

Status of Anxiety among Health Care Professionals during Covid-19 Pandemic: Comparison of Two Different Mental Health Screening Tools to Detect Anxiety

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Background: COVID-19 outbreak has the potential to significantly affect the mental health of health care professionals (HCPs) who stand in the frontline of this crisis. The aim of this study is to determine the prevalence of anxiety among HCPs in Karnali Academy of Health Sciences (KAHS) during the COVID-19 pandemic through the use of two commonly used screening tools: Becks Anxiety Inventory (BAI) and Hospital Anxiety and Depression Scale- Anxiety Subscale (HADS-A).

Methodology: Hospital based descriptive cross-sectional study conducted in KAHS during the first half of October, 2020. Convenient sampling technique among HCPs was used. A 21-item BAI and a 7-item HADS-A were used to collect the data. For each of the questions, responses were rated on a 4-point Likert scale that ranged from zero (not at all) to three (severely).

Results: A total of 75 HCPs participated in the study. Over-all prevalence of anxiety was found at 38.7% by BAI tool versus 33.3% by HADS-A (mean 36% percentage). Nurses reported the highest level of anxiety that was statistically significant ($p < 0.05$). There is no significant differences between the two tools when used for the purpose of screening anxiety disorders (p -value < 0.05).

Conclusion: Evidence suggests that a considerable proportion of HCPs experience some level of anxiety during this outbreak, stressing the need to establish ways to mitigate mental health risks and adjust interventions to promote HCP's psychological well-being. Both BAI and HADS-A have an evenly comparable case detection response for screening of anxiety disorders among HCPs during COVID-19 outbreak and it can be inferred that these tools can be relied upon for screening anxiety in similar instances.

Keywords: Anxiety, health care professionals (HCPs), COVID-19, screening tools

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INTRODUCTION

After being noticed for the first time in Wuhan, China at the end of 2019, Corona Virus Disease 2019 (COVID-19) caused by novel corona virus SARS-CoV-2 has wrapped the entire world causing a serious global health crisis. In March 2020, the World Health Organization (WHO) made the assessment about COVID-19 and declared a global pandemic.¹ The disease has spread to more than two hundred countries across the continents and has affected more than sixty million people including one and a half million deaths due to COVID-19 until late November 2020.² The emergence of COVID-19 and its consequences as a pandemic has brought fear, worries, and anxiety among people from all walks of life. Many have recognized health care professionals (HCPs) as front line warriors against the virus and have appreciated them for their contribution. Many HCPs around the world have lost their lives already and there is huge fear of perceived vulnerability among the rest as they continue to fight.

The unprecedented COVID-19 pandemic has exposed HCPs to exceptional situations that can lead to increased anxiety, traumatic stress and depression.³ The outbreak of SARS-CoV back in 2002 and 2003 in China was associated with significant cases of depression, anxiety, fatigue, pain, weakness and sleep disturbance.⁴ There are many evidence from all over the world that show how anxiety has become a common phenomenon among HCPs working in the frontline against the COVID-19. One study result from France showed that approximately 35% of young residents from the department of surgery had anxiety related to COVID-19.⁵ Furthermore, a systematic review done in Europe by Sofia Pappa et al. yielded that 23% of health care

workers had anxiety during the early COVID-19 period.⁶ Variations in routine work have caused HCPs to have a feeling of abandonment and helplessness globally. A study conducted in Wuhan, China showed that health workers had high prevalence rates of severe insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms during COVID-19 pandemic.⁷

This mental health crisis amidst global COVID-19 outbreak is causing further mental health problems which not only affect HCPs decision making ability but could also have long term detrimental effect on their overall being. The sudden role reversal of HCPs from a general health care provider to a dedicated COVID-19 health care worker or confirmed/ suspected COVID-19 case potentially may lead to sense of anxiety and frustration, helplessness and adjustment challenges too. Fear of stigma and discrimination may further accentuate an already fragile psyche of HCPs.⁸

