

Assessment of Emotions and Stress Coping Mechanisms of Healthcare Workers from the Department of Pediatrics at the Philippine General Hospital a Year after the Coronavirus Disease 2019 (COVID-19) Pandemic

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ABSTRACT

Objective. Healthcare workers (HCWs) are an often overlooked population in the face of a pandemic. With the myriad of researches focusing on the effect of Coronavirus Disease 2019 (COVID-19) on patients, this study aimed to illuminate the emotions, stressors and stress coping mechanisms of medical frontliners from the Department of Pediatrics working in Philippine General Hospital.

Methods. A quantitative cross-sectional study was done among 130 HCWs ages 21-55 years old, mostly females (72%), recruited through convenience sampling. An adapted questionnaire from China was used and data were analyzed using means, T-test and Anova.

Results. Results showed that HCWs predominantly felt a high sense of professional and ethical duty towards their jobs. Stressors include fear of transmitting the virus to their family and the shortage of manpower, while stress-relievers include knowing that their family are safe and having a good relationship with colleagues. Coping strategies include the use of personal protective measures and the hope of cure motivates them to continue working. Seeking psychiatric help is interestingly one of the least important motivational factors. Nurses, fellows, and residents significantly differ in responses about their feelings, stress-relievers, and coping strategies.

Conclusion. HCWs are a vulnerable population since they endure multiple stressors but they are idealistic and resilient, hence the hospital should give adequate financial compensation and provide good work-life balance.

Keywords: healthcare workers, covid, stressors, coping mechanism

INTRODUCTION

Background

The Coronavirus disease (COVID-19) has been declared as a "public health emergency of international concern" by the World Health Organization (WHO) last January 2020, and has been considered a pandemic by March 2020 since it has affected every continent in the world except Antarctica. The virus has been first reported from unknown cases of pneumonia in Wuhan, China last December 2019, and has been found to be due to a novel strain of the Coronavirus (SARS-CoV-2).

Transmission of COVID-19 was initially postulated to be from the live animal market in Wuhan, China before person-to-person spread has occurred mainly via large respiratory droplets or contact with fomites. With an incubation period



eISSN 2094-9278 (Online)
Published: April 30, 2024
<https://doi.org/10.47895/amp.v58i7.6343>

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ranging from 2 to 14 days, symptoms of the acute respiratory illness include fever, cough, and shortness of breath, affecting mostly the elderly and those with medical comorbidities.¹

As of September 2021, WHO has cited more than 200 million COVID-confirmed cases globally with more than 4.7 million deaths. In the Philippines, there are more than 2.4 million confirmed cases with more than 15,000 healthcare workers affected by the virus and are likely to have more casualties than recorded.² In a country with doctor-patient ratio of 1:33,000, the loss of healthcare professionals leads to an alarmingly vulnerable population in the face of a pandemic.

In response to this, the Philippine government has assigned Philippine General Hospital (PGH) as one of the COVID-19 referral centers in the country, designating an initial 130-capacity ward to become negative pressure rooms, but has expanded to handling 300 COVID patients. As an end-referral tertiary hospital, it has limited its services to its annual patients of more than 600,000 Filipinos to cater to moderate to severe cases.³ With this new responsibility, healthcare workers (HCWs) of the largest training hospital in the country have been faced with a daunting task of being in the frontlines of a pandemic.

The already strained health workforce is becoming overwrought with the burden of the increasing cases of COVID-19 positive patients. Healthcare workers face not only extrinsic causes of stress such as discrimination, physical exhaustion from extended shifts, or inadequate compensation, but are also wrestling with psychological distress of heightened risk of acquiring the infection and passing it on to their family members.⁴

Mental health concerns of healthcare workers are frequently overlooked since many of the staff find it difficult to express their concerns with fears of stigmatization, professional failure, or license restrictions.⁵ Thus, stress management should extend beyond individual mindfulness of one's coping strategies but also gaining support from employers to help manage stress in an organizational level.⁴

Review of Literature

Studies in the time of pandemic have focused more on patients rather than HCWs, leading to a dearth of researches centering on the medical staff. There are however findings from previous viral outbreaks shedding light on HCWs' emotions and coping strategies during an outbreak.

A study by Lee et al.⁶ explored the psychological impact of SARS outbreak in a tertiary hospital in Taiwan among a team of nurses working in the frontline of the emergency department. Upon doing a semi-structured interview in a debriefing session, a questionnaire was made and completed about their experiences while serving as a part of the SARS team. Results of the study showed that major stressors for the nursing staff are related to worries about their colleagues, family members, and patients, while effective measures of reducing stress include availability of psychiatric services,

encouragement among peers, and enough rest and off time during work shifts. The major coping strategy is actively wearing personal protective equipment (PPE), learning more about the disease, and engaging in health-promoting behaviors.

The same questionnaire has been adapted and modified by a research team in Saudi Arabia⁷ exploring the emotions, perceived stressors, and coping strategies of healthcare workers exposed to the MERS outbreak in 2014. Of the 117 participants in the study, majority felt fear and anxiety for their personal safety and also of transmitting the disease to their colleagues and family, but they continue working because of their ethical and professional obligation towards their profession. Main factors that also help the healthcare workers deal with stress are the positive attitude from colleagues and assurance of personal safety by adopting strict precautions.

Moreover, a recent study in Hunan China by Cai et al.⁸, has also shown similar results. Using the same adapted questionnaire from the SARS outbreak, a cross-sectional study has been done among 534 frontline medical staff. It was then noted that the most important motivation in continuing to work during the outbreak is still the healthcare workers' social and moral responsibility, though they also expect recognition and adequate compensation for their job. The identified stressors are the same with other studies, expressing concerns for their personal safety, families, and colleagues, with coping strategies such as protective measures, increased knowledge of the disease along with positive self-attitude are identified.

