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# Knowledge, Attitudes, Practices and Perceived Barriers among Mental Health Professionals in Sudanese Psychiatric Hospitals regarding COVID-19 Outbreak

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## ABSTRACT

**Objectives:** To assess mental health professionals (MHPs) knowledge, attitude and practice in Sudanese psychiatric facilitates.

**Methods:** A cross-sectional self-administered questionnaire targeting the whole population of MHPs which is 141, was conducted at three psychiatric facilities in Khartoum state, Sudan. 89 agreed to participate consisting of psychiatrists, psychologists, social workers, and nurses.

**Results:** 70.8% of MHP's in this study had adequate knowledge of COVID-19 symptomatology, transmission, management, and preventive measures. 44.9% were not willing to take the COVID-19 vaccine. Good practices like maintaining quarantine during outbreak and wearing a medical mask were observed. The significant difference found in Spearman's correlation was between knowledge and attitude which was a negative correlation. Findings showed that MHPs (37.1%, N=33) had positive Practice, (57.3%, N=51) had positive attitude regarding COVID-19. MHPs perceived that lack of an official specialized in infection control, overcrowding in psychiatric patients' rooms, and Lack of policy procedures of infection control practice were the major barriers to infection control.

**Conclusion:** This study found that MHPs in Sudan have good knowledge, and suggest a special need to scale up facilities' infection control materials to meet the required good practice.

**Key Words:** COVID-19; KAP; Psychiatrist; Psychologists; Nurses; Social workers; Psychiatric hospital

## INTRODUCTION

On 31st December 2019, cases of pneumonia of unknown cause in Wuhan, China were reported to the world health organization (WHO). The pathogen identified was severe acute respiratory syndrome coronavirus-2 (sars-cov-2) [1]. After the first cases of this predominantly respiratory viral illness were first reported in Wuhan, Hubei Province, China, in late December 2019, SARS-CoV-2 rapidly disseminated across the world in a short span of time, compelling the WHO to declare it as a global pandemic on March 11, 2020 [2]. The honorable practice of mental health care relies heavily on the close relationship between doctors and patients, hence the delicate sensitivity and sensibility of mental health care that functions on the balance of that close relationship are greatly impacted due to the spread of the current pandemic Covid-19 as both doctors and patients are considered a potential source of infection [3]. As a time that governments focus on the direct effects of Covid-19 attention toward psychiatric facilities is needed. The main goal of the study was to measure the level of knowledge, attitude, and practice concerning COVID-19 on mental health professionals (MHPs), analyze socio-demographic variables that affect KAP's and explore challenges and barriers perceived toward infection control practices

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## BACKGROUND

The truth about how the virus SARS-CoV-2 can spread both direct by droplet transmission and indirectly by contaminated objects makes it all the more dangerous and strenuous to contain [4].

As of Feb, 21th 2020, the virus has affected 3,019 healthcare workers (HCWs) with 5 deaths [5]. The fact that HCWs are at risk of infection in the epidemic chain is a critical issue because HCWs help in controlling the outbreak, they consider being the most vulnerable group at risk of contracting this new SARS-CoV-2 infection, in addition to the physiological and psychological stress, fatigue, occupational burnout, stigma, and physical violence [6].

It is well established that transmission of the disease among HCWs is associated with overcrowding, the absence of isolation room facilities, and environmental contamination. However, this is likely compounded by the fact that some HCWs have inadequate awareness of infection prevention practices [7].

Knowledge of the disease in addition to the reasoned action approach (RAA) analysis can considerably influence HCWs' attitudes and practices, and incorrect attitudes and practices directly increase the risk of infection [8].

The first announced case of the novel coronavirus in Sudan, the Sudan government imposed a strict and militarized "national lockdown" policy on March 13, 2020, that prohibited citizens from leaving quarantine except for food, medicine, and essential labor as a result of constrained resources in Sudan, the mortality rate of Covid-19 is exceptionally high [9]. The psychiatric patients are among the vulnerable group due to their lack of coherent preventive behavioral attitude toward the virus and the task of treating them is befallen on the Pandemic psychiatric medical staff.

Psychiatric hospitals are located mainly in the capital of Sudan in Khartoum, where the majority of consultant psychiatrists are present; leaving other 11 cities in Sudan deprived of mental health services [10]. Up until recently, there was no specific antiviral treatment available for COVID-19 [11]. However, due to the societal disruption brought by the virus, several national governments, and the international community have invested vast sums of money in the development of a safe and effective vaccine. Currently, there are now several vaccines that are in use. The first mass vaccination program started in early December 2020 and as of 15 February 2021, 175.3 million vaccine doses have been administered. At least 7 different vaccines (3 platforms) have been administered [12]. WHO cautioned that previous success in controlling COVID-19 transmission is not a guarantee of future success and that continued vigilance is a must [13].