Karnali Academy of Health Sciences (KAHS) is a multi-disciplinary tertiary level hospital located in Karnali province in the western part of Nepal. Besides running all departments of clinical health care, it has also been testing, managing and treating cases of COVID-19. The risk of transmission of the virus and HCPs getting the infection has increased significantly. HCPs working anywhere within the hospital, irrespective of the departments may have a certain level of fear/ anxiety related to COVID-19. Protecting healthcare professionals is an important component of public health measures to address large-scale health crisis.⁹

It is very much necessary to carry out regular screening for psychological health issues among HCPs and implement effective interventions in fighting against COVID-19. HCPs are considered the most vulnerable group of individuals not just for acquiring the infection but also for falling victims to anxiety and depression.⁷

Becks Anxiety Inventory (BAI) and Hospital Anxiety and Depression Scale- Anxiety Subscale (HADS-A) are commonly used screening tools that are practiced universally to detect anxiety disorder in a primary care setting. Individually, both these BAI and HADS-A have demonstrated excellent results as a screening tools but how these tools correlate comparatively has not been tested much. One study that investigated the discriminant validity of BAI and HADS-A among patients with chronic obstructive pulmonary disease (COPD) showed satisfactory result for both tools after simple modification of the questionnaire items.¹⁰ The aim of this study is to determine the prevalence of anxiety among HCPs in KAHS during COVID-19, six months deep into the pandemic, specifically, by the use of two different screening tools, namely Becks Anxiety Inventory (BAI) and Hospital Anxiety and Depression Scale- Anxiety Subscale (HADS-A).

MATERIALS AND METHODS

This is a hospital based descriptive cross-sectional study conducted in KAHS during the first half of October 2020 amidst COVID-19 pandemic. Data were collected by a convenient sampling technique among HCPs (doctor, nurse and paramedic and laboratory staff) involved in screening, testing, treatment and care of proven or probable COVID-19

cases. Only those HCPs who were working for a period more than three months already by the time of the study were enrolled. Doctors who participated were both consultants and medical officers. Those known to have pre-existing psychiatric conditions with or without treatment were not included. The researcher himself approached these personnel either in person or in groups to explain the objectives of the study and the participants were enrolled after written consent. Prior ethical approval was acquired from the Institutional Review Committee (IRC), KAHS.

Two different screening tools, both of which have acclaimed scientific validation for Nepalese version of the questionnaire¹¹, namely 21-item Becks Anxiety Inventory (BAI) and 7-item Hospital Anxiety and Depression Scale- Anxiety (HADS-A) were used to collect the data. Both these screening tools ask the fellow participants to reflect their psychological state relating to recent seven days (a week) only. Both these tools are administered via self-report and include assessment of somatic and psychological symptoms. The respondents were required to select any one of the multiple choices pertaining to each question. For each of the BAI and HADS-A question, responses are rated on a 4-point Likert scale and ranges from zero (not at all) to three (severely). Hence, BAI score has a range between 0-63 and HADS-A 0-21. Total score of each tool was calculated by summing up individual scores of each questionnaire. Interpretation for each tool is done by quantifying the level of anxiety in different categories as shown in the table below.

Table 1: Interpretation of BAI and HADS-A scores¹²

Screening Tool	Cut-off Values	Level of Anxiety
BAI*	0-9	Normal or No Anxiety
	10-18	Mild to Moderate
	19-29	Moderate to Severe
	30-63	Severe
HADS-A**	0-7	Normal or No Anxiety
	8-10	Mild
	11-14	Moderate
	15-21	Severe
**HADS-A = Hospital Anxiety and Depression Scale		
*BAI = Becks Anxiety Inventory		

Most of the HCPs working in the frontline who met the above mentioned criteria participated. The data thus collected were entered in the Statistical Package for the Social Sciences, version 22 (IBM SPSS Statistics Version 22). Finding of both these tools were evaluated to see the uniformity in results.

