**Approach of the Health care providers towards COVID-19; Three months of Pandemic, Where do we stand now.**

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**ABSTRACT:**

**Objective:** To access the knowledge and mental status of HCPs after being through three months of this pandemic as they have witnessed the morbidities, mortalities and sufferings during this period.

**Methods:** It was cross-sectional survey-based study, conducted including 309 Health Care Professional. They filled the self-administered questionnaire which accessed the knowledge and mental health status. Categorical socio-demographic variables were measured by frequencies and percentages of occurrence while Numerical variables were measured as mean and standard deviations. Mean Knowledge and Mental health scores were calculated.

**Results**: Over all mean score for Knowledge was 10.18±1.7and Mean Mental health score were 12.4±3.89. Doctors had a higher mean Knowledge score (10.7±1.63) as compared to nurses (9.7±1.72) and paramedics (9.8±1.83). Among the Doctors, 84.9% had Good knowledge scores as compared to 60% and 61% of the nurses and paramedics respectively. Doctors had a lower mean Mental health score (11.51± 4.14) as compared to nurses (13.58±3.250) and paramedics (12.58±3.814) respectively. Females had a higher Mean Mental Health score as compared to males. (12.97±3.750 vs 11.81±3.967) Pearson Correlation analysis showed weak negative correlation between Knowledge and Mental health scores (r=-0.032, P value=0.57).

**Conclusion:** Although it has been more than three months since COVID19 emerged to become a pandemic, there still remains a need to educate our health care professionals especially nurses and paramedics. Measures should be taken to alleviate the stress and depression of HCPs.

**Key Words**: Health care professional, knowledge scores, mental health scores

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**INTRODUCTION**

COVID 19 has been a disastrous pandemic infecting millions across the globe. It was first detected in December 2019 in Wuhan, China. As of July 15, 2020 it has spread to affect 213 countries causing 581,316 deaths worldwide 1

 This catastrophic virus is a highly contagious pathogen spreading rapidly from person to person. Transmission of this disease in humans occurs through virus-laden respiratory droplets and through contact with the immediate environment of an infected individual.2

 Clinical outcomes of this disease are diverse, varying from mild febrile illness to morbidly acute respiratory distress syndrome, multi-organ failure, intravascular coagulopathy and death.3

 While isolation and lock down strategies are employed for the general public globally, the health care providers (HCP) are the one who interact closely with COVID patients. Due to repeated exposure, HCPs are more vulnerable for acquisition of infection. 4 HCP form the first line of defense to combat this deadly disease; they jeopardize their own life in order to serve the patients during the outbreak of this deadly pandemic.5 Globally a large number of HCPs have lost their lives fighting the battle against Covid 19. They suffer the anguish of losing their colleagues and their patients 6,7

 For the effective control of the COVID outbreak, HCP must be well aware about the safety measures for self-protection. They must be facilitated with the provision of PPE. 8 Moreover, they must be prevented from burnout due to physical and mental exhaustion. Some health workers infected with the COVID-19 may feel helpless, hopeless and being isolated too.9 Therefore, issues related to their mental health well-being should not be overlooked. And the concerns of health care providers must be addressed 10,11,12

 In Pakistan there is a sudden surge in the rate of COVID infected cases and an exponential increase in mortalities. A period of 3 months has elapsed since COVID cases started to emerge in Pakistan. During this period, numerous studies on Covid 19 have been conducted. The information on modes of spread of COVID 19 and on preventive measures for has been spread by the electronic and social media.

 The HCP have been actively involved in managing COVID19 patients during this period of time. They have witnessed the morbidities and mortalities caused by COVID 19 in these three months. This study is aimed to access the level of awareness among the HCP, after dealing with Covid positive cases for a protracted period of time. Moreover, there is a limited available data in Pakistan addressing the mental health of the HCP working during the COVID 19 pandemic. We intend to determine the impact of COVID 19 on the mental status of HCP and on their personal and professional life after being a part of managing COVID 19 patients over a period of three months.

**METHODS**:

After getting approval from the ethical committee of the Rehman Medical Institute, a cross-sectional survey-based study was conducted during the month of June 2020. The data was collected from tertiary care centers of Khyber Pakhtoon khwa province (KPK). Non-probability consecutive sampling method was employed. HCP including doctors, nurses and paramedics who met the inclusion criteria were included in the study.