## Objectives

Hence the overall number of COVID-19 cases is rising, understanding mental health professionals (MHPs) knowledge, attitudes, and practices (KAP) and possible risk factors help to predict the outcomes of planned behavior. Thus, this study aimed to investigate if MHPs working in psychiatric facilitates have the needed knowledge, attitude, and practice to overcome this pandemic.

## METHODS

This study was a cross-sectional hospital-based performed in three psychiatric in-patient facilities in Khartoum state Tigani Almahi, Alidressi, and Taha Baashar. Total coverage was done to cover mental health professionals which included psychiatrists, psychologists, social workers, and nurses working in these hospitals was obtained which was 141 based on previous research [10].

The questionnaire was based on previous researches [5,14]. and has been edited by consultant Infection control experts to meet our country's requirements. It consisted of questions assessing demographics; information source; knowledge, attitude, practice towards COVID-19; and perceived barriers to infection control. Demographic characteristics included were age, gender, marital status, specialty, experience year, and one item regarding the source of information about COVID-19. The knowledge section had 16 items and each question was answered Correct or Incorrect. Correct answers codes as positive knowledge and incorrect answers as poor knowledge. The attitude and practice section had three items and fourteen items respectively, and responses were recorded on a five point Likert scale ((1) rarely; (2) Occasionally; (3) Sometimes; (4) Most of the time; (5) Always). 13 items assessed the perception of MHPs regarding barriers to infection control. Responses were recorded on a five point Likert scale (strongly agree, agree undecided, disagree, strongly disagree). Data collection was held from 23rd January to 24th February 2021.

For analysis of data, Statistical Package for Social Sciences software, version 26.0 was used. Initially, all information gathered via questionnaire was coded into variables. Normality of data was tested using Kolmogorov-Smirnov test. Both descriptive and inferential statistics involving the Mann Whitney U test, Kruskal Wallis H test, and superman's correlation were used to present results. A Chi-square test was used to compare categorical data. Frequency and percentage were used in the descriptive statistical analysis. For each test, a $p<0.05$ was considered statistically significant. A Chi-square test was used to compare categorical data.

The study was approved by the ethics committee at the Omdurman Islamic University (OIU/FMHS/OD 19/10/2020), permission from hospitals ethical committees and consents from participants were taken,,

## RESULTS

The response rate was 63% mean (SD) age of participants was 36.5±11.3 years, the majority (76.4%) of respondents were female, Nearly one half of the study respondents (39.3%) were psychologists, and (12.4%) were social workers. Most respondents (32.6%) had more than eleven years of work experience. Approximately half of the respondents were married (49.4%) (**Table 1**).

**Table 1:** Association of socio-demographic variables between psychiatrists, psychologists, social workers, psychiatric nurses groups

| Variables | | N% | Psychiatrists N=24(27.0%) | Psychologists N=35(39.3%) | Social workers N=11(12.4%) | Nurses N=19(21.3%) | P value |
|---|---|---|---|---|---|---|---|
| Age (Mean+SD) | | 36.5±11.3 | | | | | 0.000* |
| Gender | Male | 21(23.65) | 10(47.6%) | 4(19%) | 0 | 7(33.3%) | |
| | Female | 68(76.4%) | 14(20.6%) | 31(45.6%) | 11(16.2%) | 12(17.6%) | |
| Marital Status | Single | 39(43.8%) | 15(38.5%) | 17(43.6%) | 3(7.7%) | 4(10.3%) | 0.000* |
| | Married | 44(49.4%) | 8(18.2%) | 15(34.1%) | 7(15.9%) | 14(31.8%) | |
| | Divorced | 4(4.5%) | 1(25%) | 2(50%) | 1(25%) | 0 | |
| | Widowed | 2(2.2%) | 0 | 1(50%) | 0 | 1(50%) | |
| Experience Years | ≤1 | 19(21.3%) | 6(31.6%) | 12(63.2%) | 1(5.3%) | 0 | 0.202 |
| | 02-May | 25(28.1%) | 11(44%) | 9(36%) | 3(12%) | 2(8%) | |
| | 06-Oct | 16(18.0%) | 4(25%) | 4(25%) | 0 | 8(50%) | |
| | ≥11 | 29(32.6%) | 3(10.3%) | 10(34.5%) | 7(24.1%) | 9(31%) | |
| Hospitals | Tigani Almahi | 27(30.3%) | 10(37%) | 11(40.7%) | 3(11.1%) | 3(11.1%) | 0.808 |
| | Alidressi | 30(33.7%) | 9(30%) | 11(36.7%) | 0 | 10(33.3%) | |
| | Taha Baashar | 32(36.0%) | 5(15.6%) | 13(40.6%) | 8(25%) | 6(18.8%) | |

He findings demonstrated that (52.8%) of MHPs were using news and media as their main sources for information during the last month (**Figures 1 and 2**).

