

Perceived stress and burden of caregiving among nurses in the United Arab Emirates during the COVID-19 pandemic

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Abstract

Objective: To examine the perceived stress and burden of caregiving during the COVID-19 pandemic among nurses in the United Arab Emirates.

Method: A descriptive survey was conducted in two selected hospitals in the UAE. A non-probability voluntary sample ($n=64$) of nurses working in the Intensive Care Unit ($n=41$) and isolation wards ($n=24$) was taken. Each respondent completed an online validated Perceived Stress Scale (PSS) Cronbach's $\alpha=0.754$; and Professional Care Team Burden Scale (Short version) Cronbach's $\alpha=0.785$. Range of scores on PSS was 0-40, categorized as, Low: 0-13, Moderate: 14-26 and High: 27-40, while the PCTB score was categorized into Low: 0-13, Moderate: 14-26 and High: 27-40. Pearson (r) correlation was used to determine the relationship between perceived stress and burden of care at 5% level of significance.

Results: Respondents' mean age was 38.81 ± 7.23 . In all, 61 nurses (95.3%) engaged in 12-hours duty, 59.4% were confident of fighting the virus and 57 (89.1%) signed up to work in these units, despite the fear of infecting their families (78.1%). Perceived stress scale showed that 50 (78.1%) experienced moderate level of stress with only 3.1% reporting high level of stress ($\bar{x}=18.3.47 \pm 5.3$), while 40 (62.5%) reported low burden of care (11.98 ± 3.78). There was positive correlation between mean PSS score and the PCTB ($r=0.451, p=0.000$).

Conclusion: Reported moderate perceived stress may suggest vulnerability to stress-related illness. Routine screening and more support from their employers to mitigate the adverse effects on their health is recommended.

Keywords: Perceived Stress; Care Burden, COVID-19, Psychological Burden, United Arab Emirates

Introduction

The COVID-19 pandemic has greatly impacted the healthcare systems across the world, resulting in significant changes due to large-scale admission of critically ill patients in intensive care units. Expectedly, this resulted in additional care demand on nurses in terms of increased working hours, with sophisticated equipment

and resultant stress [1].

Coronavirus disease (Covid-19) was first reported from China in December 2019, and by January 2020, the World Health Organization declared COVID-19 an international public health emergency [2]. Till date, the infection rates continue to swell

through many countries across the globe. As of June 25, 2021 the WHO reported 179,513,309 confirmed cases and 3,895,661 deaths worldwide. Specifically in the UAE during the same period, 620,309 confirmed cases and 1,775 deaths were reported by the WHO. This unpredictable and fast-spreading pattern raised general anxiety and abnormal stress for health-care workers [3].

Without any doubt, nurses make significant contributions during pandemics as frontline workers, and comparatively, they remain the group under the highest pressure among the medical workers [4]; and the most at-risk for contagion [5,6]. In addition, caregiving is a tasking responsibility during pandemics, because of increasing workload of monitoring and physically assisting multiple severely infectious patients [7,8]. Thus, nurses struggle to balance their wellbeing, professional responsibilities with emotional and psychological effects [9,10].

Stress among health-care providers during any pandemic is well documented. For example, a report of empirical phenomenological research [11] on experiences of nurses (n=9) and physician (n=4) during the early phase of the pandemic in China, suggested feelings of exhaustion which was linked to heavy workloads and having to wear protective gear, coupled with fear of becoming infected and their family. However, the authors concluded that although the professionals were both physically and emotionally drained, they maintained resilience and a spirit of professionalism. Many nurses signed up to work under conditions that posed substantial risks to their overall health and well-being [12], notwithstanding the inadequate understanding at that time.

Several studies have been conducted in the wake of the current pandemic across different countries on the psychological impact of COVID-19 on healthcare workers. Findings from these studies confirm different levels of physical and psychological instability, and stress experienced by nurses as frontline care providers. In China, Lai et al. [13] reported a significantly high level of depression, anxiety, insomnia, and distress in 41.5% of nurses and physicians (n=1257) caring for patients with COVID-19. Furthermore, Peter et al. [14] also reported substantial levels of anxiety and stress in health-care professionals.