Other studies have recognized that healthcare workers who have direct clinical contact with infected COVID-19 patients have higher prevalence of anxiety.⁹ This has been supported in a large study of Lai et al.¹⁰ in China, where 1257 healthcare personnel working during the COVID-19 pandemic have reported to have symptoms of depression, anxiety, insomnia, and distress. The main factor associated with higher risk of showcasing these symptoms include those who are engaged in direct diagnosis, treatment, and care of patients with COVID-19.

It is then imperative to illuminate the emotions, stressors, and coping strategies of the healthcare workers while working in a pandemic to properly address their concerns and allow the hospital and healthcare authorities to proactively implement intervention programs.

Significance of the Study

The rationale of this study is to enhance the hospital's knowledge on its healthcare workers' emotions, perceived stressors, and coping mechanisms while working in a COVID-19 referral center. This is to adequately address their concerns and provide adequate support, assistance, and services to the health workforce, which undoubtedly plays a vital part in fighting against the current pandemic.

OBJECTIVES

General Objective

To assess the emotions, perceived stressors, and coping mechanisms of healthcare workers assigned in the pediatrics department of the Philippine General Hospital while working in a COVID-19 referral center.

Specific Objectives

1. To conduct a cross-sectional survey among healthcare workers in the pediatrics department to quantitatively assess their emotions, perceived stressors, and stress coping strategies amidst the current COVID-19 pandemic using descriptive statistics.
2. To compare differences in responses between demographic profiles of resident doctors, fellows, and nurses in the pediatrics department.
3. To generate feedback to the pediatrics department and/or hospital's administration to adequately address concerns and provide proper support to the hospital staff based on their responses.

METHODS

Study Design

This is a descriptive quantitative cross-sectional study to determine the healthcare workers' emotions, perceived stressors, and stress coping strategies while working in the pediatrics department of a COVID-19 referral center. A questionnaire (Appendix) that has been developed by Lee et al.⁶ during the SARS outbreak was used.

Study Population

Sampling technique was done by convenience sampling through recruiting healthcare workers in the pediatrics department composed of fellows, residents, and nurses. Participation on the study was voluntary. Inclusion criteria of respondents include those who are: 1) healthcare workers currently working in PGH during the COVID-19 pandemic 2) has been exposed to a pediatrics COVID-19 patient and/or has been fielded to the pediatrics COVID-19 ward 3) able to understand and answer the English questionnaire on their own. Exclusion criteria include those healthcare workers who have been tapped to cover for temporary care of pediatric patients for a short time due to shortage of staff, but not part of the pediatrics department.

Participants who refused to continue on the study can withdraw anytime. The estimated target sample size of the healthcare workers that are at risk in the pediatrics department and have fulfilled the inclusion criteria is 225 (fellows-56, residents-70, nurses-99). The breakdown of the target participants were as follows: Fellows (56) exposed to COVID-19 patients include those from divisions of Cardiology (9), Emergency Pediatrics (5), Pediatrics Intensive Care Unit (1), Infectious and Tropical

Diseases (10), Neurology (5), Nephrology (2), Newborn Medicine (9), Pulmonology (6), Hematology & Oncology (3), Gastrointestinal (3), and Endocrinology (3); Pediatric Residents (70) include first years (25), second years (24), and third years (21); while the Pediatric Nurses (99) are divided into Ward 9 (17), Ward 11(19), Hema Onco (8), PICU (19), and NICU (36) as their original designation before they have been fielded in the COVID wards. The minimum computed sample size is 107 participants using Epi Info. This was based on a cross-sectional study⁸ which reported that 84.3% of health workers were moderately to very much stressed about infecting family members. This was calculated using a 95% confidence level and 5% margin of error. Of the 225 target population, 130 have returned their questionnaires.

Setting

The study was done in the Pediatrics Department of the PGH Manila, which was one of the selected COVID-19 referral centers by the Department of Health in the country.

Time Frame

The data collection lasted for four months (March-June 2021) while PGH is still deemed as a COVID-19 referral hospital. The duration for data encoding, analysis, and write-up was done in three months (July-September 2021).

Procedure

The assessment of healthcare workers' emotions and stress coping mechanisms while working in a COVID-19 referral hospital was evaluated through data collection, data encoding, and data analysis. The respondents from the pediatrics department were given consent forms prior to the questionnaire which was answered through paper survey. Data was encoded in a frequency table using a Microsoft Excel to note the distribution of demographics of respondents. Data was analyzed using descriptive quantitative statistics, computation of mean and standard deviation of the perceived stressors and coping strategies they commonly use, and Anova and T-test to compare differences in responses among the demographics of participants.

Data Collection

The questionnaire (Appendix) used has been modified from the one made by the group of Lee et al.⁶ which was formed during the SARS epidemic in Taiwan, and has been adapted during the MERS-CoV outbreak in Saudi Arabia⁷ and COVID-19 pandemic in Hubei, China⁸.

