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RELATIONAL FEAR AND PSYCHOLOGICAL IMPACT: A CROSS-SECTIONAL STUDY OF COVID-19 STRESSORS AMONG MALE PATIENTS IN KARACHI, PAKISTAN

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ABSTRACT

The COVID-19 pandemic has triggered a global mental health crisis, yet the nature of pandemic-related stressors and their psychological impact varies across socio-cultural contexts. This study examined the relationship between specific COVID-19 stressors and psychological impact among patients in Karachi, Pakistan. A cross-sectional study was conducted from February to July 2021 involving 306 COVID-19 patients (88.2% male; mean age = 34.12) at Jinnah Postgraduate Medical Centre. Participants completed a questionnaire assessing 20 COVID-19-related stressors and 9 psychological impact items (anxiety and depression). Data were analyzed using descriptive statistics, principal component analysis (PCA), and linear regression. High levels of stress (75%) and psychological impact (65.6%) were observed. PCA identified relational and emotional stressors—particularly fear of infecting family members, irritability, and depressed mood—as the most prominent. Fear for family health emerged as the strongest psychological outcome. Regression analysis showed a strong and significant association between COVID-19 stress and psychological impact ($R = 0.855$, $R^2 = 0.731$, $p < 0.001$). These findings indicate that adverse psychological outcomes were driven primarily by concern for family rather than personal safety, reflecting culturally rooted relational responsibilities. Targeted mental health interventions and culturally sensitive public health strategies addressing familial and relational anxieties are therefore essential.

1. INTRODUCTION

The emergence of the novel coronavirus disease (COVID-19) in late 2019, caused by the SARS-CoV-2 virus, rapidly escalated from a regional health emergency in Wuhan, China, to a global pandemic of unprecedented scale (Anand *et al.,* 2020). While the primary focus of the global response was, necessarily, on the virological, epidemiological, and clinical dimensions of the crisis—containment, treatment, and vaccine development—it became increasingly clear that a "shadow pandemic" of psychological distress was unfolding in parallel (Galea *et al.,* 2020).

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The psychological toll of pandemics is a well-documented but frequently overlooked phenomenon, where the fear, uncertainty, and societal disruption inherent in a large-scale infectious disease outbreak led to widespread and often severe mental health consequences (Choi & Taylor, 2020). The COVID-19 pandemic, with its unique combination of rapid global spread, high mortality, and the implementation of drastic public health measures, has proven to be a particularly potent catalyst for psychological morbidity (Holmes *et al.,* 2020). The pathways through which the pandemic exerts its psychological pressure are multifaceted. They encompass not only the direct fear of contracting a potentially fatal illness but also the secondary and tertiary effects of societal efforts to control its spread. Public health mandates such as lockdowns, social distancing, and mandatory

quarantine, while essential for breaking chains of transmission, have fundamentally altered the fabric of social life (Flaxman *et al.*, 2020). These measures have led to profound feelings of loneliness, social isolation, and a loss of meaningful connection, which are established risk factors for a range of mental health disorders (Groarke *et al.*, 2020; Peplau, 1982). Concurrently, the pandemic triggered a severe global economic downturn, resulting in mass unemployment, financial precarity, and heightened anxiety about the future, further exacerbating the mental health burden on individuals and families (Coibion *et al.*, 2020; Chakraborty & Maity, 2020). This confluence of health-related fear, social deprivation, and economic instability has created a perfect storm for the emergence of psychological distress, including elevated rates of anxiety, depression, post-traumatic stress symptoms, and, in the most tragic cases, suicidal ideation and behavior (McIntyre & Lee, 2020; Wang *et al.*, 2020). The literature that emerged during the pandemic has systematically documented the specific stressors and their psychological consequences. A primary and universal stressor is the fear of infection itself. The constant threat of contracting SARS-CoV-2, a virus with unpredictable severity and potentially fatal outcomes, creates a state of hypervigilance and anxiety (Kontoangelos *et al.*, 2020). This fear is often compounded by the physical symptoms of the disease, which can include distressing experiences like dyspnea (difficulty in breathing), leading to a feedback loop of physical and psychological suffering (Du *et al.*, 2020). Beyond the direct fear of the virus, the non-pharmaceutical interventions (NPIs) implemented to control its spread have been identified as major sources of stress. Quarantine, in particular, has been associated with significant psychological trauma and acute stress reactions, as documented during the earlier SARS outbreak of 2003 and reaffirmed during the COVID-19 crisis (Bai *et al.*, 2004; Wu *et al.*, 2009). The experience of being forcibly isolated, often with limited information and social support, can induce feelings of anger, confusion, and preoccupation with an uncertain future (Holmes *et al.*, 2020). This isolation disrupts daily routines, diminishes physical activity, and can lead to a sense of meaninglessness, all of which are detrimental to psychological well-being (Yıldırım *et al.*, 2021).

