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Original Article

Perception of COVID among Factory Workers, Assessment of Stress Levels, and the Economic Implications in Karachi, Pakistan

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ABSTRACT

Background: The COVID-19 pandemic has significantly impacted various sectors worldwide, with factory workers particularly vulnerable due to their working conditions and economic challenges. Understanding the mental health and perceptions of COVID-19 among these workers is essential for developing effective interventions.

Objective: To assess the stress levels and perceptions of COVID-19 among factory workers in Karachi and explore the relationship between these factors and demographic variables such as education and financial status.

Methods: A cross-sectional study design was used, involving 354 factory workers in Karachi, selected through convenient sampling. A questionnaire-based survey, including the Perceived Stress Scale (PSS), was employed to gather data on stress levels and perceptions of COVID-19.

Results: In the study of factory workers in Karachi, results revealed diverse stress levels and perceptions of COVID-19, significantly influenced by demographic factors. Among the 354 participants, 61.3% recognized COVID-19 as a real threat, despite 45% having only completed matric-level education. Stress varied notably across different groups, with 86.7% of male workers reporting higher stress compared to 13.3% of their female counterparts. Financial status emerged as a crucial determinant, with 57.3% of workers earning below PKR 18,000 exhibiting more pronounced stress levels. Additionally, preventive measures were well-recognized, with 82.8% of participants identifying hand washing, and 74% acknowledging mask-wearing as effective against COVID-19. These findings underscore the complex interplay between education, financial status, and health awareness in shaping the pandemic's impact on this workforce segment.

Conclusion: The study underscores the need for targeted interventions in workplaces to manage stress and enhance health awareness among factory workers, regardless of their educational background.

Keywords: COVID-19, Factory Workers, Stress, Perception, Public Health, Karachi, Workplace Interventions.

INTRODUCTION

The introduction to the study on the perception of COVID-19 among factory workers in Karachi, the assessment of their stress levels, and the economic implications, can be enriched by integrating relevant literature that provides a broader context and underscores the importance of this research.

The global context of the COVID-19 pandemic, with its onset and widespread impact, is a phenomenon that has been extensively studied (1, 2). In this regard, the social performance of waste management systems during the pandemic, as explored by Geng et al. (2021), reveals a pattern of heightened psychological stress among managers, indicative of broader systemic stresses in times of crisis (3). This observation is pertinent as it mirrors the kind of stresses likely experienced in other urban systems, including those in Karachi (4).

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In Pakistan, the COVID-19 situation has been closely monitored, with studies like Mubeen et al. (2020) shedding light on the awareness levels of the virus among young adults in Karachi (5). This is particularly relevant to our study as it provides a baseline understanding of the awareness that factory workers might have regarding the pandemic. The research by Shareef et al. (2021) goes further to analyze the psychological impact of the pandemic on the general public in Karachi, offering insights into the mental health challenges that could be similarly prevalent among factory workers (6).

The economic and social impact of the pandemic in Pakistan, especially in the context of employment and mental health, is a key area of interest (7). Studies like Maqsood et al. (2021) have assessed the perceived stress levels among employees during the COVID-19 lockdown, employing binary logistic regression analysis to understand the impacts of workload and salary changes (8). These findings are crucial as they provide a comparative backdrop for understanding the specific stressors faced by factory workers in Karachi (9, 10).

The challenges faced by factory workers in Karachi during the pandemic are multifaceted. Bodrud-Doza et al. (2020) conducted a perception-based analysis in Bangladesh, which revealed a significant association between the fear of COVID-19 and the struggling healthcare system, a factor likely paralleled in Karachi (11). Furthermore, the work of Zakaria et al. (2021) on the prevalence of burnout among emergency healthcare workers highlights the increased job workload and responsibilities during the pandemic, a situation that factory workers in Karachi may also face (12).

The study of the perception of COVID-19 among factory workers in Karachi becomes even more pertinent when considering the broader implications of the pandemic. The research by Bright et al. (2020) on the impacts of COVID-19 on domestic violence in the United States, triggered by social and functional isolation and economic stress, underscores the complex socio-economic dynamics that can arise in times of crisis (13). These dynamics are likely to be reflected in the lives of factory workers in Karachi, albeit in different forms.