The study questionnaire is composed of 5 sections with a total of 72 questions in English language. The first section (15 items) explores the feelings of the staff about the pandemic, where they rate the severity of their feelings on a 4-point Likert scale: 0=not at all; 1=slight; 2=moderate; 3=very much. The second section (20 items) identifies the level of stress of healthcare workers during the pandemic with the different stressors: 0=very minimal; 1=slight; 2=moderate; 3=very

much. The third section (14 items) comprises of extrinsic factors that help the healthcare workers cope with stress and how effective they are: 0=not at all effective; 1=mildly effective; 2=moderately effective; 3=extremely effective. The fourth section (13 items) explores the personal coping strategies of the staff and the frequency of how they used it during the pandemic: 0=never; 1=sometimes; 2=often; 3=always. Lastly, the fifth section (10 items) explores motivational factors that urge healthcare workers to continue working in a COVID-19 referral center: 0=not important at all; 1=slightly important; 2=moderately important; 3=most important.

The principal investigator (PI) recruited the participants by convenience sampling. The PI went around Pediatrics wards of PGH (Ward 9, Ward 11, COVID ward, neonatal intensive care unit, pediatric intensive care unit, and emergency room) to identify participants who have fulfilled the inclusion criteria. Depending on their availability and convenience, the participants were approached and recruited by the PI, who declared herself as a resident-in-training in the pediatrics department making a research study as part of her requirement for residency. The subject matter, purpose, and importance of the study were explained to the participants, followed by instructions on how to answer the paper questionnaire which will take around 10-15mins of their time, a one-time survey.

Moreover, they were informed of their rights of privacy and confidentiality along with their right to refuse and withdraw from the study anytime as reflected in the Informed Consent Form. Once with signed consent, they were given a printed copy of the study tool. They were allowed to accomplish it at their preferred time and submit it at their convenience. The returned accomplished questionnaires were stored in an envelope to maintain anonymity. The questionnaires were then assigned with identification numbers and the data collected were encoded in Microsoft Excel.

Analysis

Descriptive statistics were conducted on demographic characteristics and responses of the participants. Means with standard deviation, medians with interquartile range and frequencies and proportions were generated for normally-distributed quantitative data, non-normal quantitative data, and qualitative data, respectively. The comparison of responses between different demographics were done using T-test and Anova. All analyses were generated with 95% confidence intervals in STATA 16.1 A statistician was consulted to do the data encoding and analysis, with the assurance of data privacy and confidentiality.

Ethical Issues

Patient Confidentiality and Privacy

The completed questionnaires were coded and assigned identification numbers by the principal investigator. The participant's name was not included in the data gathering. The participants were given Informed Consent Form with

the assurance of their anonymity and data privacy. Their identification numbers were coded in Microsoft Excel along with the following information: age, sex, profession, area assignment, duration of employment in PGH, comorbidities, civil status, and whether they are living with family while working. The master list of participants with their information in the Excel file was available only to the principal investigator.

Data Storage and Publication

Hard copies of completed questionnaires were stored in a cabinet with a lock at the principal investigator's condominium, with physical copies accessible only by the physical investigator and statistician. All copies will be shredded after two years of publication of results. Soft copy of the data was stored in a password protected folder in the principal investigator's laptop, accessible only to the physical investigator and statistician. All copies will be deleted after two years of publication of results. In the event the study is published in a journal, presented in a conference, or disseminated online, the identity of participants will remain confidential without disclosure of private information. Any breach of privacy by any unauthorized personnel will be reported to the Data Privacy Officer of the PGH.

Vulnerability of Research Participants

Since the principal investigator is a physician that also works in the pediatrics department, the researcher recognizes that the participants may be vulnerable to be pressured to join the study, especially when recruiting junior colleagues and those of lower occupational rank in the team. Hence, an informed consent was imperative to all participants, being cognizant of their rights to refuse from participation in the study. They were informed that there is no compensation, incentive nor anticipated expense for participating. They may opt to withdraw from the study anytime they feel uncomfortable. The PI also has no conflict of interests with the research participants.

Patient Safety

No form of harm is expected from this study. The protocol was submitted to UP Manila Research Ethics Board (UPMREB) for review and approval and commenced only upon approval of the UPMREB.

Duties of Supervising Investigators

The supervising investigators guide the principal investigator in developing the protocol, while ensuring ethical guidelines are followed in data gathering, collection and analysis. They guide in the development of a scientifically and ethically sound research protocol, assist in addressing ethical and scientific concerns raised by reviewing bodies, supervise in the proper collection and recording of data including the duty to maintain the confidentiality of information for all the phases of the research processes including the

disposal or archival of data, review interim and final reports for accuracy and consistency, and share responsibility and accountability with for the ethical conduct of the research. The principal and supervising investigators have no conflict of interest.

Risks of the Study

Patients' confidentiality, anonymity, and privacy were ensured at all times to guarantee freedom of participants to provide accurate feedback on their experience while working in a COVID-19 referral center. No participant was also subjected to coercion in joining the study, with the right to refuse or leave the study midway. In the event that they feel stressed, triggered or in need of a psychiatric consult while answering the questionnaire, the PI was to connect them to the chief resident of the PGH Psychiatric Department who is responsible for psychiatric consults of PGH employees. During data encoding and certain participants have been noted to have high levels of stress in their answers on the questionnaire, the PI was to contact the participant and arrange a possible consult to the chief resident of the psychiatry department if the participant agrees.

Benefits of the Study

Healthcare workers are indispensable parts of an effective strategy in battling a pandemic. This study hopes that by getting feedback of the healthcare workers' emotions and perceived stressors while working during the COVID-19 pandemic, the pediatrics department or the hospital administration will be able to provide directed support and be able to address staff concerns as much as they can from their capacity, and strengthen coping strategies and motivations of the workers in choosing to serve in the frontlines of the pandemic.

