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Community Section

Evaluation of Effectiveness of COVID-19 Training and Assessment of Anxiety among Nurses of a Tertiary Health Care Centre during the Corona Virus Pandemic- An Experimental Study

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ABSTRACT

Introduction: The Corona Virus Disease 2019 (COVID-19) is spreading rapidly and has become a source of various challenges and pressure for the healthcare workers specially the nursing staff. As the nurses are exposed to environments with huge amount of physical as well as psychological stress, their anxiety issues have been on the rise. Thus, an elaborate knowledge about the COVID-19 is essential for the staff nurses to manage this situation.

Aim: To assess the anxiety levels in nurses and to find out the effectiveness of training provided to the nurses regarding information on COVID-19.

Materials and Methods: This experimental study was conducted in the Department of Community Medicine of a medical college in Central India from 21st May to 30th May 2020. In all, 232 nurses were present during the training, organised to provide the information on COVID-19. Corona virus Anxiety scale (CAS) was used to calculate anxiety score of all the participants. Mean scores of pre-test and post-test were calculated. Significance was found out using Mann-Whitney's U-test.

Results: The mean age (±SD) of the study participants was found to be 38.95 (±4.5) years. The mean pre-test and post-test scores of all the participants were found to be 6.7586 (±3.08SD) and 13.5517 (±3.27 SD) respectively. The difference between the means was observed to be (p-value <0.001). Around 38.3% of the nurses had dysfunctional anxiety (CAS score more than 9), 52.1% were found to be working on the frontline (outpatient departments, wards and laboratory services specifically dedicated to COVID-19).

Conclusion: This study was found to be effective in gaining knowledge and practice pertaining to COVID-19 training. This study also revealed the level of anxiety among the nurses during the ongoing pandemic. Thus, a proper counselling of the nurses is required for their mental stability and for an efficient execution of healthcare duties.

Keywords: Corona virus anxiety scale, Corona virus disease-2019, Post-test, Pre-test, Psychological stress

INTRODUCTION

The World Health Organisation (WHO), mentioned that the outbreak of COVID -19 is a Public Health Emergency of International Concern in January 2020. Later, In March, it inferred that COVID-19 can be characterised as a pandemic. Since then, the public health authorities around the world are working to contain the COVID-19 outbreak. However, this time of crisis is generating stress throughout the population as well as the healthcare workers [1].

The COVID-19 is spreading rapidly and bringing numerous challenges and pressure to the healthcare workers specially the nursing staff. It is evident that nurses have been a pillar of the healthcare system by performing the important roles in infection prevention and control [2]. Nurses, all over the world are showing immense commitment in fighting against this pandemic and risking their lives to give best healthcare to the patients [3]. In this grave scenario, the nurses who are on the frontline are facing psychological stress and anxiety issues. In India, the increasing number of corona virus positive cases, heavy workload, decreasing availability of personal protective equipment and tension regarding the occurrence of infections among their family members has added to the worries of the nursing task force. Certain cases of unwillingness to work or consideration of resignation from the healthcare staff have been observed. Thus, there is a rising concern about the mental stability and recovery of the healthcare workers in the current situation as the whole world is in the grip of COVID-19.

In order to assess the level of anxiety among the people due to the disease, a CAS was developed. The CAS is a self-report mental health screener of dysfunctional anxiety associated with the corona virus crisis. [4]. It includes five items to assess physiologically based symptoms that are aroused with COVID-19-related information and thoughts (e.g., "I felt dizzy, lightheaded, or faint, when I read or listened to news about the corona virus"), which were scored from 0 (Not at all) to four (Nearly every day over the last two weeks) and scores range between 0 and 20. Higher scores indicate higher levels of a COVID-19 anxiety. Its reliability and validity has been studied in a recent validation study [5]. As healthcare workers are under a lot stress due to this disease, this scale was efficiently used in the study to assess the anxiety levels among the nurses.