Lastly, the study by Ali et al. (2021) provides an exploratory qualitative look at community perspectives on COVID-19 affecting mental well-being in Karachi (14). This, along with the thematic analysis technique used, offers valuable methodological insights for our study, which seeks to understand a similar demographic albeit within a different context. Integrating these various studies into our research offers a comprehensive view of the multifaceted impacts of the COVID-19 pandemic. It emphasizes the importance of understanding the unique experiences of factory workers in Karachi, not just in terms of their perception of the virus, but also the associated stress levels and the broader economic implications.

MATERIAL AND METHODS

In this study, a cross-sectional design was utilized to assess the stress levels and perceptions of COVID-19 among factory workers in Karachi who returned to work after a lockdown period. Conducted between July and December 2021, the research focused on various factories across the city. The participant selection process employed convenient sampling, wherein employees from the selected factories were invited to complete questionnaires. The final sample size amounted to 354 participants, a figure determined using Open Epi version 3.01. This calculation was based on a study from China evaluating stress in health workers during the COVID-19 pandemic, where the stress level was found to be 29.8%. Factoring in a 95% confidence level, a 5% margin of error, and an additional 10% to account for potential non-response, the sample size was appropriately adjusted to the final number.

The study's inclusion criteria were specific: only employees aged 18 or older who worked on-site during the pandemic and had observed a period of lockdown were considered. Those who worked from home or did not work during the pandemic, as well as those who did not experience a lockdown, were excluded. A questionnaire-based survey, conducted in the participants' native language and facilitated by trained researchers, gathered data. This survey aimed to gauge the employees' stress levels and their perceptions of the COVID-19 virus. Additionally, personal information such as name, age, gender, marital status, occupation, and area of residence was collected. The questionnaire was divided into three sections. Part A consisted of a single question probing the participants' belief in COVID-19 as a hoax. Part B explored adherence to specific conspiracy theories about the pandemic. The latter portion of this section assessed general knowledge about COVID-19. The final section employed the Perceived Stress Scale (PSS) to evaluate the stress levels of employees working during the pandemic.

Data analysis was conducted using IBM SPSS Statistics for Windows, version 20. Descriptive statistics, including frequencies and percentages, were employed to characterize the quantitative and categorical variables. The study also utilized chi-square tests to identify any significant associations between stress levels, perceptions of COVID-19, and variables such as gender and educational level. Furthermore, T-tests were applied to compare differences in outcome variables among groups of employees working at different levels and within various salary brackets. The research proposal received ethical approval from the Institutional Review Board of DUHS, ensuring that the study adhered to the necessary ethical standards and guidelines.

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RESULTS

The results of this study offer insightful observations into the demographics, perceptions of the COVID-19 pandemic, and the associated stress factors among factory workers in Karachi. Through a careful analysis of the data collected from a diverse group of participants, key findings emerged that shed light on how this workforce segment experienced and perceived the pandemic.

Table 1 provides a comprehensive breakdown of the demographic characteristics of the study participants. The age distribution shows a younger workforce, with the majority (28.0%) falling in the 18-25 age bracket, followed by 26.3% in the 31-40 range. A significant majority of the participants were male (86.7%), reflecting gender distribution in the industrial workforce. In terms of marital status, most participants were married (71.5%). The educational background varied, with a large proportion having completed matric (45.2%), followed by non-matric (22.0%). The workforce predominantly comprised regular employees (83.1%), with contract workers making up 16.9%. A major portion of participants worked 5-9 hours daily (66.9%), and the salary range most reported was below PKR 18,000 (57.3%). The majority of participants had children (61.6%) and worked in the sector for 1-5 years (46.3%). The most common occupation among participants was as workers (66.4%), followed by technical staff (13.0%).

Table 1 Demographics of Study Participants

Variable	Category	f (n)	%		Variable	Category	f (n)	%
Age (years)					Employment Type			
	18-25	99	28.0			Contract	60	16.9
	26-30	90	25.4			Regular	294	83.1
	31-40	93	26.3		Working Hours (Daily)			
	41-50	60	16.9			<5	20	5.6
	>50	12	3.4			5-9	237	66.9
Gender						>9	97	27.4
	Male	307	86.7		Salary (PKR)			
	Female	47	13.3			< 18,000	203	57.3
Marital Status						18,000- 28,000	82	23.2
	Married	253	71.5			28,000- 44,000	30	8.5
	Unmarried	101	28.5			44,000- 64,000	12	3.4
Education						64,000- 150,000	17	5.1
	Non-matric	78	22.0			> 150,000	10	2.8
	Matric	160	45.2		Children			
	Inter	39	11.0			Yes	218	61.6
	Bachelors	59	16.7			No	136	38.4
	Masters	2	0.6		Occupation			
	PhD	16	4.5			Worker	235	66.4
Working Since (Years)						Technical staff	46	13.0
	1-5	164	46.3			Executive personnel	31	8.8
	6-10	79	22.3			Sales and marketing personnel	12	3.4
	11-15	64	18.1			Middle management personnel	12	3.4
	16-20	21	5.9			Senior management personnel	12	3.4
	>20	26	7.3			Other executive and management positions	6	1.7