The socio-economic consequences of the pandemic represent another critical vector of stress. The closure of businesses and widespread job losses have created immense financial strain, a well-known predictor of mental health problems (McIntyre & Lee, 2020). For many, the loss of employment is not just a financial blow but also a loss of identity, purpose, and social connection, contributing to feelings of hopelessness and depression (Coibion *et al.*, 2020). This economic anxiety is often intertwined with familial discord and an increase in domestic violence, as the pressures of lockdown and financial hardship strain interpersonal relationships (Galea *et al.*, 2020). Finally, the information environment surrounding the pandemic has been a significant stressor in its own right. The relentless 24-hour news cycle, coupled with the proliferation of misinformation and "fake news" on social media, has created an "infodemic" that fuels public panic, fear, and confusion (Qiu *et al.*, 2020; Ayittey *et al.*, 2020). Navigating this complex and often contradictory information landscape requires significant cognitive and emotional resources, contributing to a sense of exhaustion and anxiety (Balkhi *et al.*, 2020). The psychological impact of these combined stressors has been consistently demonstrated in large-scale surveys. For instance, a nationwide study in China found that nearly 35% of respondents reported experiencing trauma-related distress symptoms, with women and young adults being particularly vulnerable (Qiu *et al.*, 2020). Another Chinese study reported that over half of its participants had moderate to severe psychomotor symptoms, with nearly a third reporting significant anxiety (Wang *et al.*, 2020).

The global patterns of psychological distress have been mirrored and, in some cases, amplified within specific national and local contexts. In Pakistan, the first case of COVID-19 was confirmed on February 26, 2020, leading to the swift implementation of public health measures, including a province-wide lockdown in Sindh, where the megacity of Karachi is located, on March 23, 2020 (Waris *et al.*, 2020). Karachi, a densely populated and economically vital urban center, became a major hub of the outbreak, with the virus disproportionately affecting its crowded slum areas (Chandir *et al.*, 2020).

Local research conducted during the pandemic has confirmed the significant psychological toll on the city's population. Studies have highlighted that

individuals undergoing quarantine in Karachi experienced moderate depression and severe anxiety, with outcomes often linked to socio-economic status (Rizwan *et al.,* 2021). Consistent with international findings, women in Karachi appeared to be more susceptible to psychological distress, showing marked increases in depression and anxiety compared to the pre-pandemic period (Asim *et al.,* 2021). This vulnerability aligns with broader literature suggesting that women often experience higher baseline levels of anxiety and mood disorders (Alexander *et al.,* 2007).

Frontline healthcare workers in Karachi also faced immense psychological pressure. Constantly exposed to the virus, they experienced high levels of stress and anxiety, driven by concerns not only for their own health but also for the risk of transmitting the infection to their families (Jawed *et al.,* 2020; Alwani *et al.,* 2020). This "altruistic" fear—the fear of harming loved ones—emerged as a particularly potent stressor for this group. The situation prompted calls for innovative solutions like tele-psychiatry to provide much-needed mental health support while minimizing physical contact (Nadeem *et al.,* 2020). However, while these studies established the prevalence of psychological distress in Karachi, a more granular understanding of the specific nature of the stressors and their direct relationship with psychological outcomes within the general patient population remained less explored. The source material for the present study noted that the people of Karachi were often "misinformed about Covid-19 and its associated factors," leading them to respond in ways that could exacerbate psychological issues. This observation points to a critical need to move beyond simply documenting the existence of stress and to investigate the specific components of that stress that are most predictive of adverse psychological impact in this unique socio-cultural setting. While the international literature provides a robust framework for understanding the psychological impact of COVID-19, and local studies have confirmed its relevance in Pakistan, a significant research gap persists. There is a lack of quantitative research that systematically deconstructs the multifaceted experience of "COVID-19 stress" into its constituent components and then models the direct predictive relationship between these stressors and specific psychological impacts within a cohort of diagnosed patients in Karachi. Understanding which specific fears, anxieties, and life disruptions are the most potent drivers of psychological distress is essential for developing targeted and effective public health messaging and clinical interventions.