It has been pointed out that, this epidemic has been a result of poor infection control practices and the lack of early diagnosis of this disease [6]. The risk of transmission of this infection is maximum in the hospitals and healthcare centers, thus, a proper understanding and knowledge about the disease among the healthcare workers is mandatory. As, nurses are in close contact with corona virus infected patients, an elaborate knowledge about the disease among them is a necessity in the present scenario. This study was conducted to assess the anxiety levels of the nurses working in a tertiary care hospital and to evaluate the knowledge of nurses about COVID-19.

MATERIALS AND METHODS

This one group pre-post-test experimental study was conducted in the Department of Community Medicine of a medical college in central India, from 21st May to 30th May 2020.

In this study, sample size calculation was based on pilot study findings. In the pilot study (N=30), the proportion of awareness about COVID-19 was 80% with Type I error of 0.5% and absolute error 5%. Thus, the sample size estimated for this study was 196. Out of 269 nurses, 86.25% i.e., 232 nurses attended training and participated in the study. Response rate was 86.25%. Thus, the data of 232 participants were included in final analysis. The participants comprised of staff nurses from different departments. They participated in a one day training program on COVID-19. The training was taken in 10 batches with each batch consisting of 20-25 participants. An informed consent was taken from all the participants. Use of mask and more than 2.5-meter social distancing was maintained during the sessions.

Inclusion criteria: All the participants present throughout the training course and willing to participate in the study and those who completed predesigned pre-test and post-test sessions were included in this study.

Exclusion criteria: Those participants who left the training session in between or did not give consent to participate in the study were excluded.

As this training was organised in an emergency, permission from ethics committee could not be sought. However, permission from head of the institution was sought.

A predesigned and prestructured validated questionnaire was used in this study. Same questionnaire was used for pre and post-test assessment. This questionnaire consisted of 20 questions regarding epidemiology, microbiological aspects and prevention of COVID-19. [Appendix 1]. It was evaluated by three subject experts and agreement (Kappa analysis) analysis was done for each item. The agreement value was 65%. There were 20 questions in the questionnaire. The marks were allotted on the basis of 17 questions. These marks were distributed in the form of number ranges (0-2, 3-5, 6-8, 9-11, 12-14 and 15-17) for an effective calculation. The remaining three questions were based on designation of the participants and attitude. Question numbers 2 to 8 were based on epidemiology, question number 9 on microbiology and question number 10 to 18 on prevention of COVID-19.

The other component called the CAS was added in the pre-test assessment questionnaire but not in the post-test assessment. The scale comprised of the questions related to the experiences like dizziness, sleep disturbances, tonic immobility, appetite loss and abdominal distress over last two weeks. The scoring system is based on the frequency of these symptoms experienced by the participants:

a) Not at all- 0
b) Rare, less than a day or two- 1
c) Several days- 2
d) More than 7 days- 3
e) Nearly every day over the last 2 weeks- 4

According to this scale, the cut-off score of >9 denotes the presence of dysfunctional anxiety among the participants [4].

During training, different sessions were conducted on epidemiology of corona virus infection and methods of its prevention. One section of the training included lectures on the morphology, testing protocols for COVID-19 and biomedical waste disposal. This was followed by an informative lecture on stress management. The training ended with the information regarding the administrative aspects such as proper handling of equipment and maintenance of medical records. Before the session, pre-test questionnaires along with the CAS were distributed among the participants. They were given a duration of 15 minutes for completing the questionnaire. After the training, post-test questionnaire was filled and feedback was taken.

STATISTICAL ANALYSIS

Data was analysed using Microsoft excel and SPSS version 21 for windows. Mean scores of pre-test and post-test were calculated. Significance was found out using Mann-Whitney's U-test. The p-value of <0.05 was considered as statistically significant.

RESULTS

In the present study, majority of the respondents were females. It was observed that maximum number of nurses {156 (67.2%)} belonged to the age-group of 30-39. The mean age (±SD) of the study participants was found to be 38.95 (±4.5) years. Most of the participants {177 (76.2%)} held a GNM Nursing degree (General Nursing and Midwifery) [Table/Fig-1].