Within the Gulf region, some authors [15] examined the mental health status of healthcare providers during COVID-19 in Oman. Authors reported a high prevalence of stress, anxiety and poor psychological well-being, especially among females, young health care workers and those who interacted with known or suspected COVID-19 patients. In another study, in the Kingdom of Saudi Arabia among 502 healthcare providers, AlAteeq et al. [16] reported that more than half of respondents had depressive disorder (55.2%), which ranged from mild (24.9%), moderate (14.5%), and moderately severe (10%) to severe. In the UAE, a study among health service employees in Abu Dhabi indicated that 77.4% (n=2184) obtained normal to mild scores on the Depression Anxiety Stress Scale-21 (DASS-21) [17].

Stress is integral to human existence, but when it becomes prolonged, individuals' coping strategies may become overwhelmed, resulting in reduced work output, increased absenteeism and poor coping abilities [18]. For nurses, such outcomes of stress may hinder job

performance and create uncharacteristic errors at work [19]. This study aimed at examining the levels of stress and burden of care experienced by nurses who provide direct care to patients with COVID-19 in selected hospitals in the UAE.

Materials and Methods

Research Design: A cross-sectional descriptive design was adopted.

Setting: The study was conducted in two major hospitals in the UAE. Both hospitals are funded by the state government. In Hospital A, the intensive care unit (ICU) comprises a 13-bed capacity with 42 nurses running 12 hours shift duty. On the other hand, Hospital B was converted into an isolation hospital during the pandemic, and 143 nurses are working in the isolation unit and running 12 hours shift duty.

Study Participants: Professional nurses who provided direct care for COVID-19 patients in intensive care units (ICU) and isolation units in the selected hospitals.

Sample Size: A total sample size of 185 nurses working in the ICU and Isolation wards of each hospital: A=42 nurses, B=143 nurses. This sample size was calculated with the assumption of a 50% response rate and 95% confidence interval (CI) and error margin. Therefore, the proportion sample based on the population in each hospital was: - Hospital A: 38 nurses & Hospital B: 105 nurses.

Selection Method: A non-probability voluntary response sampling technique was applied. Only nurses who provided consent took part in the study. In the phase of the pandemic, which made direct selection difficult, an online survey powered by Google forms was used and respondents who volunteered to participate completed the online survey.

Inclusion Criteria: Only nurses in the direct care of patients with COVID-19 in ICU and isolation wards in the two selected hospitals were recruited.

Exclusion Criteria: Nurses who do not engage in direct care to patients on the selected wards, including the supervisors and clinical resource nurses (CRNs).

Tool and Instruments: A structured questionnaire consisting of three sections was utilized and described below:

Section I: Socio-demographic data: It included participants' data such as age, sex, and experience in a nursing specialty.

Section II: Perceived Stress Scale (PSS): This validated instrument was used with the author's permission. It is a 10-item scale, which is used to measure perceived stress levels. Participants were required to express their feelings and thoughts for 10 statements on a 5-point Likert scale ranging from 0 to 4, where 0=Never, 1=almost never, 2=sometimes, 3=fairly often, and 4=very often [20]. After reversing items 4, 5, 7 & 8, the scores were totaled yielding 3 levels of stress, namely, Low: 0-13, Moderate: 14-26 and High: 27-40.

The Cronbach's alpha on the PSS was found to be 0.754. PSS scores

were correlated with General Anxiety disorder-7 (GAD-7): ($r = .27$, $p < .01$). The Pearson correlation between the PSS and PCTB 10-item scale is 0.46 ($p < 0.001$).

Section III Professional Care Team Burden Scale (Short version): This is a 10-item validated scale [21] to measure nurses' burden of caregiving with COVID-19 patients. Permission for adaptation of the tool was received from the author via email. It is a 5-point Likert scale ranging from 0 to 4 where 0= strongly agree, 1=agree, 2=neutral, 3=disagree, and 4=strongly disagree. After reversing items 5 & 7, the scores were totaled. The scale yielded 3 levels of burden of care, namely, Low: 0-13, Moderate: 14-26 and High: 27-40.

The Cronbach's alpha on the PCTB is 0.785. The Pearson correlation between the PCTB 10-item scale (Mean score 10.2, SD=5.0) and the PSS (Mean score 13.0, SD=5.9) was 0.46 ($p < 0.001$). The internal consistency coefficient is 0.785.

Data collection procedure: After the ethical approval for the study was secured, the emails of all nurses working in the selected units was obtained from the ward manager with their consent, and the survey instrument was sent via Google forms to the respondents-those who accepted to participate signed a consent form prior to gaining access to the questionnaire.