This study was therefore designed to address this gap by quantitatively analyzing the core relationship between a comprehensive set of COVID-19-related stressors and the resultant psychological impact, defined as symptoms of anxiety and depression. By examining a sample of individuals who had contracted the virus, the study aimed to provide a focused lens on the psychological experience of being a patient during the pandemic. The primary objectives of this study were to determine the prevalence and nature of COVID-19-related stress by identifying the most significant stressors experienced by a sample of patients in Karachi. To identify the primary psychological impacts, specifically symptoms of anxiety and depression, experienced by this population. To analyze the statistical relationship between the experienced stress and the resultant psychological impact, thereby identifying the strength and significance of this core predictive pathway.

2. MATERIALS AND METHODS

Study Design and Participants

To investigate the relationship between COVID-19 stress and its psychological consequences, a quantitative, cross-sectional research design was employed. This design allows for the simultaneous measurement of independent (stressors) and dependent (psychological impact) variables within a defined population at a single point in time, providing a snapshot of the associations between them. The study was conducted over a six-month period, from February 2021 to July 2021. The study population consisted of patients diagnosed with COVID-19 who were receiving care at the Jinnah Postgraduate Medical Centre (JPMC) in Karachi, Pakistan, a major tertiary care public hospital. The inclusion criterion for participation was a confirmed diagnosis of COVID-19 and being a patient at JPMC. Individuals who were not patients at the center were excluded. A final sample of 306 participants was recruited for the study. A critical characteristic of the sample was its demographic composition. The participants were predominantly

male, with 270 males (88.2%) and 36 females (11.8%). The mean age of the sample was 34.12 years, with a standard deviation of 8.57 and an age range spanning from 22 to 56 years. The majority of participants were married (252 participants, 82.4%) and employed (276 participants, 90.2%). In terms of education, the sample was split between those with an undergraduate level of education (168 participants, 54.9%) and those with a graduate level of education (138 participants, 45.1%). This pronounced demographic skew, particularly the overrepresentation of married, employed males, is a defining feature of the dataset and provides an essential context for the interpretation of the study's findings.

Measures

A structured, multi-section questionnaire was utilized as the primary instrument for data collection. The questionnaire was adapted with modifications from a previous study conducted in the region by Balkhi *et al.* (2020), ensuring a degree of contextual relevance for the items. The instrument was divided into three sections.

Section A: Socio-Demographic Information. This section collected basic demographic data from the participants, including age, gender, marital status, highest level of education attained, and current employment status. These variables were collected to characterize the sample and to be used as potential covariates in exploratory analyses.

Section B: Stress due to COVID-19. This section comprised a 20-item scale designed to measure the intensity of stress arising from various specific aspects of the COVID-19 pandemic. The items covered a wide range of potential stressors, including fear of infection, emotional responses (e.g., hopelessness, anger), cognitive states (e.g., confusion, poor concentration), behavioral changes (e.g., avoidance, information seeking), and social consequences (e.g., stigmatization, fear of infecting family). A complete list of these items is provided in the Results section (Table 2). Participants rated their level of stress for each item on a 5-point Likert scale, with response options defined as:

1 = *not stressed at all*, 2 = *slightly stressed*, 3 = *stressed*, 4 = *more stressed*, and 5 = *highly stressed*.