Table 2 delves into the perceptions of the COVID-19 pandemic among the participants. A significant proportion (38.7%) believed that the COVID-19 pandemic is a hoax. About a third (31.4%) viewed COVID-19 as a bioweapon developed by governments or terrorist organizations. A notable 44.9% of participants thought that the virus is intentionally presented as more dangerous than it is to mislead the public, and an equal percentage believed that experts are misleading the public for their benefit, stating the virus is not worse than the flu. However, the majority (69.8%) trusted experts' opinion on the virus's danger. Nearly 29.1% dismissed the

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idea of the virus being created in a laboratory. A majority felt threatened by the spread of coronavirus (68.4%), and 74.0% believed that consistently wearing a facemask is highly effective in protecting against COVID-19 infection.

Table 2 Perception of COVID-19 Pandemic

Perception Statements	f (n)	%
Do you think COVID-19 Pandemic is a hoax?	137	38.7
COVID-19 is a bioweapon developed by any government or terrorist organization to reduce population.	111	31.4
The virus is intentionally presented as dangerous in order to mislead the public.	159	44.9
Experts intentionally mislead us for their own benefit, even though the virus is not worse than a flu.	169	44.9
We should believe experts when they say that the virus is dangerous.	247	69.8
I think it's nonsense that the virus was created in a laboratory.	103	29.1
I feel threatened by the spread of coronavirus.	242	68.4
Consistently wearing a facemask is highly effective in protecting you from being infected with the COVID-19.	262	74.0

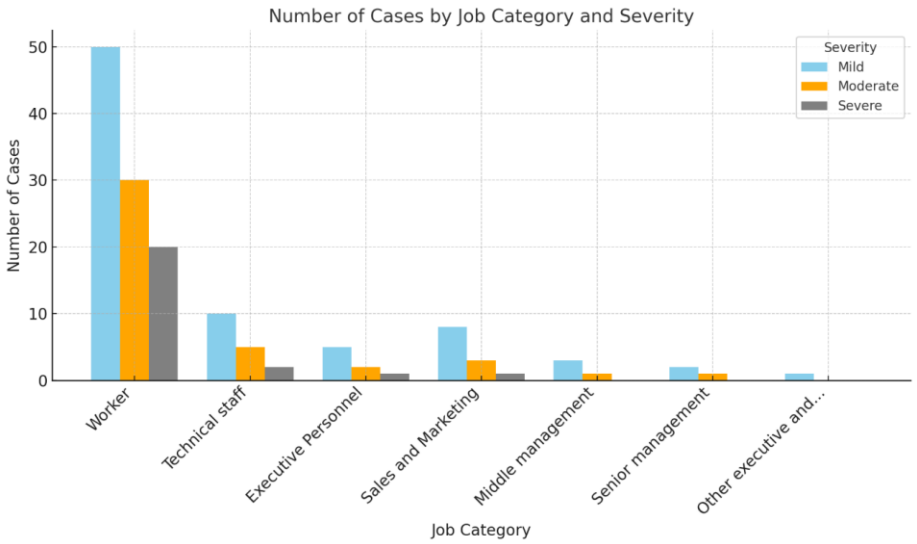

Figure 1 Stress levels of Factory workers

Table 3 presents the results of the multivariate logistic regression analysis. Age showed a positive association (B = 0.2) with a p-value of 0.3, indicating a less significant relationship. Gender had a negative coefficient (B = -1.0) with a p-value of 0.2. Having children was positively associated (B = 1.0) with stress and perception, with a p-value of 0.1. Education, particularly for those who passed the intermediate level, had a strong positive association (B = 4.3) with a p-value of 0.0, suggesting a significant relationship. Working experience of less than 15 years also showed a strong positive relationship (B = 4.1) with the outcomes, with a p-value of 0.0. Working hours, particularly 5-9 hours a day, were significantly associated (B = 1.4) with stress and perception, with a p-value of 0.0. Employment status showed a positive coefficient (B = 2.5) with a p-value of 0.0, indicating a strong relationship with the dependent variables. The 95% confidence intervals for these variables suggest a range of influence on the outcomes, with education and working experience showing particularly wide intervals, indicating a strong effect.