RESULTS

A total of 75 completely filled questionnaire were received from eligible participants. Most of the participants (62.7%) were between 25-40 years of age, equal distribution among genders. The most number of respondents (n=55, 73.3%) belonged to ethnic Brahmin/Chhetri group (table 2)

Table 2: Social demographic characteristics of the respondents

Characteristics		Frequency (n=75)	Percentage (%)
Age (in years)	<25	23	30.7
	25-40	47	62.7
	>40	5	6.7
Gender	Male	36	48
	Female	39	52
Ethnicity	Brahmin/ Chhetri	55	73.3
	Janajati	13	17.3
	Dalit	5	6.7
	Others	2	2.7
Marital Status	Married	44	58.7
	Unmarried	31	41.3

Nurses were the highest number of participants (n=28, 37.3%) and HCPs working in the clinical diagnostic laboratory comprised the least number (n=11, 14.7%). There was fair distribution of the respondents among all

working department and unit except COVID-19 isolation ward and fever ward which had a relatively low number of HCPs working in these respective units (table 3).

Table 3: Occupational demographic characteristics of the respondents

Characteristics		Frequency (n=75)	Percentage (%)
Job Description	Doctor	19	25.3
	Nurse	28	37.3
	Paramedic Staff	17	22.7
	Lab Staff	11	14.7
Working Unit	COVID-19 Isolation Ward	3	4
	Fever Ward	4	5.3
	Emergency and Triage	12	16
	ICU, OT, Surgery, Anesthesia	17	22.7
	General Ward	15	20
	General OPD	12	16
	Lab	12	16

Table 4: Characteristics of Anxiety as found by BAI and HADS-A tool

Screening Tool	Level of Anxiety	Frequency (n=75)	Percentage (%)
Becks Anxiety Inventory (BAI)	Normal or No Anxiety	46	61.3
	Mild to Moderate	23	30.7
	Moderate to Severe	6	8
	Severe	0	0
Hospital Anxiety and Depression Scale (HADS)	Normal or No Anxiety	50	66.7
	Mild	19	25.3
	Moderate	6	8
	Severe	0	0

As suggested by table 4, both tools (BAI and HADS-A) showed a fairly comparable result for anxiety. As BAI showed 30.7% (n=23) participants with mild to moderate anxiety, HADS-A showed 25.3% (n=19) respondents had a mild anxiety. Similarly, the number of respondents with moderate to severe anxiety for both BAI was exactly 6 (8%).

Table 5. BAI and HADS-A characteristics in relation to job description

		BAI (n, % within job description)			HADS-A (n, % within job description)			p-value
		Normal	Mild-Moderate	Moderate-Severe	Normal	Mild	Moderate	
Job Description	Doctor	16 (84.2)	2 (10.5)	1 (5.3)	15 (78.9)	3 (15.8)	1 (5.3)	0.031
	Nurse	18 (64.3)	6 (21.4)	4 (14.3)	18 (64.3)	8 (28.6)	2 (7.1)	
	Paramedic	7 (41.2)	9 (52.9)	1 (5.9)	11 (64.7)	3 (17.6)	3 (17.6)	
	Lab Staff	5 (45.5)	6 (54.5)	0 (0.0)	6 (54.5)	5 (45.5)	0 (0.0)	

Table 6: Proportion and averages of anxiety for the BAI and HADS-A

			HADS-A		Total	p-value
			No Anxiety	Mild, Moderate Anxiety		
BAI	No Anxiety	Count	39	7	46	0.024
		% within HADS-A	78.0%	28.0%	61.3%	
	Mild- Moderate Anxiety	Count	11	18	29	
		% within HADS-A	22.0%	72.0%	38.7%	
Total		Count	50	25	75	
		% within HADS-A	100.0%	100.0%	100.0%	