Section C: Psychological Impact (Anxiety and Depression). This section consisted of a 9-item scale intended to assess the psychological impact of the pandemic, with items reflecting symptoms of anxiety and depression. The items probed fears related to leaving the house, visiting crowded places, and the health of oneself and family members, as well as general feelings of anxiety and perceptions of the situation's severity. A complete list of these items is provided in the Results section (Table 3). The response format for this scale was not explicitly detailed in the source material but was analyzed congruently with the stress scale (Balkhi *et al.*, 2020).

Procedure

The data collection was carried out with the cooperation of medical practitioners at the JPMC isolation ward. Ethical considerations and logistical constraints of conducting research during a pandemic necessitated the use of remote data collection methods. After identifying eligible patients, data were collected using "convenient methods," which included communication via telephone, email, and post to administer the questionnaire. This approach allowed for the recruitment of participants while adhering to public health guidelines and minimizing the risk of virus transmission.

Statistical Analysis

All collected data were first organized in Microsoft Excel and subsequently imported into the Statistical Package for the Social Sciences (SPSS), version 16, for formal analysis. The initial step in the analysis involved data cleaning to identify and handle any outliers or irrelevant data entries to ensure the integrity of the dataset. The formal statistical plan proceeded in three stages.

First, Descriptive Statistics were calculated to summarize the sample's characteristics and the main study variables. Frequencies and percentages were used for categorical variables (e.g., gender, marital status), while means and standard deviations (M±SD) were calculated for continuous variables (e.g., age) and the Likert scale scores.

Second, Principal Component Analysis (PCA) was performed separately for the 20-item stress scale and the 9-item psychological impact scale. PCA is a data

reduction technique used to identify the underlying latent structure of a set of variables. The goal was to reduce the multiple items of each scale into a smaller, more manageable number of coherent factors or components that represent the core constructs of "COVID-19 Stress" and "Psychological Impact." This allows for a more parsimonious and powerful analysis than examining each of the 29 items individually.

Third, Linear Regression analysis was conducted to test the study's central hypothesis. A regression model was specified with the factor score derived from the PCA of the COVID-19 stress scale as the independent (predictor) variable and the factor score derived from the PCA of the psychological impact scale as the dependent (outcome) variable. This analysis aimed to determine the strength (R2), direction (β), and statistical significance (p-value) of the relationship, thereby quantifying the extent to which stress predicted psychological impact in this sample. The alpha level for determining statistical significance was set at $p<0.05$.

3. RESULTS AND DISCUSSION

Participant Characteristics

The study was based on a sample of 306 participants who had been diagnosed with COVID-19. The socio-demographic profile of the sample is detailed in Table 1. The mean age of the participants was 34.12±8.57 years, with a range of 22 to 56 years. The sample was characterized by a significant gender imbalance, with 270 (88.2%) males and only 36 (11.8%) females. A large majority of the participants were married (82.4%) and employed (90.2%). The educational background was relatively balanced, with 54.9% having completed undergraduate-level education and 45.1% having attained a graduate-level degree.

Prevalence of Stress and Psychological Impact

Analysis of the frequency distributions for the primary constructs revealed high levels of distress within the sample. A substantial majority of the participants, 75% (n=229.5), reported experiencing a high level of overall stress related to the COVID-19 pandemic. Correspondingly, 65.6% (n=201) of the participants reported experiencing a high level of psychological impact, encompassing symptoms of anxiety and depression. Conversely, 25% reported low stress, and 34.3% reported low psychological impact. These figures indicate that significant psychological distress was a common experience among the patients in this cohort.