Ethical Considerations

Approval was obtained from the Institutional Research Boards (IRBs) of two participating institutions with the following approval numbers: RAKMHSU-REC-102-2019-UG-N and MOHAP/REC2020/51-2020 F-N. The evidence of approval was submitted to the two hospitals' research committees for internal permission to gain access to the participants. In addition, the unit managers with the consent of the nurses, provided the email IDs of the prospective nurses from the selected units.

An email was sent to each prospective respondent with the details of the study provided. Each nurse was required to read and sign an online consent before starting the formal survey. Their voluntary participation, declaration of confidentiality, and anonymity were also explained in the consent form. A click on the 'acceptance' button indicated consent, which then opened the link to the questionnaire via a Google form.

Data collection started when the survey was sent to the participants' email on 17 November 2020 until the acceptance of responses was closed on 31 January 2021. In all, only 64 nurses completed the online survey questionnaire after 3months of data collection. This is possibly due to the COVID situation.

Data analysis: Statistical package for social science (SPSS) version 25 was used for data entry and analysis. Data was presented in the form of frequency, percentages, mean and standard deviation. Person

(r) correlation was used to investigate the correlation between Mean perceived stress score and burden of care.

Results

In all, only 64 nurses completed the online survey, representing a 35% response rate. The low response could be due to the work pressure during the current pandemic, which also made it difficult to conduct a pen and paper survey.

Table 1: Demographic Characteristic.

Demographics data	Frequency (N=64)	Percent (%)
Age		
20-30	7	10.9
31-40	32	50
41-50	22	34.4
51- ≥ 60	3	4.7
Mean ± SD	38.81 ± 7.2	
Gender		
Male	3	4.7
Female	61	95.3
Nationality		
Emirates	2	3.1
Asian	45	70.3
African	3	4.7
Others	14	21.9
Educational Level		
Diploma	15	23.4
Bachelor degree	42	65.6
Master	7	10.9
Marital Status		
Married	59	92.2
Separated	2	3.1
Single	3	4.7
having children		
Yes	59	92.2
No	5	7.8

Table 1 showed the demographic characteristics of the participants. The total participants were 64 nurses, of which 50.0% were between the ages 31-40 years. The majority were female, married, and had children. Furthermore, 70.3% were Asian, and 65.6% had a bachelor degree in nursing.

Table 2: Workload Characteristics of Respondents.

Workload characteristics	Frequency (N=64)	Percent (%)
Name of the hospital		
Hospital A	28	43.8
Hospital B	36	56.3
Ward of Practice		
ICU	41	64.1
Isolation	23	35.9
Hospital admits patients with COVID-19		
Yes	46	71.9
No	18	28.1
Working hours per day		
8 hrs.	3	4.7
12 hrs.	61	95.3
Working days /week		
3 days	15	23.4
5 days	49	76.6
Day off duty each week in the past month		
One day/wk.	2	3.1
Two days/ wk.	22	34.4
More than 2 days/ wk.	38	59.4
Others	2	3.1
Number of night shifts in a week		
Zero	4	6.3
1 night shift a week	4	6.3
2 shift a week	39	60.9
3 or more	17	26.6
Confidence in fighting transmission		
Generally confident	38	59.4
Quite confident	26	40.6
Signed up to be frontline staff		
Yes	57	89.1
No	7	10.9
Attend infection prevention control training		
Yes	59	92.2
No	5	7.8
Fear of infecting family members		
Yes	50	78.1
No	14	21.9
Frequency of test for COVID-19		
Never	7	10.9
Every month	47	73.4
Once in 2 Wks.	10	15.6

Table 2 shows the workload characteristics of the participants, indicating that 64% of the participants worked in the ICU while the remaining worked in the Isolation ward. Of this, 95.3% of the participants worked for 12-hour shifts, 76.6% worked for five days a week, and 60.9% worked for two-night shifts out of 5

days a week. In all, 89.1% signed up to be frontline staff, 92.2% had attended infection prevention training, and 40.6% were quite confident in fighting the transmission. In addition, roughly 78.1% of them had fear of infecting family members, and 73.4% had routine monthly tests for COVID-19.