 Total 309 HCP including doctors, paramedics, and nurses who fulfill the inclusion criteria were included in the study. Purpose and procedure of the study was explained to the included HCP and informed consent was obtained from them. Recommended protective measures were taken to minimize exposure of COVID infection to the researchers. During the collection of data, strategies were employed for minimal interaction between the researcher and health care provider. Therefore, instead of performing a direct interview, the data was collected on a printed questionnaire. The questionnaire was provided to the participant, to fill at their own convenience.

**Measure**: The questionnaire was designed after extensive literature review and review of course material regarding COVID-19 by WHO.1314,15, The questionnaire comprised of questions assessing the demographics, practices, knowledge, attitude toward COVID-19. Demographic characteristics included were gender, age, profession and qualification. Knowledge section comprised of 14-items. The questions were related to the clinical presentations, transmission, prevention and control of COVID-19. The total score of knowledge items ranged as 0-14. Each correct response scored 1 point and incorrect response scored 0 point. The higher score reflected better awareness of the HCW about COVID 19. A cut off level of <10 was evaluated as poor knowledge, and >10 indicated good knowledge. The scoring system has been adapted by Azlan etal.and Saqlain etal16,17

 Mental status section comprised of 9 items. It accessed the impact of the COVID pandemic on the mental status, personal life and professional life of HCPs. 3 Point Likert scale was used to access the responses.. This section had total score ranged from 0-18. The options of most of the time/sometimes/never were given. To calculate the score two points were awarded for the option of most of the time while one and zero points were awarded for sometimes and never options respectively. The higher score reflected the higher degree of mental stress the HCW were being through. The scoring system has been adapted by Cai.H etal18. The responses of the participants were presented as frequencies and percentages.

 Data was entered and processed in statistical package for social sciences version. 22(SPSS Inc, Chicago, IL) software, and analyzed through its statistical package. Categorical socio-demographic variables were measured by frequencies and percentages of occurrence while numerical variables were measured as mean and standard deviations.

 Inferential statistics was applied to determine the depending upon nature of data and variables. Chi-square tests was applied to find the difference in responses to the questions by demographic characteristics. Independent sample t-test was performed in assessing the difference in mean mental health score by demographic characteristics. Pearson-rank correlation tests was applied to find the correlation between knowledge and mental health sections. A p value of less than 0.05 was considered as statistically significant in all tests.

**RESULTS:**

A total of 400 questionnaires were distributed. Out of which 350 forms were received. There were 41 incompletely filled forms which were not included in the final analysis. A total of 309 respondents were included in final analysis, of which there were doctors (n=126), 40.8 % paramedics (n= 100) 32.4% and nurses (n= 83) 26.9%. There was almost equal proportion of male (n= 150)48.5%, and female (n=159) 51.5%, respondents. The majority of participants were between the ages of 18 –25 years (48.2%) and 26-30 years (23.9%).

 Over all mean score for Knowledge was 10.18 ±1.7and Mean Mental health score was 12.4 ±3.89. Majority of the participants incorrectly responded in negative to the question “Does COVID 19 spread by touching a diagnosed COVID patient” 204 (66.0%). While to the question “Do you think that COVID 19 spread by fomites” 32 %( 99) participants incorrectly responded in negative.

 Majority were unaware of the mortality rate due to COVID19 and responded in don’t know 40.8 % (126). 23 % (71) participants incorrectly responded in affirmative that afebrile persons with COVID-2019 cannot infect the virus to others