RESULTS

Of the 225 target population, 130 have returned their questionnaires. The demographics (Table 1) show that most of the respondents come from the 28-34 age range (50%), with most of them female (72.3%). The nurses comprise the majority (51.5%) followed by the residents (26.2%) and the fellows (20%). More than 70% have been working in PGH for 0-6years with an average for 4.98 years, with only 8% working at PGH for more than 20 years. More than half of the participants have no comorbidities (58.5%) but the top 3 diagnoses include asthma and allergy (20%), hypertension (6.2%), and diabetes (1.5%). Majority of the participants are single (70.8%), with most not living with family members (47.7%) while working in a COVID referral center.

In Table 2 Section 1 regarding the feelings of healthcare workers during the pandemic, majority very much felt that the reason they are doing their job was because it was their professional and ethical duty (mean score 2.62, 0.65), followed by the expectation and appreciation of a financial compensation during and after the outbreak (mean 2.25

Table 1. Demographic Profile

	Frequency	Percentage	Mean (SD)
Age			
21-27	30	23.1	32.54 (6.76)
28-34	65	50.0	
35-41	18	13.8	
42-48	7	5.4	
49-55	7	5.4	
No response	3	2.3	
Gender			
Female	94	72.3	—
Male	34	26.2	
No response	2	1.5	
Profession			
Fellow	26	20.0	—
Nurse	67	51.5	
Resident	34	26.2	
No response	3	2.3	
Duration of Employment			
0-6 years	91	70.0	4.98 (5.33)
7-13 years	19	14.6	
14-20 years	14	10.8	
21-27 years	1	0.8	
No response	5	3.8	
Area of Assignment			
COVID Ward	31	23.8	—
Non-COVID Ward	91	70.0	
No response	8	6.2	
Comorbidities			
Asthma/Allergy	26	20.0	—
Diabetes	2	1.5	
Hypertension	8	6.2	
None	76	58.5	
Others	10	7.7	
Civil Status			
Single	92	70.8	—
Married	34	26.2	
No response	4	3.1	
Living with family			
Yes	52	40.0	—
No	62	47.7	
No response	16	12.3	

and 2.4, SD 0.85 and 0.94). On the other hand, the items that have been least rated imply that the respondents did not feel like calling in sick to escape from duty (mean 0.61, SD 0.91) or quitting their jobs if ever there is an outbreak recurrence (mean 1, SD 0.98).

With regard to the factors causing stress among staff (Table 2 Section 2), they are very much stressed with the fact that they can transmit the virus to their family or friends (mean score 2.66, SD 0.60), followed by the shortage of manpower or staff at times (mean score 2.45, SD 0.73). Other factors causing them moderate stress include being infected by the virus (mean 2.4, SD 0.69), seeing colleagues getting

Table 2. Descriptive Statistics of the Emotions, Perceived Stressors, and Coping Mechanisms of Healthcare Workers

Section 1. Healthcare workers' feelings during COVID-19 pandemic				
	Mean	SD	Verbal Interpretation	Rank
1. You felt that you had to do your job as it was your professional and ethical duty	2.62	0.65	Very Much	1
2. You felt nervous and scared	2.02	0.81	Moderate	4
3. You will appreciate financial compensation after the outbreak	2.40	0.85	Moderate	2
4. You were unhappy to do overtime	1.56	0.93	Moderate	9
5. You appreciated special recognition for your job by the Hospital administration	1.86	0.93	Moderate	7
6. You expected financial compensation during the outbreak	2.25	0.94	Moderate	3
7. You tried curtailing your contact with the COVID-19 positive patient (e.g., shorten your trips to patient's room)	1.89	0.90	Moderate	5
8. You thought of quitting your job	1.16	1.09	Slight	10
9. You felt that employees not directly exposed to COVID-19 avoided you	0.85	0.92	Slight	12
10. You noticed that employees outside your unit were avoiding COVID-19 patients	1.57	1.05	Moderate	8
11. If optional, you would have chosen to work in a unit where you would not be exposed to COVID-19	1.88	1.11	Moderate	6
12. You would quit your job if COVID-19 outbreak recurred	0.52	0.72	Slight	15
13. You felt angry that your workload increased when compared to employees not exposed to COVID-19	1.00	0.98	Slight	11
14. You thought of calling in sick	0.64	0.84	Slight	13
15. You called in sick at least once	0.61	0.91	Slight	14
Feelings overall mean	1.52	0.43	Moderate	
Section 2. Factors that caused stress among staff during COVID-19 pandemic				
	Mean	SD	Verbal Interpretation	Rank
1. Seeing your colleagues getting intubated	2.39	0.82	Moderately Stressed	4
2. You could transmit COVID-19 to your family or friends	2.66	0.60	Very much stressed	1
3. Small mistake or lapse in concentration could infect you or others	2.40	0.69	Moderately Stressed	3
4. Taking care of your own colleagues sick from COVID-19	2.03	0.87	Moderately Stressed	14
5. Seeing patients with COVID-19 dying in front of you	2.23	0.91	Moderately Stressed	7
6. Not knowing when the COVID-19 outbreak will be under control	2.29	0.85	Moderately Stressed	6
7. Every time you were exposed to a new COVID-19 patient	1.97	0.94	Moderately Stressed	16
8. Lack of treatment for COVID-19	2.19	0.85	Moderately Stressed	9
9. News of new cases of COVID-19 reported in TV/newspaper	2.07	0.93	Moderately Stressed	13
10. You were emotionally exhausted	2.22	0.88	Moderately Stressed	8
11. You had physical stress/fatigue	2.33	0.79	Moderately Stressed	5
12. Colleagues displaying COVID-like symptoms	1.99	0.74	Moderately Stressed	15
13. You developed respiratory symptoms and feared that you had COVID-19	2.16	0.90	Moderately Stressed	10
14. You could get COVID-19 infection from a patient in the hospital	2.15	0.76	Moderately Stressed	11
15. Conflict between your duty and your own safety	2.15	0.82	Moderately Stressed	12
16. Seeing your colleagues stressed or afraid	1.83	0.82	Moderately Stressed	18
17. Getting screened for COVID-19 infection after exposure	1.88	0.83	Moderately Stressed	17
18. You felt there were not adequate protective measures	1.82	0.89	Moderately Stressed	19
19. You had to wear protective gear on a daily basis	1.80	1.00	Moderately Stressed	20
20. Shortage of staff at times	2.45	0.73	Moderately Stressed	2
Perceived stress overall mean	2.15	0.56	Moderately Stressed	