BAI and HADS-A characteristics in relation to job description only is illustrated in table 5. Paramedics (n=9, 52.9%) and staff from the lab (n=6, 54.5) had mild to moderate level of anxiety for BAI as compared to lower rates of the same level of anxiety among doctors (10.5%) and nurses (21.4%). However, one statistically significant finding (p-value <0.05) was noted in relation to job description of HCPs that among nurses, moderate to severe anxiety detected by BAI was noteworthy. As detected by HADS-A, paramedic staffs were detected with the highest rate of moderate level of anxiety (17.6%). Interestingly, both BAI and HADS-A detected the exact number of nurses to have a normal state of mind (n=18, 64.3%).

The table number 5 doesn't show columns for severe anxiety as expected of both BAI and HADS because there were no respondents falling in that category. Also, rest of the socio-demographic variables did not have significant statistical relation.

As can be seen, whatever count of participants with a certain level of anxiety is detected by BAI (for example: BAI detected a certain

number of HCPs to have a normal mental state or state of no anxiety disorder), the sensitivity of HADS-A to detect those cases is found to be 78%. Table 6 clearly showed that these two tools were found to have a fairly reliable detection rates for anxiety disorder and statistically, there is no significant differences between the two tools when used for the purpose of screening anxiety disorders (p-value 0.024).

DISCUSSION

This study explored the prevalence of anxiety during COVID-19 pandemic among frontline HCPs in Karnali Academy of Health Sciences, Jumla, Nepal. Doctors, nurses, paramedics and health staffs working in diagnostic laboratory (both clinical and genetic labs) participated. The researcher used BAI and HADS-A tools for the purpose of screening anxiety disorders.

This study found a 38.7% prevalence of anxiety by BAI tool versus 33.3% by HADS-A with a mean 36% percentage prevalence between the two. This finding has been in line with result from a similar study conducted among frontline physicians working in different hospitals in Pakistan which concludes that

there was 43% prevalence of anxiety/depression during the COVID-19 pandemic.¹³ All these findings co-related well with the findings of this study. A meta-analysis that included 13 studies with a combined total of 33,062 participants, all HCPs, anxiety was assessed in 12 studies, with a pooled prevalence of 23.2%.¹⁴

However, most of these results reflect the status particularly representing the earlier days of the pandemic. Whether the status of anxiety among HCPs remains same throughout the year irrespective of different phases of the pandemic or not is something that the author feels a need to be explored. Generally, as we have noticed, there is much fear regarding any disease when it is still new and not many things are known about it. In Nepal also, there was strict lockdown order by the government during the early phase of the pandemic and people abided much to the rules.¹⁵ However, a study result from the USA shows that people were considerably less likely to screen positive for anxiety disorders as the pandemic prolongs.¹⁶ Almost a year down the line, as the number of COVID-19 cases keep reaching new high each day, people can be seen all over the place making all sort of movements. Whether the people in all walks of life including the HCPs have gradually started to take the disease with a changed perspective of less fear and anxiety as compared to the beginning phase of the evolution of the pandemic can be a matter of further study.

As per the findings of this study, nurses reported the highest prevalence of moderate to severe anxiety disorder among other HCPs. Understandably so, nurses have intense workload as they have to indulge for comprehensive monitoring of the patients by

staying close to not just the patients only but also working closely with other HCPs. Similar finding about prevalence of anxiety in nurses was observed by one study in Pakistan.¹⁷

Another study from India also yielded that female had two times the increased odd for developing moderate to severe symptoms of anxiety and depression requiring further evaluation and treatment.¹⁸ Another meta-analysis report by Pappa et al.¹⁴ have similar finding that revealed gender and occupational differences with female and nurses exhibiting higher rates of affective symptoms compared to male staffs. On the other hand, this study noted that the level of anxiety among supportive health staffs like those working in the laboratory is less as compared against other HCPs (none of the respondents from lab reported moderate to severe level of anxiety) and this finding is further justified by a similar finding from a study by Saleem et al.¹⁷ that describes, just as perceived by the author of this study that the possible reason could be because they do not have direct contact with patients or other health care providers like the way other HCPs do.

