are required to assess whether anxiety persists beyond the pandemic. Self-reported measures may introduce bias, particularly in sensitive domains such as family support. Convenience sampling may limit generalisability, and future studies should adopt probability-based sampling across diverse school types, including public and rural institutions. The exclusion of male teachers restricts gender-based comparisons, which have been reported as significant in several international studies. Future research should address these gaps through mixed-method designs, include both genders, and assess the long-term trajectories of teacher mental health.

CONCLUSION

Anxiety was highly prevalent among female primary school teachers in Karachi during the COVID-19 pandemic, with nearly three-quarters of participants experiencing moderate to severe levels. Socio-demographic variables were not significantly associated with anxiety severity, whereas institutional support, online teaching challenges, classroom management difficulties, family responsibilities, and social support networks showed strong associations. These findings highlight the critical role of workplace and family environments in shaping mental health outcomes of teachers during crises. Strengthening institutional resources, enhancing family and social support, and providing targeted psychological interventions are essential to mitigate anxiety in this vulnerable workforce and to sustain the quality of education delivery during and beyond public health emergencies.

Ethical Approval

The permission was obtained from the Institutional Review Board/Ethics Committee of the Jinnah Sindh Medical University through letter number: JSMU/IRB/2023/719, dated: 25/05/2023.

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None.

Conflict Of Interest

The authors have no conflict of interest.

Authors' Contributions

SSS: Conceptualized and designed the study; oversaw overall project management; provided guidance on research methodology and ethical compliance, approved for publication.

GKM: Responsible for literature review, study design refinement, data collection supervision, manuscript drafting, and approved for publication. **GKJ:**

Methodology and design, data analysis planning, interpretation of results, and approved for publication. **PP:**

Data collection, field coordination, and participant recruitment, contributed to data interpretation, manuscript review, and approved for publication. **RAC:**

Data collection, questionnaire administration, preliminary data management; discussion, literature synthesis, and approved for publication. **MSAA:**

Statistical analysis and data entry oversight, and interpretation of results, approved for publication. **MA:**

Concept and design, drafting, proof reading, critical revisions, approved for publication.

Abbreviations

COVID-19: Coronavirus disease 2019

GAD: Generalized Anxiety Disorder

SPSS: Statistical Package for Social Sciences

UNESCO: United Nations Educational, Scientific and Cultural Organization

WHO: World Health Organization

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