intubated (mean 2.39, SD 0.82), and the physical stress and fatigue of the job (mean 2.33, SD 0.79). The factor with the lowest mean of 1.8 and SD of 1 implies that wearing PPE are the least of their worries.

In Table 2 Section 3, the extremely effective factor that helps the employees in reducing stress during the pandemic is the knowledge of their family and friends not having the virus (mean 2.71, SD 0.55), followed by moderately effective factors such as sharing jokes among colleagues (mean 2.55,

SD 0.64), improvement in their patient's condition (mean 2.5, SD 0.6) and the healing of colleagues previously infected by the virus (mean 2.48, SD 0.59). The least effective stress reliever includes the hospital releasing clear guidelines on infection prevention (mean 2.06, SD 0.86).

With regard to personal coping strategies used by the staff to alleviate stress (Table 2 Section 4), the most frequently used is strict personal protective measures such as wearing mask, gown and handwashing (mean 2.62, SD

Table 2. Descriptive Statistics of the Emotions, Perceived Stressors, and Coping Mechanisms of Healthcare Workers (*continued*)

Section 3. Factors that helped in reducing stress during COVID-19 pandemic				
	Mean	SD	Verbal Interpretation	Rank
1. Positive attitude from colleagues in your department	2.43	0.67	Moderately Effective	5
2. None of the staff getting COVID-19 after starting strict protective measures	2.18	0.65	Moderately Effective	10
3. Improvement in patient's condition	2.50	0.60	Moderately Effective	3
4. Your colleagues who were infected getting better	2.48	0.59	Moderately Effective	4
5. Protective equipment provided to you by Hospital	2.36	0.63	Moderately Effective	7
6. Clear guidelines from Hospital for infection prevention	2.06	0.86	Moderately Effective	14
7. Your family members or friends outside hospital did not get COVID-19	2.71	0.55	Extremely Effective	1
8. Decrease in COVID-19 cases reported in news	2.13	0.92	Moderately Effective	12
9. Likelihood that you would get extra compensation for your exposure to COVID-19	2.12	0.84	Moderately Effective	13
10. All healthcare professionals working together on front line	2.29	0.76	Moderately Effective	8
11. Confidence in the hospital staff in case you got sick from COVID-19	2.14	0.83	Moderately Effective	11
12. Not to do overtime	2.27	0.85	Moderately Effective	9
13. Sharing jokes or humor among colleagues	2.55	0.64	Extremely Effective	2
14. Getting free meals from the hospital in your unit	2.38	0.71	Moderately Effective	6
Reducing stress overall mean	2.33	0.49	Moderately Effective	
Section 4. Personal coping strategies by the staff to alleviate stress				
	Mean	SD	Verbal Interpretation	Rank
1. Followed strict personal protective measures (e.g., mask, gown, hand washing, etc.)	2.62	0.50	Always used	1
2. Kept separate clothes for work/used disposable scrubs provided by Hospital to minimize transmission	2.28	0.83	Often used	5
3. Considered every patient admitted to the hospital as having COVID-19 infection and using full protective gear even if patient was COVID-19 negative	2.32	0.70	Often used	4
4. Read about COVID-19, its prevention and mechanism of transmission	2.42	0.64	Often used	3
5. Avoided going out in public places to minimize exposure from COVID-19	2.25	0.68	Often used	6
6. Did relaxation activities, e.g., involved in prayers, sports, exercise etc.	2.19	0.86	Often used	7
7. Chatted with family and friends to relieve stress and obtain support	2.52	0.67	Always used	2
8. Talking to yourself and motivating to face the COVID-19 outbreak with positive attitude	2.15	0.87	Often used	8
9. Got help from family physicians or other doctors to reduce your stress and get reassurance	1.40	1.08	Sometimes used	12
10. Tried to be busy at home in activities that would keep your mind away from COVID-19	2.11	0.90	Often used	9
11. Avoided doing overtime to reduce exposure to COVID-19 patients in hospital	1.60	0.92	Often used	10
12. Avoided media news about COVID-19 and related fatalities	1.52	0.93	Often used	11
13. Vented emotions by crying, screaming, etc.	1.21	1.04	Sometimes used	13
Strategy overall mean	2.05	0.46	Often used	
Section 5. Motivational factors for future outbreaks				
	Mean	SD	Verbal Interpretation	Rank
1. Similar adequate personal protective equipment supply by the Hospital	2.79	0.46	Most Important	3
2. Available cure or vaccine for the disease	2.89	0.34	Most Important	1
3. Family support	2.85	0.40	Most Important	2
4. Compensation to family if disease-related death at work happens	2.73	0.57	Most Important	4
5. Financial recognition of efforts	2.58	0.66	Most Important	8
6. Disability benefits if disabled from the disease	2.73	0.54	Most Important	5
7. Recognition from management and supervisors for the extra efforts	2.36	0.85	Moderately Important	10
8. Psychiatric help and therapy made available in work place to help reduce stress and anxiety	2.48	0.70	Moderately Important	9
9. Not forced to do overtime	2.62	0.59	Most Important	6
10. Reduced working hours during outbreaks	2.62	0.61	Most Important	7
Motivational factors overall mean	2.66	0.40	Most Important	

0.5), followed by chatting with family and friends to relieve stress and obtain support (mean 2.52, SD 0.67). Other coping strategies that are often used include reading about how to prevent COVID and its transmission (mean 2.42, SD

0.64), considering all admitted patients as having COVID even with a negative swab (mean 2.32, SD 0.7) and wearing separate clothes for work or using disposable scrubs provided by hospital to minimize transmission (mean 2.28, SD 0.83).