The COVID-19 put HCPs in an unprecedented situation. Often working for long hours with high risk of exposure (vulnerability) and tight restrictions on daily life as implemented by local and national authorities have had serious consequences on both HCPs and general population. In addition, concerns about transmission of the virus to family members, need for isolation and treatment, lack for enough support in terms of time and physical presence (due to the nature of the disease that attendants are not allowed to go near the infected individuals) have contributed to increased frequency and also increased level

of anxiety among HCPs. Furthermore, the overwhelming circulation of news about catastrophic outcomes about COVID-19 have definitely played a big role in developing such psychological issues.¹⁹ To mitigate such mental health crisis, the WHO has issued a manual in March, 2020 for mental health and psychological support during the COVID-19 outbreak that mentions about minimizing watching, reading or listening to news about COVID-19 that causes one to feel anxious or distressed.²⁰

There are many tools practiced all over the world for screening anxiety disorders. However, screening results and data may differ among these individual tools or there may be a need for comparing these tools against each other in terms of diagnostic accuracy and sensitivity. Although these tools have been tested vicariously before being acclaimed universally, it is still worthy to have studies that compare these tools. One study that compared two different mental health screening tools, namely PHQ9 and HADS for depression showed identical results for both as explained by not having significant differences (p-value 0.15).²¹ In the current study, both these tools found a uniform number of respondents who had a moderate (to severe) level of anxiety. Specifically, as BAI found 6 cases with moderate anxiety, HADS-A detected just the same number of cases (n=6) with that level of anxiety. Statistically, there was no significant difference in performance of the two tools. These findings suggest that both these pre-validated universally accepted tools have an evenly comparable result for screening anxiety disorder for its early detection. The author would like to mention another study from South Africa that compared five different tools for screening

anxiety among pregnant women. K10, K6, PHQ-9, Whooley questions (with the help questions) - four of the five tools showed good internal consistency.²² Similar study by Simpson et al.²³ that measured comparative efficacy Generalized Anxiety Disorder (GAD7) and Edinburgh Postnatal Depression Scale (EPDS) - Anxiety Subscale also yielded a very comparable sensitivity (77% each). These results are very much in line with the result of our study which shows that both BAI and HADS-A have a very comparable detection rate for screening anxiety related disorder (BAI 38.7% detection versus HADS-A 33.3% detection).

Recognizing mental health state of HCPs during times of such pandemics will help institutions to develop targeted approaches to address these issues and implement specific support system to their health care team. To the best of our knowledge, this study is the first of its kind to compare two commonly used tools: BAI and HADS-A for screening anxiety disorders among HCPs during COVID-19 or any other times of health crisis. This study offers an additional dimension to scholars and researchers who are willing to carry out similar studies.

The main strength of this study includes a real-time reporting which reduces the likelihood of recall bias and use of acceptable and well validated tools in native Nepali language for assessing anxiety. However, this study too has its own limitations. Whether the anxiety pertained solely to COVID-19 or there were pre-existing anxiety disorders cannot be determined with certainty. Also, there could have been other factors like social, professional and economic or any other personal matters leading to or contributing to

the current state of anxiety. Hence, it cannot be ascertained with guarantee that the prevalent anxiety referred entirely to COVID-19 only.

CONCLUSION

Evidence suggests that a considerable proportion of HCPs experience some level of anxiety during such pandemics. This further

stresses the need to establish ways to mitigate mental health risks and adjust interventions to promote HCP's psychological well-being. Both BAI and HADS-A have an evenly comparable case detection response for screening of anxiety disorders among HCPs during COVID-19 outbreak and it can be inferred that these tools can be relied upon for screening anxiety in similar instances.

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