Factor Structure of COVID-19 Stressors

A Principal Component Analysis (PCA) was conducted on the 20 items of the COVID-19 stress scale to identify the underlying dimensions of stress experienced by the participants. The analysis revealed a strong primary component. As reported in the source document, four components had initial eigenvalues greater than 1.0, collectively explaining 80.22% of the total variance. The first and most dominant principal component alone accounted for a substantial 62.11% of the variance, indicating a powerful, unidimensional core to the stress experience. Table 2 presents the factor loadings for each of the 20 stress items on this first principal component, sorted in descending order of their loading magnitude. The factor loading represents the correlation of each item with the underlying component; higher loadings indicate that the item is a stronger measure of the latent construct. The results clearly show that the most potent stressors were primarily emotional and relational in nature. The three items with the highest loadings were "Felt irritated/angry on self or others" (S12, loading =.950), "Afraid to go to home because of fear of infecting family" (S16, loading =.902), and "Depressed mood - feeling low most part of the day" (S19, loading =.901). Other highly loading items included reluctance to work (S18), stigmatization in the neighborhood (S20), and uncertainty about infection control procedures (S14). In contrast, the item with the lowest loading was "Anxiety when dealing with febrile patients/family members" (S9, loading =.535), suggesting that direct clinical encounters were a less central component of the overall stress experience compared to the emotional and social sequelae.

Factor Structure of Psychological Impacts

A parallel PCA was performed on the 9 items of the psychological impact scale. This analysis yielded a single, extremely dominant principal component with an eigenvalue of 6.88, which explained a remarkable 76.39% of the total variance. This result indicates that the nine items were measuring a highly coherent, unidimensional construct of psychological distress. Table 3 displays the factor loadings for each of the 9

impact items on this component, sorted by magnitude. The item with the highest loading, and thus the single best indicator of the psychological impact experienced by this sample, was "I fear for the health of my family members" (P4, loading =.900). This was followed closely by items related to government isolation of patients (P6, loading =.895) and feeling anxious when a family member goes outside (P5, loading =.850). The item "I feel the situation is not as bad as it is being portrayed" (P9) had the lowest loading (.325), suggesting it was the least related to the core distress construct. This pattern strongly suggests that the psychological impact was overwhelmingly characterized by fear and anxiety centered on the well-being of family members.

The Predictive Relationship Between Stress and Psychological Impact

To test the central hypothesis of the study, a linear regression analysis was conducted using the factor scores generated from the PCAs. The factor scores for COVID-19 stress was entered as the independent variable to predict the factor score for psychological impact. The results, summarized in Table 4, demonstrate a powerful and statistically significant relationship. The model summary shows a correlation coefficient (R) of.855, indicating a very strong positive association between the two constructs. The coefficient of determination (R2) was.731, which means that 73.1% of the variance in psychological impact was statistically explained by the variance in COVID-19 stress. This is an exceptionally strong effect size in social science research.

The analysis of variance (ANOVA) confirmed the statistical significance of the model, F (1,304) = 825.725, p<.001. The extremely low p-value indicates that the likelihood of observing such a strong relationship by chance is virtually zero. The regression coefficient for the stress factor score was positive and highly significant (β=.855, p<.001), confirming that as COVID-19 stress increased, psychological impact also increased in a direct, linear fashion.

This study was designed to investigate the core relationship between the stress induced by the COVID-19 pandemic and its subsequent psychological impact on a sample of diagnosed patients in Karachi, Pakistan. The results provide a clear and compelling narrative. First, the study confirms the high prevalence of psychological distress within this population, with three-quarters of participants reporting high stress and nearly two-thirds reporting high psychological impact. This finding is broadly consistent with the global body of research that has consistently highlighted the pandemic's role as a major mental health crisis (Gonzalez-Sanguino *et al.*, 2020; Wang *et al.*, 2020).

However, the primary contribution of this research lies not in confirming the existence of distress, but in deconstructing its specific nature and quantifying its internal dynamics. The linear regression analysis revealed an exceptionally strong predictive relationship, with COVID-19-related stress accounting for over 73% of the variance in adverse psychological outcomes (R2=.731). This robust statistical link underscores that the psychological suffering experienced by these patients was not a vague or diffuse phenomenon but was directly and powerfully driven by the specific stressors associated with the pandemic. Moving beyond this overarching relationship, the Principal Component Analyses (PCA) offer a more profound layer of understanding. The analysis of the stress scale revealed that the psychological experience was not dominated by the clinical fear of the virus itself (S1: "Feared getting infected more severely," loading =.680). Instead, the most potent stressors were intensely emotional and relational. The highest-loading items were "Felt irritated/angry on self or others" (S12), "Afraid to go to home because of fear of infecting family" (S16), and "Depressed mood" (S19). This pattern suggests that the core of the stress experience was not simply a fear for one's own life, but a complex emotional state characterized by anger, sadness, and a profound, altruistic fear of being a vector of harm to one's loved ones.