The coping strategies with the lowest mean score and are sometimes used include getting professional help from doctors for stress reduction (mean 1.4, SD 1.08) and venting emotions by crying or screaming (mean 1.21, SD 1.04).

The most important motivational factor in continuing to work in PGH when faced with the possibility of future outbreaks (Table 2 Section 5) includes the availability of cure or vaccine for the disease (mean 2.89, SD 0.34), followed by family support (mean 2.85, SD 0.4), adequate PPE supply provided by the hospital (mean 2.79, SD 0.46), and compensation to family members if they die at work (mean 2.73, SD 0.57). The items with the lowest mean and considered moderately important motivational factors include available psychiatric help and therapy (mean 2.48, SD 0.7) and recognition from management and supervisors of efforts (mean 2.36, SD 0.85).

As seen in Table 3 Sections 1, 3 and 4, the nurses, residents and fellows significantly differ in their feelings during the pandemic (p 0.002), use of stress-relieving factors

(p 0.00), and coping strategies (p 0.00). The analysis shows that nurses have the highest ratings about their ethical duty, knowing their family is safe, and using protective personal equipment. Those who worked in PGH for a longer duration (p 0.014) also have the significant highest evaluation in healthcare workers' feelings during the pandemic (Table 3 Section 1). Moreover, the factors that caused stress among staff significantly differs between those living and not living with family (Table 3 Section 2, p 0.047).

In Table 3 Section 3, the factors that help in reducing stress varies between the single and the married (civil status p 0.006). The personal coping strategies used by staff are also significantly different between males and females (p 0.016), area of assignment (p 0.037), civil status (p 0.035), living with family (p 0.009) and between professions (Table 3 Section 4).

In Table 3 Section 5, the motivational factors in continuing to work in PGH for future outbreaks significantly differ between those living and not living with family (p 0.026).

Table 3. Comparison of Responses Based on Demographic Profile

Section 1. Healthcare workers' feelings during COVID-19 pandemic				Section 2. Factors that caused stress among staff during COVID-19 pandemic			
Demographics	test statistic value	df	p-value	Demographics	test statistic value	df	p-value
Age	1.180	126	0.15	Age	1.910	126	0.113
Gender	0.012	126	0.991	Gender	0.997	126	0.321
Profession	6.684	126	0.002*	Profession	1.9643	126	0.145
Duration	3.655	124	0.014*	Duration	2.278	124	0.083
Area of Assignment	-1.020	120	0.919	Area of Assignment	0.028	120	0.913
Comorbidities	0.518	121	0.723	Comorbidities	0.644	121	0.632
Civil Status	-0.440	124	0.661	Civil Status	-1.191	124	0.236
Living with family	1.976	112	0.051	Living with family	2.009	112	0.047*

Section 3. Factors that helped in reducing stress during COVID-19 pandemic				Section 4. Personal coping strategies used by the staff to alleviate stress			
Demographics	test statistic value	df	p-value	Demographics	test statistic value	df	p-value
Age	0.590	126	0.67	Age	0.290	126	0.884
Gender	0.239	126	0.811	Gender	2.345	126	0.016*
Profession	9.097	126	0.00*	Profession	15.843	126	0.00*
Duration	1.571	124	0.20	Duration	3.320	124	0.022
Area of Assignment	1.121	124	0.264	Area of Assignment	2.113	120	0.037*
Comorbidities	1.821	121	0.129	Comorbidities	0.355	121	0.129
Civil Status	-2.788	124	0.006*	Civil Status	-2.133	124	0.035*
Living with family	1.695	112	0.093	Living with family	1.695	112	0.009*

Section 5. Motivational factors for future outbreaks			
Demographics	test statistic value	df	p-value
Age	0.722	126	0.579
Gender	1.702	126	0.091
Profession	1.753	126	0.178
Duration	0.514	124	0.673
Area of Assignment	-1.053	120	0.294
Comorbidities	1.879	121	0.119
Civil Status	-0.749	124	0.455
Living with family	2.253	112	0.026*

* Note: p-values less than 0.05 have significant difference, and the hypothesis was rejected. Otherwise, no significant difference and the hypothesis was retained.

DISCUSSION

Medical workers are often an overlooked population in the face of a pandemic. Bearing the brunt of caring for the sick, several studies have shown a high level of stress for health-care professionals.¹¹ This study aimed to assess the psychological wellbeing of HCWs in the Pediatrics Department after working in a COVID-referral hospital for a year.

More than the feelings of fear, frustration or anxiety, the predominant feeling of HCWs on performing their duties with a sense of social and moral responsibility to their sworn profession has been supported in previous similar studies.^{7,8,12} Duty above all is an invaluable intrinsic motivation for healthcare professionals in continuing their jobs, proving that serving in the frontlines of a pandemic is a calling of service rather than of a career advancement. The expectation of adequate financial compensation also follows the sense of duty in this study^{8,12} showing that monetary incentive is not the most important motivation but a valuable recompense that can be provided in an organizational level. McConnell and Wilkinson¹³ argue that "the amount of compensation should be proportional to the harm suffered and the amount of hazard pay should be proportional to the risk and burden endured", with offer of compensation to HCWs being similar to military personnel due to substantial personal risk to life.