Table 3 Multivariate logistic (overall)

Variables	B	P-value	95% CI	
			Lower	Upper
Age	0.2	0.3	0.8	1.9
Gender	-1.0	0.2	0.1	1.6
Children	1.0	0.1	0.8	8.9
Education (inter pass)	4.3	0.0	6.9	814.6
Working experience (<15)	4.1	0.0	6.0	552.3
Working hours (5-9)	1.4	0.0	1.7	9.7
Employment	2.5	0.0	3.2	49.5

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DISCUSSION

The discussion of the study uncovers significant trends in the stress levels among employees, markedly influenced by age, gender, and financial status. The demographic profile predominantly consisted of workers with a limited educational background. Previous research in Pakistan has indicated a correlation between lower levels of education and negative attitudes towards health challenges, such as the widespread polio virus (15). In an unexpected contrast to this trend and like findings from a Nigerian study (16), a considerable 61.3% of the participants in this study acknowledged the reality of COVID-19, rejecting the idea of it being a hoax. This differs from the Nigerian context, where the majority dismissed the seriousness of the virus and believed in natural immunity, leading to a disregard for preventive measures and self-care.

Contrary to a study in Pakistan that found a higher degree of COVID-19 knowledge among more educated individuals (17), this research interestingly reveals that even participants with lower educational levels possessed adequate awareness about the pandemic (18, 19). Despite 45% of the participants having only completed matric, they experienced various levels of stress, ranging from mild to severe. The stress levels appeared to be linked with financial status, mirroring the observation that employees in higher ranks experienced less stress than those in lower ranks (20).

In terms of preventive measures, the participants' awareness was noteworthy. They recognized practices such as gargling mouthwash (57.9%), washing hands (82.8%), and avoiding close contact with sick individuals (74.6%) as effective in preventing COVID-19. This aligns with findings from Bangladesh (21), where a high percentage of participants practiced hand washing as a preventive measure. Additionally, research on the benefits of antiviral mouthwashes for COVID-19 patients (22) supports the practices acknowledged by the participants in this study. Moreover, 74% of the participants believed in the effectiveness of mask-wearing in preventing the spread of the virus, which is comparable to another study in Pakistan 81.3% (23) but contrasts with a lower percentage in Egypt 35% (24).

The alignment of perceptions in this study with various national (25) and international studies (26) indicates a global consensus regarding COVID-19 perceptions. However, the predominance of male participants suggests a need for more inclusive research that incorporates female perspectives for a fuller understanding of the pandemic's impact.

The study highlights the importance of early identification of stress levels in employees to prevent further mental health issues. The introduction of awareness sessions and motivational seminars in workplaces could address challenges faced by workers. Further research to explore why younger, lower-earning workers exhibited higher stress levels could provide valuable insights.

Stress has significant economic consequences, including reduced productivity, increased healthcare costs, and prolonged economic hardship for affected individuals (27, 28). Despite lower educational levels, most workers in this study displayed a positive perception of COVID-19, challenging the assumption that substantial pandemic knowledge is limited to more educated populations. This finding underscores the importance of disseminating mental health information to poor groups, especially in rural areas (29). The observed negative correlation between financial status and stress levels emphasizes the need to address financial disparities to reduce stress and promote overall health and well-being.

Participants were generally aware of crucial preventive practices, essential in reducing economic burdens and healthcare costs, and contributing to decreased absenteeism and enhanced workplace productivity.

CONCLUSION

The study concludes that the majority of workers possessed sufficient knowledge and correct perceptions regarding the coronavirus, despite their varied stress levels. Young workers with lower incomes were notably more stressed. The research advocates for policymakers to implement cost-effective, targeted interventions in workplaces, such as awareness sessions and motivational seminars. These measures are crucial not only for managing stress but also for mitigating its broader economic consequences, fostering a healthier and more productive workforce.

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