This interpretation is powerfully reinforced by the PCA of the psychological impact scale. The single item that best captured the essence of the participants' psychological suffering was "I fear for the health of my family members" (P4), which had the highest factor loading (.900). When synthesized, these findings paint a coherent picture: the central psychological pathway of the pandemic experience in this cohort began with an overwhelming fear of

infecting one's family, which in turn manifested as anger, depression, and a generalized state of severe psychological distress. The core of the crisis, for these individuals, was not selfish fear, but altruistic fear.

This finding of "altruistic fear" as the primary psychological driver demands an interpretation that goes beyond the data and considers the specific socio-cultural context of the sample. The demographic profile of the participants is not an incidental detail; it is the key to unlocking a deeper understanding of the results. The fact that the sample was overwhelmingly composed of males (88.2%) who were married (82.4%) and employed (90.2%) is of paramount importance. In the socio-cultural milieu of Pakistan, as in many other patriarchal societies, men are traditionally ascribed the role of the family's primary protector and provider. This role is deeply internalized and forms a core part of male identity. A man is expected to shield his family from external threats and to ensure their economic well-being. The diagnosis of a contagious and potentially deadly disease like COVID-19 represents a catastrophic inversion of this fundamental role. The male patient is no longer the protector; he is the threat. He is not the provider; he is a burden, unable to work and potentially draining family resources for his care.

This profound role-reversal can generate an intense psychological conflict. The fear of infecting one's family (S16) is not just a health concern; it is a manifestation of the horror of failing in one's most basic duty as a husband and father. This sense of powerlessness and failure is a plausible and potent driver for the other dominant emotional responses observed in the study. The high levels of anger and irritability (S12) can be understood as an externalization of this internal frustration—anger at the virus, at the situation, and perhaps at oneself for becoming a source of danger. Similarly, the profound depressed mood (S19) can be seen as the internalization of this sense of failure and helplessness. Therefore, the psychological distress observed in this study is not merely a reaction to a pathogen; it is a reaction to the pathogen's complete disruption of a deeply ingrained socio-cultural identity and its associated responsibilities. This interpretation elevates the findings from a simple description of symptoms to a culturally-informed analysis of psychological suffering.

The findings of this study both align with and add important nuance to the existing body of literature cited in the source material. The high levels of stress, anxiety, and depression are consistent with studies conducted on various populations during the pandemic, including psychiatric patients in China who also exhibited high levels of anger and emotional changes (Dong *et al.*, 2020), and the general population in Spain (Gonzalez-Sanguino *et al.*, 2020). The significance of stressors related to lockdown and social consequences, such as stigmatization (S20), resonates with research highlighting how changes to daily life induced by public health measures contribute to psychological distress (Roy *et al.*, 2020). Furthermore, the strong positive correlation found between stress and psychological effects is in strong agreement with the work of Harper *et al.* (2021) and Wang *et al.* (2020), who also reported that pandemic-related stress was a major predictor of adverse psychological symptoms.

However, the present study offers a crucial, nuanced perspective by focusing on a predominantly male sample. Much of the literature, including local studies from Karachi cited in the source material, has correctly highlighted the particular vulnerability of women to anxiety and depression during the pandemic (Rizwan *et al.*, 2021; Asim *et al.*, 2021; Alexander *et al.*, 2007). While these findings are valid and important, they risk creating an incomplete picture of the pandemic's psychological toll if the unique experiences of men are not also investigated. This study provides a rare and valuable window into the specific psychological dynamics affecting men in this context. It suggests that while women may report higher levels of generalized anxiety, the distress experienced by men may be qualitatively different, rooted more specifically in the conflict between their illness and their culturally defined roles. The "altruistic fear" for their family's safety appears to be the central organizing principle of their psychological distress. This does not contradict findings of female vulnerability but rather complements them, illustrating that the pandemic inflicted psychological harm through different, gender-inflected pathways. The insights generated by this study have direct and actionable implications for

public health policy and clinical practice, particularly in Pakistan and other regions with similar socio-cultural structures.