Variables	Number of respondents (%)
Sex	
Females	209 (90)
Males	23 (10)
Age (years)	
30-39	156 (67.2)
40-49	76 (32.8)
Education level	
GNM nursing	177 (76.2)
B.Sc nursing	55 (23.8)

[Table/Fig-1]: Socio-demographic profile of the study participants.
GNM: General nursing and midwifery; B.Sc: Bachelor of science

In the pre-test questionnaire, out of the total participants, majority of them {80 (34.4 %)}. scored from 3 to 5 and 93 (40.1%) scored from 6 to 8. On the other hand, in the post-test questionnaire the number of participants falling in the higher score ranges of 12 to 14 and 15 to 17 rose to 53 (22.8%) and 133 (57.3 %), respectively [Table/Fig-2].

Number range	Pre-test (n=232) N (%)	Post-test (n=232) N (%)
0-2	10 (4.3)	1 (0.4)
3-5	80 (34.4)	5 (2.2)
6-8	93 (40.1)	21 (9.1)
9-11	25 (10.8)	19 (8.2)
12-14	19 (8.2)	53 (22.8)
15-17	5 (2.2)	133 (57.3)

[Table/Fig-2]: Pre and post-test scores (number range).

Out of the total 232 nurses, 121 (52.1 %) were found to be working on the frontline (outpatient departments, wards and laboratory services specifically dedicated to COVID-19) against COVID-19. It was observed that 89 (38.3%) nurses had an anxiety score of more than 9 (suffering from dysfunctional anxiety) [Table/Fig-3].

Epidemiology	Mean	SD (±)	p-value
Pre-test	3.37	1.62	**<0.001**
Post-test	5.53	1.49	
Microbiology			
Pre-test	0.46	0.49	**<0.001**
Post-test	0.75	0.43	
Prevention			
Pre-test	2.91	1.59	**<0.001**
Post-test	7.26	1.96	
Total score			
Pre-test	6.75	3.08	**<0.001**
Post-test	13.55	3.27	

[Table/Fig-3]: Comparison of Pre-test and Post-test scores of all the participants on the basis of different questions (Chi-square test).
p-value <0.05 to be considered significant

DISCUSSION

The present study involved the assessment of knowledge of 232 staff nurses regarding epidemiology, testing protocols and prevention of corona virus infection by conducting a pre-test and post-test sessions before and after the training. Similar study was conducted by Wilson W et al., among the healthcare professionals in India [7]. Another study was conducted by Chatterjee SS et al., among healthcare workers in West Bengal which was on same lines as the present study [8]. Similar study was conducted by Nemati M et al., in Shiraz, Iran which included 85 nurses in view of measuring their awareness level about corona virus outbreak [9]. The present study was necessary as around 52.1% of these nurses were working on the frontline against the corona virus infection. This was similar to the study conducted by Zhou M et al., in Henan China where around 42.59 % of the participants were on the frontline [10].

In the present study, the mean pre-test and post-test scores of all the participants at 95% confidence interval were 6.7586 (±3.08921 SD) and 13.5517 (±3.27484 SD), respectively. The difference between the means was found to be significant by using Mann-Whitney's U-test. (p-value <0.001). In the present study, lower score of the participants in the pre-test signifies that there is an emergent need of conducting orientation sessions for the nursing staff regarding all the aspects of corona virus disease in order to prepare them against the ongoing pandemic. Similar findings were observed in study conducted by Alsahafi AJ and Cheng AC which showed less knowledge about MERS-Corona virus disease among the nurses as compared to the other healthcare professionals [11]. On the contrary, a study conducted by Olum R et al., portrayed that the level of knowledge about COVID-19 among the healthcare workers were similar irrespective of the cadre or academic qualifications [12].