Multiple stress factors contribute to a medical workers' wellbeing. The fear of transmitting the virus to family members, self and colleagues has been the most contributory, consistent with studies done to nurses in Taiwan during the severe acute respiratory syndrome (SARS) outbreak in 2003⁶, medical frontliners in the Middle East during the Middle East respiratory syndrome coronavirus (MERS-CoV)⁷, and most recently the HCWs from Hubei China for the COVID-19 pandemic⁸. The fear of infecting family members with the virus has been forcing the HCWs to isolate themselves, as this study points out that living with family members serve as a significant demographic factor causing stress.

Interestingly, an observational study by Xiao et al.¹⁴ on medical staff in China showed that a strong social support in the form of family and a wide social network significantly affect the levels of anxiety, stress, and self-efficacy on HCWs. Hence, living with family or colleagues serve as double-edged sword as they both serve as a source of comfort to medical workers but also a source of worry and stress as they can be infected by the virus by living with them. A similar study done in COVID-19 medical workers in Indonesia¹² showed family support as a main motivational factor for workers thus the study suggested ample opportunities for HCWs to spend time with family members and having regular communication to allow them to work in a good psychological condition.

The fear of being pulled out or covering for someone's work due to shortening manpower is also an interesting stress factor for Filipino HCWs that has been uniquely elicited in this study. This triumphs over the stress of wearing PPE and getting swabbed for COVID screening which

have been important stress factors in other literature.¹² As shortage of HCWs are prevalent in developing countries such as the Philippines, the lack of human resource can stretch the medical staff to high workload and burnout.¹⁵ A recommendation in an organizational level of increased staffing have been suggested to address surge capacity.¹⁵

The top personal coping strategies used by the participants in this study include protection of self from virus by using PPE, followed by chatting with family and friends to relieve stress. This is in line with other coping mechanisms employed by HCWs during the other outbreaks such as using disposable scrubs at work and exercising extreme caution⁷, and highlighting the importance of social support and communication as preventive measures to avoid negative psychological outcomes¹⁶. Hence, the hospital should be able to provide adequate PPE and ample time for the workers to spend time with family and friends by not making them work overtime.

Recommendations on activating a psychological intervention team in response to a psychological crisis of medical workers have been raised by Spoorthy et al.¹¹ to address mental health problems faced by HCWs. However, getting professional psychiatric help and venting emotions have been listed as the least used coping strategies by the participants in this study. Coming from a culture where getting psychiatric help can be stigmatized, a study by Mcpherson et al.¹⁷ echoes the notion that venting or expressing negative feelings are related to higher stress scores postulating that "venting entails focusing on the emotions aroused by the stressors". Hence, they recommended using active coping strategies such as problem solving, planning, and positive reframing which can change the source of stress. Wong et al.¹⁸ in a study done to HCWs who worked during the SARS outbreak also reported active coping, acceptance, and positive framing as effective coping strategies. Hence, an available psychiatric support team may be organized by the department for high-risk HCWs, but should not be forced upon to its staff.

Motivational factors to continue working in the face of future outbreaks include the availability of cure and vaccine for the disease and continuous adequate PPE supply from the hospital. This highlights the importance of good infection control and information dissemination in an administrative level, making HCWs feel that there is a light at the end of the tunnel, a perceived end of working in a pandemic.

Limitations of the Study

Since the start of the pandemic, researches have been more directed towards patients and their circumstances rather than of healthcare workers. Hence, there have been difficulty in obtaining a questionnaire that has previously been tested for reliability and validity in measuring the staff's emotions and stressors amidst a pandemic. The lack of a gold standard and the degree of subjective perception of emotions, stressors, and coping mechanisms of the participants rather than the actual measure led to the lack of prevalidation. The

questionnaire has also been answered by participants after one year working in the pandemic hence responses are not reflective of their acute reaction or post-traumatic stress. Moreover, this study has focused on healthcare workers assigned in the pediatrics department taking care of comparably fewer COVID-19 positive patients compared to the adults. Hence, the results of this study are only reflective of the healthcare workers in the PGH pediatrics department and cannot be generalized to other population. The workforce recruited also come from different ranks in the department with varying duration of exposure and close contact with the patients.

CONCLUSION

This study aimed to assess the emotions, stressors, and coping strategies of healthcare workers from the Department of Pediatrics working in a COVID-19 referral center. This study showed that HCWs are under high levels of stress from the fear of infecting family members with virus and overworking due to shortage of manpower, but nevertheless staying on the job as it is their professional and ethical duty. In between professions, nurses have significantly higher ratings in responses about feelings, stress-relief and coping strategies. Based on the results of the study, the author presents the following recommendations to the administration: 1) provide adequate and timely compensation with hazard pay; 2) mandate fixed duty shifts with no overtime to ensure time with loved ones; 3) continue outsourcing HCWs from other department or institution to address the fear of lack of manpower; 4) provide PPE and accessible screening of COVID for the employees and their immediate family; 5) organize online team-building activities and provide avenue to safeguard mental health; and 6) disseminate information on latest cure and vaccines against the disease.

Statement of Authorship

Both authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

Both authors declared no conflicts of interest.

Funding Source

None.