Table 3: Frequency of Perceived Stress among participants in the last one month (N=64)

Question	Never (0) N (%)	Almost never (1) N (%)	Sometimes (2) N (%)	Fairly often (3) N (%)	Very often (4) N (%)
Q1 In the last month, how often have you been upset because of something that happened unexpectedly?	13 (20.3)	4 (6.3)	33 (51.6)	10 (15.6)	4 (6.3)
Q2 In the last month, how often have you felt that you were unable to control the important things in your life?	13 (20.3)	9 (14.1)	31 (48.4)	9 (14.1)	2 (3.1)
Q3 In the last month, how often have you felt nervous and “stressed”?	7 (10.9)	4 (6.3)	33 (51.6)	15 (23.4)	5 (7.8)
Q4 In the last month, how often have you felt confident about your ability to handle your personal problems? *	13 (20.3)	24 (37.5)	22 (34.4)	3 (4.7)	2 (3.1)
Q5 In the last month, how often have you felt that things were going your way? *	4 (6.3)	12 (18.8)	33 (51.6)	11 (17.2)	4 (6.3)
Q6 In the last month, how often have you found that you could not cope with all the things that you had to do?	6 (9.4)	13 (20.3)	32 (50.0)	9 (14.1)	4 (6.3)
Q7 In the last month, how often have you been able to control irritations in your life?	5 (7.8)	17 (26.6)	33 (51.6)	4 (6.3)	5 (7.8)
Q8 In the last month, how often have you felt that you were on top of things?	1 (1.6)	11 (17.2)	34 (53.1)	12 (18.8)	6 (9.4)
Q9 In the last month, how often have you been angered because of things that were outside of your control?	11 (17.2)	10 (15.6)	33 (51.6)	7 (10.9)	3 (4.7)
Q10 In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	11 (17.2)	11 (17.2)	36 (56.3)	5 (7.8)	1 (1.6)

From table 3, most of the participants reported stress ‘Sometimes’ in 9 out of 10 questions, except for Q4, which inquired about the confidence in their ability to handle personal problems. This

item yielded a higher percentage (37.5%) of ‘Almost Never’ than ‘Sometimes’ responses. The higher the score, the greater the perceived stress.

Table 4: Cumulative score on Perceived Stress level Scale (N=64).

Level of Perceived stress	Frequency (N=64)	Percent (%)
Low stress (0-13)	12	18.8
Moderate stress (14-26)	50	78.1
High stress (27-40)	2	3.1
$\bar{x} \pm SD$	18.03±5.33	

Table 4 revealed that the Mean score on perceived stress scale (M=18.03, SD=5.33), where 78.1% of the respondents experienced moderate stress. Only a few participants experienced high stress (3.1%) and low stress (18.8%) (Figure 1).

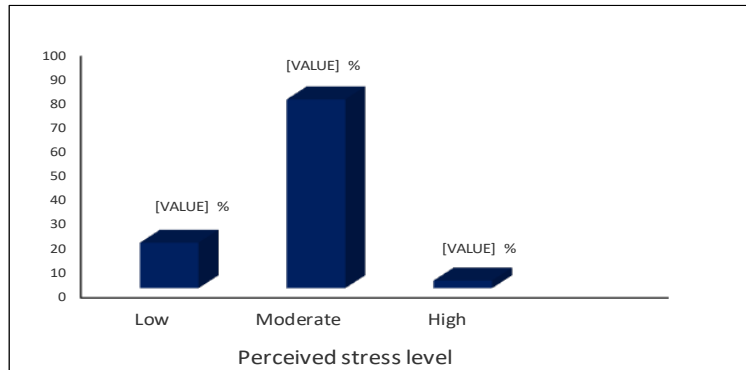


Figure 1: Cumulative score on Perceived Stress level Scale (N=64).

Table 5: Burden of caregiving among the participants.