Table 1: Questionnaire for Knowledge status assessment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  Knowledge | Yes | No  | Don’t Know |
|  | Does COVID 19 spread by touching a diagnosed COVID patient (No) | 204 (66.0  | 78(25.2)  | 24(7.8) |
|  | Do you think that COVID 19 spread by fomites (Yes) | 146 (47.2) | 99 (32.0) | 64(20.7)  |
|  | Clinical symptoms are fever, fatigue, dry cough, and myalgia (Yes) | 292(94.5) | 8(2.6) | 9(2.9) |
|  | Stuffy nose, runny nose, and sneezing are less common in COVID19 infection (Yes) | 190(61.5) | 77 (24.9) | 42(13.6) |
|  | Early symptomatic and supportive treatment can help most patients recover (Yes) | 278(90.0) | 12(3.9) | 19(6.1) |
|  | Elderly, chronically ill, and obese are more likely to be severe cases. (Yes) | 252(81.6)  | 41(13.3) | 16(5.2) |
|  | Afebrile persons with COVID-2019 cannot infect the virus to others (No) | 71(23.0) | 198(64.1) | 39(12.6) |
|  | The COVID-19 virus spreads via respiratory droplets of infected individuals (Yes) | 274(88.7) | 19 ( 6.1) | 16(5.2)  |
|  | Ordinary residents can wear general medical masks to prevent COVID-19 infection (Yes) | 263(85.1)  | 33 (10.7) | 13(4.2) |
|  | It is not necessary for children and young adults to take preventive measures for COVID-19 virus (No) | 67 (21.7)  | 223(72.2) | 19(6.1) |
|  | individuals should avoid crowded places and public transportations to prevent COVID-19 infection (Yes) | 285(92.2)  | 17 (5.5) | 7(2.3) |
|  | Isolation and treatment of COVID-19 infected persons are effective ways to reduce the spread of the virus (Yes) | 293(94.8)  | 10 (3.2) | 6 (1.9) |
|  | People with H/O contact with COVID-19 infected pt should be isolated for 14 days (Yes) | 292(94.5) | 6 (1.9) | 11(3.6) |
| 14 | The over all mortality rate in COVID19 infected patient is 5% (No) | 114(36.  | 67(21.7) | 126(40.8) |

**Difference in knowledge, among HCPs regarding COVID-19:** Doctors had a higher mean Knowledge score (10.7±1.63) as compared to nurses (9.7±1.72) and paramedics (9.8±1.83) respectively. Among the Doctors, 84.9% had Good knowledge scores as compared to 60% and 61% of the nurses and paramedics respectively. Chi-square tests were applied to find the difference in responses to the questions by demographic characteristics of HCPs towards COVID-19. In the knowledge section the responses to 4 out of 14 questions were statistically significant based on the difference in the occupation 39.8% nurses and 23% paramedics incorrectly responded that an afebrile person with COVID-2019 cannot infect the virus to others. it was statistically significant (P value 0.00). 25% nurses and 27% paramedics incorrectly responded in affirmative to the question that it is not necessary for children and young adults to take preventive measures for COVID-19 virus which was statistically significant (P value 0.038)

**Difference in mental status and concerns among HCPs regarding COVID-19:** Doctors had a lower mean mental health score (11.51± 4.14) as compared to nurses (13.58±3.250) and paramedics (12.58±3.814) respectively. Chi square analysis revealed that among HCPs, the differences in responses from 8 out of 10 questions related to their mental status and concerns were statistically significant. Doctors and nurses were more afraid than paramedicsl that they might become a source of spreading COVID19 to their families 72.4% vs, 72% nurses vs 60% respectively.(P value 0.00). Nursing staff and paramedics felt more anxious due to the global spread of COVID pandemic than the doctors,73.5% and 75% vs 66% respectively (P value 0.002). Similarly nurses and paramedics felt more anxious while handling a suspected COVID 19 patient than doctors 59% and 68% vs 50% respectively (P value 0.001). Nurses and paramedics both were more over whelmed with the fear of contracting virus than doctors 54% and 53% vs 45% respectively (P value 0.017).More nurses and paramedics than doctors agreed that their mental status due to COVID 19 affected their professional skills 51% and 47% vs 35% (P value 0.000). Paramedics were influenced most by the stream of news reports from social media than doctors and nurses 83% and 65% vs 60% respectively (P value 0.000). Meanwhile, 38% of nurses and 34% paramedics agreed that they felt overwhelmed due to the current state, and they react with anger and aggression towards their family members most of the time (P value 0.001). Moreover, 80.7% of nurses followed by 80% paramedics and 56% doctors were most of the time worried that deterioration of economy may impact them (P value 0.00).

**Gender based differences:** Over all gender based difference in responses to the knowledge based questions were not statistically significant. Females had a higher Mean Mental Health score as compared to males. As compared to 53% males, 63.5% females admitted that most of the times they felt depressed and anxious while handling COVID 19 patient which was statistically significant (P value 0.01). 80% females as compared to 61% males agreed that that most of the times, they feel anxious due to the global spread of COVID pandemic statistically significant ( P value 0.00). Similarly, 59% females as compared to 40% males agreed that most of the times they are overwhelmed with the fear of contracting COVID19 ( P value 0.004).Majority of the participant from both genders were concerned that they will be affected by the deterioration of economy. Pearson Correlation analysis showed negative correlation between Knowledge and Mental health scores (r=-0.032).