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APPENDIX**Data Collection Form****Assessment of emotions and stress coping mechanisms of healthcare workers from the Department of Pediatrics at the Philippine General Hospital during the Coronavirus Disease 2019 (COVID-19) pandemic**

Participant Identification Number: _____

Kindly fill-out the following details before answering the questionnaire.

Age: _____

Sex: _____

Profession: _____

Area assignment in Pediatrics Department: _____

Duration of employment in PGH: _____

Comorbidities: _____

Civil status: _____

Living with family members while working in PGH: Yes/No

This questionnaire is composed of 5 sections with a total of 72 questions. Kindly check the box that best represents your answer towards the following statements.

Section 1. Healthcare workers' feelings during COVID-19 pandemic					
Number	Staff feelings during COVID-19 pandemic	0 Not at all	1 Slight	2 Moderate	3 Very much
1	You felt that you had to do your job as it was your professional and ethical duty				
2	You felt nervous and scared				
3	You will appreciate financial compensation <i>after</i> the outbreak				
4	You were unhappy to do overtime				
5	You appreciated special recognition for your job by the Hospital administration				
6	You expected financial compensation <i>during</i> the outbreak				
7	You tried curtailing your contact with the COVID-19 positive patient (e.g., shorten your trips to patient's room)				
8	You thought of quitting your job				
9	You felt that employees not directly exposed to COVID-19 avoided you				
10	You noticed that employees outside your unit were avoiding COVID-19 patients				
11	If optional, you would have chosen to work in a unit where you would not be exposed to COVID-19				
12	You would quit your job if COVID-19 outbreak recurred				
13	You felt angry that your workload increased when compared to employees not exposed to COVID-19				
14	You thought of calling in sick				
15	You called in sick at least once				

Section 2. Questions regarding factors that caused stress among staff during COVID-19 pandemic					
Number	Factors causing stress	0 Very minimal stress	1 Slightly stressed	2 Moderately stressed	3 Very much stressed
1	Seeing your colleagues getting intubated				
2	You could transmit COVID-19 to your family or friends				
3	Small mistake or lapse in concentration could infect you or others				
4	Taking care of your own colleagues sick from COVID-19				
5	Seeing patients with COVID-19 dying in front of you				
6	Not knowing when the COVID-19 outbreak will be under control				
7	Every time you were exposed to a new COVID-19 patient				
8	Lack of treatment for COVID-19				
9	News of new cases of COVID-19 reported in TV/newspaper				
10	You were emotionally exhausted				
11	You had physical stress/fatigue				
12	Colleagues displaying COVID-like symptoms				
13	You developed respiratory symptoms and feared that you had COVID-19				
14	You could get COVID-19 infection from a patient in the hospital				
15	Conflict between your duty and your own safety				
16	Seeing your colleagues stressed or afraid				
17	Getting screened for COVID-19 infection after exposure				
18	You felt there were not adequate protective measures				
19	You had to wear protective gear on a daily basis				
20	Shortage of staff at times				

Section 3. Factors that helped in reducing stress during COVID-19 pandemic					
Number	Factors that helped to reduce stress	0 Not at all effective	1 Mildly effective	2 Moderately effective	3 Extremely effective
1	Positive attitude from colleagues in your department				
2	None of the staff getting COVID-19 after starting strict protective measures				
3	Improvement in patient's condition				
4	Your colleagues who were infected getting better				
5	Protective equipment provided to you by Hospital				
6	Clear guidelines from Hospital for infection prevention				
7	Your family members or friends outside hospital did not get COVID-19				
8	Decrease in COVID-19 cases reported in news				
9	Likelihood that you would get extra compensation for your exposure to COVID-19				
10	All healthcare professionals working together on front line				
11	Confidence in the hospital staff in case you got sick from COVID-19				
12	Not to do overtime				
13	Sharing jokes or humor among colleagues				
14	Getting free meals from the hospital in your unit				

Section 4. Personal coping strategies used by the staff to alleviate stress

Number	Strategy used by staff	0 Never used	1 Sometimes used	2 Often used	3 Always used
1	Followed strict personal protective measures (e.g., mask, gown, hand washing, etc.)				
2	Kept separate clothes for work/used disposable scrubs provided by Hospital to minimize transmission				
3	Considered every patient admitted to the hospital as having COVID-19 infection and using full protective gear even if patient was COVID-19 negative				
4	Read about COVID-19, its prevention and mechanism of transmission				
5	Avoided going out in public places to minimize exposure from COVID-19				
6	Did relaxation activities, e.g., involved in prayers, sports, exercise, etc.				
7	Chatted with family and friends to relieve stress and obtain support				
8	Talking to yourself and motivating to face the COVID-19 outbreak with positive attitude				
9	Got help from family physicians or other doctors to reduce your stress and get reassurance				
10	Tried to be busy at home in activities that would keep your mind away from COVID-19				
11	Avoided doing overtime to reduce exposure to COVID-19 patients in hospital				
12	Avoided media news about COVID-19 and related fatalities				
13	Vented emotions by crying, screaming, etc.				

Section 5. Motivational factors for future outbreaks

Number	Motivational factors	0 Not important at all	1 Slightly important	2 Moderately important	3 Most important
1	Similar adequate personal protective equipment supply by the Hospital				
2	Available cure or vaccine for the disease				
3	Family support				
4	Compensation to family if disease-related death at work happens				
5	Financial recognition of efforts				
6	Disability benefits if disabled from the disease				
7	Recognition from management and supervisors for the extra efforts				
8	Psychiatric help and therapy made available in work place to help reduce stress and anxiety				
9	Not forced to do overtime				
10	Reduced working hours during outbreaks				