Question	Strongly agree (0) N (%)	Agree (1) N (%)	Neutral(2) N (%)	Disagree (3) N (%)	Strongly disagree (4) N (%)
Q1 My work performance is respected by my colleagues.	21 (32.8)	38 (59.4)	4 (6.3)	0 (0.00)	1 (1.6)
Q2 I can discuss work related issues with my colleagues.	13 (20.3)	45 (70.3)	6 (9.4)	0 (0.00)	0 (0.00)
Q3 I feel that the contact with my superiors is good.	17 (26.6)	33 (51.6)	12 (18.8)	2 (3.1)	0 (0.00)
Q4 I can participate in organizing the daily routine in my organization.	9 (14.1)	44 (68.8)	8 (12.5)	2 (3.1)	1 (1.6)
Q5 The loss of ability to communicate in persons with COVID-19 bothers me.	6 (9.4)	11 (17.2)	22 (34.4)	23 (35.9)	2 (3.1)
Q6 I can manage behaviors resulting from disorientation in persons with COVID-19.	12 (18.8)	39 (60.9)	12 (18.8)	1 (1.6)	0 (0.00)
Q7 Difficult behaviors of persons with COVID-19 are difficult to bear.	3 (4.7)	15 (23.4)	27 (42.2)	15 (23.4)	4 (6.3)
Q8 I can handle constructive critique.	9 (14.1)	39 (60.9)	16 (25.0)	0 (0.00)	0 (0.00)
Q9 I can keep personal problems out of my daily work routine.	15 (23.4)	37 (57.8)	10 (15.6)	2 (3.1)	0 (0.00)
Q10 My personal life/family environment is supportive and is able to unburden me.	16 (25.0)	34 (53.1)	12 (18.8)	1 (1.6)	1 (1.6)

From table 5, the Professional Care Team’s Burden Scales, most of the participants responded that they ‘Agreed’ in 9 out of 10 questions, except for Q7 about the difficulty in bearing the behaviors of persons with COVID-19, which yielded a higher

percentage (42.2%) of ‘Neutral’ responses and strikingly also yielded an equal percentage (23.4%) of ‘Agree’ and ‘Disagree’ responses.

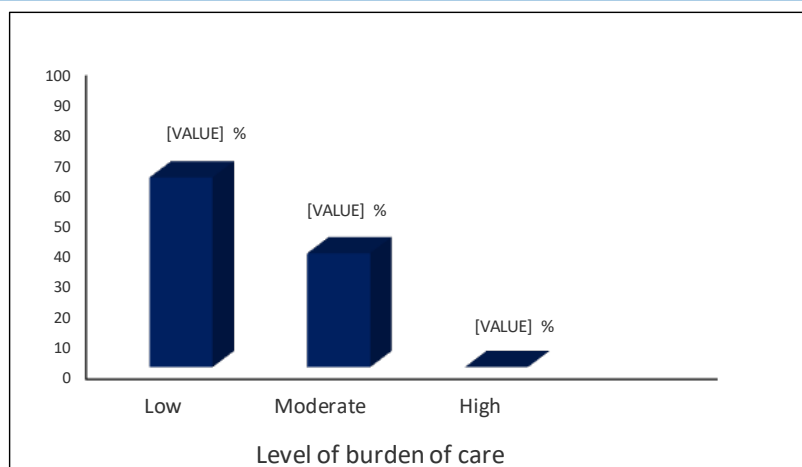


Figure 2: Level of Professional care teams' burden scale (N=64).

Table 6: Level of burden scale among the participants.

Levels of burden	Frequency (N=64)	Percent (%)
Low burden of care (0-13)	40	62.5
Moderate burden of care (14-26)	18	37.5
High burden of care (27-40)	0	0.0
$\bar{x} \pm SD$	11.98 ± 3.79	

Table 6: showed that the burden of providing care to patients during COVID-19 ($\bar{x}=11.98$, $SD=3.79$), where 62.5% of the respondents experienced low burden of care. None of the participants experienced a high burden of care (Figure 2).

Table 7: Correlation between Perceived Stress and Burden of Caregiving

Items	Mean ± SD	r	P
Perceived stress level score	18.03 ± 5.33	0.451	0.000
Burden of care score	11.98 ± 3.79		
r=Pearson Correlation; *p= ≤ 0.0			

Table 7 showed a positive correlation between the Mean of the total score of the Perceived Stress Scale and Professional Care Team Burden Scale ($r=0.451$; $p=0.000$).

Discussion

The coronavirus pandemic has caused substantial global health burden with increasing unpredictability in pattern of spread and virulence. This has taken a mental toll on healthcare professionals with significant stress, anxiety, depression and insomnia [23]. Nurses with other health-care professionals are fighting on the frontline to contain the infection, and to ensure quick recovery of the infected people; however, with fear of contagion for themselves and their families [12,23]. This study examined perceived stress and burden of care experienced by nurses working in isolation wards and intensive care units.