In the present study, the highest increase from mean pre-test and post-test score was observed to be in the questions for prevention of infection (from 2.9181 to 7.2672) followed by questions on epidemiology (from 3.3793 to 5.5302). Similarly, Bhagavathula AS et al., also found that 87 %of the heath care workers were aware that washing hands with soap and water could help to prevent COVID-19 transmission and 84.3% of the participants had adequate knowledge about the epidemiology of the disease [13].

In the present study, it was seen that (38.3%) nurses had an anxiety score of more than nine, which means that they are suffering from dysfunctional anxiety according to CAS. Similar findings were observed in the study conducted by Lee SA which showed that, based on a CAS cut off score of ≥9, 25.4% of the healthcare workers were classified as dysfunctionally anxious [14]. Another study conducted by Nemati M et al., among 85 Iranian nurses showed their anxiety for themselves and fear of their family being infected with COVID-19 [9]. This finding was also in accordance with the study conducted by Wilson W et al., where significant number of healthcare professionals was found to be anxious because of the corona virus pandemic [7]. Another study conducted by Chatterjee SS et al., depicted the presence of depression among 34.9% of the participants which was concurrent to present study [8].

Limitation(s)

In this study, it was not possible to incorporate all demographic characteristics of the study participants. It does not assure that COVID-related work is responsible for higher anxiety score among the study participants. These study findings cannot be generalised.

CONCLUSION(S)

Thus, this study reflects that, the training was successful in gaining knowledge pertaining to epidemiology, prevention, testing protocols, biomedical waste regarding COVID-19 infection. This study also revealed a baseline anxiety score of nursing staff. It can be concluded that there is a need of conducting more training sessions for the nursing staff in order to create a higher level of awareness in them which will help them in managing this pandemic with determination and confidence. As the anxiety level among them is on the rise, there is a requirement of organising periodic counseling sessions to create a mental stability in them. Hospitals and healthcare centers should focus on providing psychological support to nurses and training for coping against this situation as an improved regulation of emotions in the nurses might lead to an effective containment of this infection. Therefore, this issue needs to be addressed at institutional level and hence, this study is recommended to be held at a wider level.

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APPENDIX-1

Department of Community Medicine
Novel COVID-19 Training
Pre-test/Post-test Questionnaire

1) Designation _____

Epidemiology

2) Name of the causative virus of the pandemic_____

3) Name of the disease caused_____

4) Average incubation period in days _____

5) Major routes of transmission _____

6) Who should be home quarantined _____

7) Duration of home quarantine _____

8) Main symptoms _____

Microbiology

9) Sample collected for testing _____

Prevention

10) As per the guidelines, How much distance should be maintained for social distancing?_____

11) Distance to be kept between two beds in Isolation ward?_____

12) Who should use a mask? _____

13) Which type of PPE should be used by healthcare workers? _____

14) What is the sequence of Donning PPE (wearing) by healthcare workers?_____

15) Duration for hand washing with soap & water?_____

16) Recommended concentration of alcohol in hand sanitisers?_____

17) Minimum duration of contact of sanitiser for hand hygiene?_____

18) All PPE used in COVID-19 wards should be disposed off in _____bag

19) Are you presently involved in caring of COVID-19 patients _____?

20) If the need arises, are you willing to provide care for COVID-19 patients _____?

Corona virus Anxiety Scale (CAS)

How often have you experienced the following activities over the last two weeks?

Sr. No.	Assessment	Not at all Score: 0	Rare, less than a day or two Score: 1	Several days Score: 2	More than 7 days Score: 3	Nearly every day over the last 2 weeks Score: 4
1	I felt dizzy, lightheaded or faint, when I read or listened to news about the corona virus					
2	I had trouble falling asleep because I was thinking about the corona virus					
3	I felt paralysed or frozen when I thought about or exposed to information about the corona virus					
4	I lost interest in eating when I thought about or was exposed to information about the corona virus					
5	I felt nausea or had stomach problems when I heard information about the corona virus					
6	Total score					