First, public health communication strategies should be culturally attuned. Messaging that focuses solely on self-preservation (e.g., "Wear a mask to protect yourself") may be less effective than messaging that leverages the powerful, culturally resonant motivation of family protection. Campaigns framed around the concept of protecting one's loved ones (e.g., "Protect your family: wear a mask, maintain distance") are likely to resonate more deeply with the male population, tapping into the very anxieties that this study identified as central to their experience.

Second, clinical and mental health interventions for male patients with COVID-19 should be specifically designed to address the unique psychological themes identified here. Therapies should create a space for men to articulate and process feelings of guilt, helplessness, and anger related to their perceived failure as family protectors. Cognitive-behavioral approaches could be used to challenge maladaptive thoughts about being a "threat" or a "burden," while supportive counseling can help validate these difficult emotions. The findings lend strong support to the expansion of accessible mental health services, such as the tele-psychiatry clinics proposed by Nadeem et al. (2020), which could provide a confidential and accessible platform for patients to address these sensitive issues.

Third, the results highlight the importance of family-centered care. Since the primary anxiety revolves around the family's well-being, interventions that include and support the family unit may be particularly effective. Providing clear information to the family about infection control, offering them psychological support, and facilitating safe communication between the patient and their loved ones can help alleviate the patient's primary source of stress.

Limitations and Directions for Future Research

Despite its important findings, this study has several limitations that must be acknowledged and which point toward important avenues for future research.

The most significant limitation is the severe gender imbalance of the sample. With 88.2% of participants being male, the findings are overwhelmingly representative of the male experience and cannot be generalized to women in Karachi. The culturally-informed interpretation of "altruistic fear" is contingent on this demographic reality. Future research is urgently needed to recruit a gender-balanced sample to investigate whether this psychological model holds true for women, or if their primary stressors and psychological responses follow a different pattern, perhaps more related to domestic burdens, childcare, or direct health anxieties.

Second, the cross-sectional design of the study, while effective for identifying associations, cannot establish causality. It demonstrates a strong relationship between stress and psychological impact but cannot definitively prove that the stress caused the impact. Longitudinal studies that follow patients from diagnosis through recovery and beyond are needed to track the evolution of these psychological variables over time and to better understand their causal sequencing.

Third, the sample was drawn from a single public hospital (JPMC) in Karachi. While JPMC is a major medical center, its patient population may not be representative of all COVID-19 patients in the city, particularly those treated in private hospitals or those who did not require hospitalization. Multi-center studies encompassing a broader range of healthcare settings would enhance the generalizability of the findings.

Fourth, the study relied exclusively on self-report questionnaires. This method is susceptible to biases such as social desirability (participants responding in a way they deem socially acceptable) and recall bias. Future studies could benefit from incorporating multi-method assessments, including clinical interviews or biomarker data (e.g., cortisol levels), to provide a more objective and comprehensive picture of psychological distress.

Finally, as recommended in the source material, future research should endeavor to include a control group of non-infected individuals from the same community. This would allow for a more precise isolation of the psychological impact attributable specifically to the experience of being diagnosed with COVID-19, as

opposed to the general stress of living through a pandemic.

4. CONCLUSION

This study provides robust quantitative evidence of the profound psychological toll exacted by the COVID-19 pandemic on a cohort of predominantly male patients in Karachi. The findings move beyond a simple confirmation of distress to offer a nuanced and culturally-informed understanding of its core dynamics. The central conclusion is that the relationship between pandemic-related stress and adverse psychological outcomes is not only statistically powerful but is also characterized by a specific and meaningful theme: the primacy of relational fear. The psychological burden for these individuals was driven less by a fear for their own safety and more by a potent, altruistic fear of endangering their families. This anxiety, likely amplified by the conflict between their illness and their socio-cultural role as family protectors, manifested as significant anger, depression, and overall psychological impairment. This research underscores the critical importance of looking beyond universal models of distress to understand how large-scale crises are experienced and interpreted through the lens of local culture and identity. The insights gained offer a clear directive for public health and clinical practice: to be effective, interventions must acknowledge, validate, and directly address the relational and familial anxieties that lie at the very heart of the pandemic experience.