Findings indicated that 95% were engaged in 12 long working hours of duty, and 89% signed up to work on the frontline. On the Perceived Stress Scale (PSS), we found that 78.1% reported

moderate levels (14-26), with only 3.1% reporting high perceived stress (27-40). Studies from different regions of the world document diverse levels of mental health burden among frontline care providers. For example, research studies and editorial highlights during the early months of the pandemic suggested that nurses were under tremendous work-related stress and burden of caregiving associated with long working hours and fear of infection [24,25]. Of particular reference is a report of nurses' perceptions of work during the early stages of the pandemic in the United States of America [26,27]. Authors found that over 50% of respondents experienced symptoms of depression, anxiety and post-traumatic stress disorder, which were reported by more than a third of the respondents. This spoke to the impact of COVID-19 in the early stage of the pandemic, at which time reasonable understanding was limited, along with the scarce supply of personal protective equipment (PPE). In the current scenario, there is significant improvement in knowledge of the coronavirus, infection control strategies, and availability of vaccines. These factors may contribute to low stress level reported by nurses in the present

study, despite the fact that there is still fear of contagion among nurses and to their families, reported by 78.1% of the participants. Similarly, findings from a systematic review supported global experience of anxiety, depression and post traumatic symptoms, associated with COVID-19 [28], which was also linked to fear of contagion [12,22,23].

The reported low level of stress is not unique to our study. For example, an Indonesian study on the burden of mental distress among nurses using the DASS-21 reported only 6.3% stress among nurses xxii, suggesting a low stress level. In addition, in the UAE, a study conducted among health service employees in Abu Dhabi indicated that 77.4% (n=2184) obtained normal to mild scores on DASS-21 [17]. Authors explained that the low level of psychological impact experienced by healthcare employees was a reflection of the level of preparedness of the UAE government and the support provided to frontline workers and their families. This suggests that adequate from employers of healthcare workers across countries can significantly mitigate psychological impacts of the pandemic on their employees.

Caring for patients in ICUs is associated with huge workload, long-term fatigue, infection threat, and frustration from consistent death of patients [1], which naturally results in an increased burden of care and stress for nurses. Authors opined those nurses were more likely to experience stress related to COVID-19, compared to other health care professionals. This finding is consistent with a study conducted in China on perceived stress of COVID-19 among healthcare workers [29]. Findings from our study did not suggest similar conclusions as 62.5% reported low burden of caregiving on the PCTB scale. Our results appear to align with Ahmed et al. [17] study in Abu Dhabi, UAE. From their reports, 77.4% healthcare workers were within the normal to the mild range on DASS-21, 9% at a moderate level, and 13.5% were within the severe to extremely severe range levels of depression, anxiety, and stress. They argued that the findings were a reflection of the UAE's preparedness and effective implementation of pandemic plans, as well as a manageable volume of patients with adequate staffing levels at the frontline facilities. Our findings also showed that 92.2% of nurses attended infection control educational training, which also likely strengthened their knowledge of infection control measures, including use of PPE, hand hygiene, ward disinfection, and occupational exposure management. Such programs could contribute to less burden of care and stress perception.

Limitations

This study has some limitations. First, the method of sampling was a voluntary response which was a weak technique, relying on the voluntary online self-report responses. This may contribute to reduced objectivity of the results. Secondly the small sample size reduces the generalizability of the results.

Conclusion

The findings suggest a low burden of caregiving and moderate level of stress among nurses. A moderate level of stress may result in significant complications in some persons, depending on their coping abilities. Therefore, we suggest routine psychological screening for early identification of nurses who may be experiencing stress and could be at risk of stress-related problems. The targeted

screening will facilitate early intervention.

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Conflict of Interest

The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

None of the authors of this paper has a financial or personal relationship with other people or organizations that could inappropriately influence or bias the content of the paper.

There are no competing interests at stake and there is 'No Conflict of Interest' with other people or organizations that could inappropriately influence or bias the content of the paper.

Ethical Approval

Approval date: 3/11/2020. Reference No: MOHAP/REC/2020/51-2020-F-N

Authors' Contributions

All persons listed and designated as authors qualify for authorship. Each person has checked the article for plagiarism. If plagiarism is detected, all authors will be equally held responsible and will bear the resulting sanctions imposed by the journal thereafter.

REI conceptualized and designed the study, involved in data collection, data interpretation, and provided initial draft of the manuscript. VFH evaluated the questionnaire, and also contributed to the manuscript. EAD was involved in data collection, data entry and analysis, and revising the manuscript. CAM evaluated the questionnaires, and also revised the manuscript.

All authors have critically reviewed the manuscript for important intellectual content, approved the final draft and are responsible for the content and similarity index of the manuscript.

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