**Correlation analysis:** Pearson Correlation analysis showed a weak negative correlation between Knowledge and Mental health scores (r=-0.032, P value=0.57). Knowledge score were weak positively correlated with Age(r=0.026) (P value=0.644) and Gender (r=0.050, P value.379). Knowledge score was negatively correlated with Qualification (r=-.170) with statistically significant P value (0.003) and Occupation (r=-.240) with statistically significant P value (.000). Mental health score was positively correlated with Age (r= .138,P value=0.015),Gender(r=.126, P value 0.027), Qualification (r=.097, P value0.090) and Occupation (r=.131, P value(0.021)

Table 2: Questionnaire for Mental status assessment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Mental status  | Most of the time | Some Times | Never |
|  | Do you feel depressed/anxious when handling a suspected COVID 19 patient | 181(58.6) | 85 (27.5) | 43(13.9) |
|  | Do you feel anxious, angry, stressed, agitated due to the global spread of COVID19 | 220(71.2)  | 64 (20.7) | 25(8.1) |
|  | Does the stream of news reports from social media have an impact on your state of mind | 216(69.9)  | 76 (24.6) | 17(5.5) |
|  | Are you overwhelmed with the fear of contracting COVID19 | 155(50.2) | 102(33.0) | 52(16.8) |
|  | Does depression/anxiety related to COVID19 influences your professional skills | 135(43.7  | 79 (25.6) | 95(30.7)  |
|  | Are you being avoided by your family or community due to the fear related to COVID19 | 128(41.4)  | 83( 26.9) | 98(31.7) |
|  | Are you fearful that you might become a source of spreading COVID19 to your family members | 212(68.6)  | 65(21.0) | 32(10.4) |
|  | Being overwhelmed due to COVID19 , do you react with anger towards family members | 97(31.4)  | 92( 29.8) | 120(38.8) |
|  | Are you worried that deterioration of economy may impact you in any way | 222(71.8  | 72 (23.3) | 15(4.9) |

Table : 3 Knowledge status

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Total |  | Knowledge | T test |
| DemographicCharacteristics |  | N (%) | Mean score±SD | Good≥10 points | Poor< 10 points | T valueP value |
| Over all |  | 309 | 10.18±1.7 | 70.6% | 29.4% |  |
| Gender | MaleFemale | 150 (48.5)159(51.5) | 10.08±1.810.2±1.7 | 102(68%) | 48(32) | - 0.8810.379 |
| Age inyears |  18-2526-3031-3536-4041-70 | 149(48.2)74 (23.9)39 (12.6)28 (9.1)19 (6.1) | 10.2±1.710.3±1.69.8±1.659.8±2.211±1.4 | 73.1%71.5%64.2%53.6%83.3% | 26.9%28.5%35.8%46.4%16.7% |  |
| Occupation |  DoctorsNurseParamedics | 126(40.8)83 (26.9)100(32.4) | 10.7±1.639.7±1.729.8±1.83 | 107(84.9%)50(60%)61(61%) | 19 (15%)33(39.7%)39(39%) |  |
| Qualification | FCPSMBBSBDSBachelorsIntermediateMatricMphilMasters | 11 (3.6)106 (34.3)7 (2.3)116 (37.5)42(13.6)6( 1.9)3(1.0)18(5.8) | 12.18±.98210.45±1.6111.7±0.959.7±1.79.98±2.069.33±1.21111.00±1.00010.06±1.830 | 11(100%)87(82%)7(100%)68(58.6%)27 ( 64.3%)4 (66.7%)3 (100.0%)11 (61.1%) | 019(17.9%)048 (41.4%)15(35.7%)2 (33.3%)07 (38.9%) |  |

Table: 4 Mental Health Status

|  |
| --- |
| Mental health score |
| DemographicCharacteristics | N | Mean ± Std. Deviation | T testT value P value |
| Over all | 309 |  12.4±3.89  |  |
| Gender Male Female | 150159 |  11.81±3.967 12.97±3.750  | -2.646.009 |
| Age18-2526-3031-3536-4041-70 | 14974402818 |   11.72±4.043 12.97± 3.796  13.08±3.335  13.39±3.645  12.50 ±3.823  |  |
| Occupation DoctorsParamedics Nurse | 12610083 | 11.51± 4.1412.58±3.81413.58±3.250 |   |
| QualificationFCPSMBBSBDSBachelorsIntermediateMatricM. PhilMasters | 111067116426318 | 10.09±3.44811.66±4.11710.43 ±5.35013.19±3.67113.67±3.08211.33±5.426.00±1.00012.50±2.407 |  |