5. CONFLICT OF INTEREST

All authors have declared that there is no conflict of interest regarding the publication of this article.

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Table 1. Socio-Demographic Characteristics of the Study Participants (N=306)

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	270	88.2
	Female	36	11.8
Marital Status	Married	252	82.4
	Unmarried	54	17.6
Employment Status	Employed	276	90.2
	Unemployed	30	9.8
Educational Level	Undergraduate	168	54.9
	Graduate	138	45.1

Table 2. Principal Component Analysis of the COVID-19 Stress Scale (N=306)

Item ID	Stressor Item	Factor Loading	Mean Likert Score
S12	Felt irritated/angry on self or others	.950	5 (Highly Stressed)
S16	Afraid to go to home because of fear of infecting family	.902	5 (Highly Stressed)
S19	Depressed mood - feeling low most part of the day	.901	5 (Highly Stressed)
S18	Reluctant to work or consider resignation after discharge	.899	4 (More Stressed)
S20	Stigmatization and rejection in neighborhood	.859	4 (More Stressed)
S14	Uncertainty about frequent modification of infection control procedures	.849	4 (More Stressed)
S17	Deteriorating work performance	.845	4 (More Stressed)
S10	Avoided corona virus related information	.844	4 (More Stressed)
S3	Absence of emotional response - feeling numb	.827	4 (More Stressed)
S4	Feeling exhausted	.823	4 (More Stressed)
S15	Poor concentration and felt indecisive	.813	4 (More Stressed)
S11	Had anxiety/palpitations	.808	4 (More Stressed)
S6	Feeling detached from others	.769	3 (Stressed)
S7	Always wore mask and protective equipment even in open spaces	.762	3 (Stressed)
S2	Feeling pessimism or hopelessness	.750	3 (Stressed)
S5	Reduced awareness or feeling confused	.746	3 (Stressed)
S8	Invest majority of free time reading or watching corona virus-related information	.741	3 (Stressed)
S13	Had trouble falling asleep/frequent awakening	.740	3 (Stressed)
S1	Feared getting infected more severely with corona virus	.680	2 (Slightly Stressed)
S9	Anxiety when dealing with febrile patients/family members	.535	1 (Not Stressed)

Table 3. Principal Component Analysis of the Psychological Impact Scale (N=306)

Item ID	Psychological Impact Item	Factor Loading	Mean Likert Score
P4	I fear for the health of my family members.	.900	5 (Highly Impacted)
P6	I feel that the government should isolate COVID-19 patients to specific hospitals.	.895	4 (More Impacted)
P5	I feel anxious when a family member goes outside the house.	.850	4 (More Impacted)
P2	I fear visiting crowded places i.e. markets and departmental stores.	.843	4 (More Impacted)
P3	I fear for the safety of my health even when I'm at home.	.806	4 (More Impacted)
P8	I feel anxious on a daily basis because of COVID-19.	.778	3 (Impacted)
P1	I fear leaving my house because of COVID-19.	.756	3 (Impacted)
P7	I feel fake news surfacing through social media regarding COVID-19 is causing panic.	.722	3 (Impacted)
P9	I feel the situation is not as bad as it is being portrayed.	.325	1(Slightly Impacted)

Table 4. Linear Regression Analysis Predicting Psychological Impact from COVID-19 Stress (N=306)

R	R Square	Adjusted R Square	S.E. of the Estimate		
.855	.731	.730	.5196		
ANOVA				F Sig. (p) 825.725 <.001	
Model	Sum of Squares	df	Mean Square		
Regression	222.927	1	222.927		
Residual	82.073	304	.270		
Total	305.000	305			
Coefficients					
Model	Unstandardized B	Std. Error	Standardized Beta (β)	t	Sig. (p)
(Constant)	-7.687E-16	.030		.000	1.000
Stress Factor Score	.855	.030	.855	28.735	<.001
Note: The dependent variable is the Psychological Impact factor score.					