Table : 5a Correlation

|  |  |
| --- | --- |
|  | Mental health score |
| Knowledge score | Pearson Correlation | -.032 |
| Sig. (2-tailed) | .570 |
| N | 309 |

Table : 5b Correlations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Age | Gender | Qualification | Occupation |
| Knowledge | Pearson Correlation | .026 | .050 | -.170\*\* | -.240\*\* |
| Sig. (2-tailed) | .644 | .379 | .003 | .000 |
| N | 309 | 309 | 309 | 309 |
| Mental health score | Pearson Correlation | .138\* | .126\* | .097 | .131\* |
| Sig. (2-tailed) | .015 | .027 | .090 | .021 |
| N | 309 | 309 | 309 | 309 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). \*. Correlation is significant at the 0.05 level (2-tailed). |

**DISCUSSION**:

COVID 19 pandemic has been a menace engulfing the lives of HCPs worldwide.

 HCPs are the one who fight on the front line against COVID 19 and remain the most vulnerable to be succumbed by this infection. Therefore they must possess sufficient knowledge in terms of the modes of disease transmission, prevention and treatment

 Since the beginning of this pandemic, multiple studies has been carried to access the knowledge and mental status of HCPs to deal with COVID 19 infection. This study is designed to access the Knowledge and mental status of HCPs of KPK after a lapse of three months since the emergence of COVID 19 cases in Pakistan. Moreover this study also reflect that where KPK’s HCPs are standing to combat this deadly disease.

 This study identified significant lacunae in the knowledge status of nurses and paramedics despite the fact that many ambiguous concepts about COVID 19 has been clarified over the passage of time. Khan.S et al also observed in his study that doctors possess a higher level of awareness. 19 In our study the knowledge scores didn’t differ significantly according to age and gender. This is in agreement with the study conducted by Nemati et al 20.

 These findings suggest that there remains a dire need to educate our Nursing staff and paramedics. Our findings are in contrast to the study conduct by Olum R et al in which they found no statistically significant difference in the level of knowledge about COVID-19 among HCP irrespective of their occupation or qualifications.21

 Social media and awareness campaign are playing their role in educating the masses but the findings of our data suggests that additional measures should be taken. Awareness programs should be arranged by individual hospital to educate their HCPs.

 Our data is showing that how severely the mental status of our HCP has been affected by this pandemic as clearly depicted by the high mean Mental status score. This is in agreement with the study conducted by Lai.J etal.22.

 In our study females were found to have a higher mean Mental score and were more prone to be stressed. The findings are in agreement to the study conducted by Rossi etal.23

 Financial issue is yet a big issue whom all the HCPs are facing alike which adds on to their stress and anxiety levels. These psychological and financial impacts may lead to a long term sequel manifesting in the form of depression and other mental issues.

 Based on the psychological evaluation, an algorithm should be designed to determine the mental health of each individual HCP. It will help to detect the vulnerability of HCPs to become a victim of stress, depression or anxiety. Moreover, a proactive identification, addressing their concerns and appropriate counselling will protect them from mental ailments. They must be educated to adapt themselves and employ coping strategies in response to the stress

 HCP are the front line warriors in the face of COVID 19 pandemic. They endanger their lives and strive day in and day out for the sake of their patients. Facilitating them with every possible way is the need of the hour. Therefore HCPs must be the priority of any country in the face of this pandemic.

 There are some limitations of this study. Firstly, the survey was conducted only in Khyber Pakhtun Khua province of Pakistan, so we are not able to generalize the results to other HCPs working in hospitals of other provinces. Furthermore, this study was done on a limited set of questions which may not be able to access comprehensively the knowledge and mental health status Of HCPs. Further studies must be done to measure the actual burden of the burn out which HCPs of Pakistan.

**ETHICAL APPROVAL:**

The study was approved by the Ethical Review Committee of Rehman Medical Institute, Peshawar, Pakistan, Vide Reference No.RMI/RMI-REC/Approval/83 Dated: June 02, 2020.

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**Authors’ Contribution:**

**HM, MK:** Manuscript writing, Literature review

**IK, MH:** Data collection, Statistical data analysis

**MA:** Critically reviewed the article

**FR:** Tabulated the charts