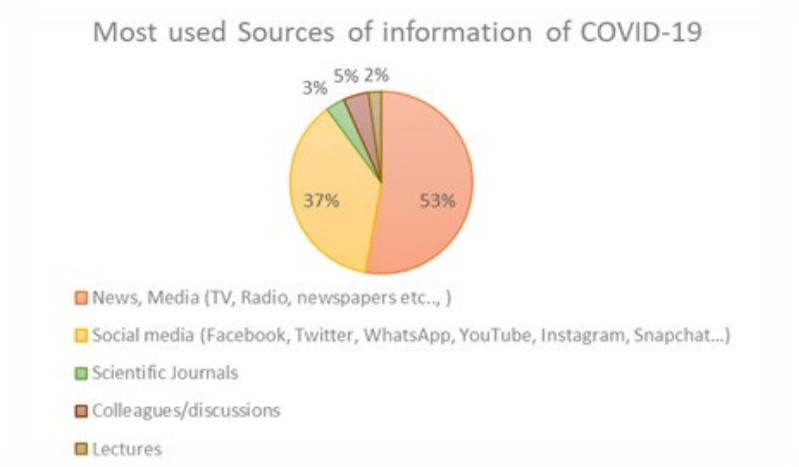


**Figure 1:** Percentage of MHPs source of Information.

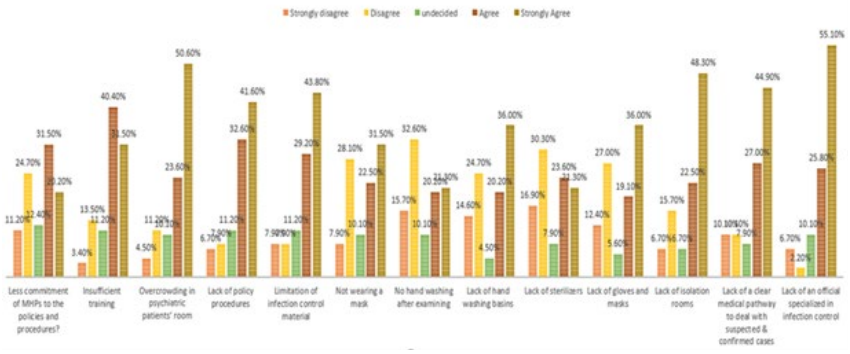


**Figure 2:** Barriers Perceived by Mental Health Professionals

A correlation between different domains of the questionnaire was also assessed. A negative correlation was observed between knowledge and attitude (Table 2)

**Table 2:** A correlation between different domains of the questionnaire was also assessed. A negative correlation was observed between knowledge and attitude

| variables | rho | p-value |
|---|---|---|
| Knowledge, Attitude | -0.278 | 0.008** |
| Knowledge, Practice | -0.098 | 0.359 |
| Practice, Attitude | 0.157 | 0.141 |

**Significant At P<0.05

The results of study indicate that there was sufficient knowledge. 70.8% of MHP's demonstrated positive knowledge of COVID-19 (Table 3). demonstrate a Statistical significance difference between Male and Female in knowledge using significance level <0.05 with female achieving higher mean, although females scored higher than males but there was no statistical significant difference in attitudes and practices between Males and Females.

There's a statistical significance of Social workers' knowledge showing higher knowledge mean (57.95) than psychiatrists (31.15) in contrast social workers had a lower attitude (32.95) ] than psychiatrists (62.63).

Descriptive statistics for each item in the questionnaire are given in Table 4. For participants' practice and attitudes, the result was assessed by summing up scores. The score was then computed. For Practice Scores between (55-70) were graded as positive Practice, meanwhile, scores between graded as a negative Practice (14-54). 33(37.1%) had positive Practice, 65(62.9%) had negative Practice (Table 5)

**Table 3:** Mean score with respect to demographics

| Variable | K.score 1.23 ± 0.091 Mean Rank | P-value | A.score 3.40 ± 0.975 Mean Rank | P-value | P.score 3.76 ± 0.732 Mean Rank | P-value |
|---|---|---|---|---|---|---|
| Gender | | 0.046 | | 0.196 | | 0.489 |
| Male | 35.36 | | 51.33 | | 48.4 | |
| Female | 47.98 | | 43.04 | | 43.95 | |
| Marital Status* | | | | | | |
| Single | | 0.649 | | 0.448 | | 0.873 |
| | | | | | 47.58 | |
| | 42.96 | | 49.92 | | | |
| Married | 45.15 | | 40.81 | | 43.09 | |
| Divorced | 56.75 | | 42.5 | | 42.5 | |
| Widowed | 58 | | 46.25 | | 41.75 | |
| Specialty* | | | | | | |
| Psychiatrists | 31.15 | 0.009 | | 0.001 | 50.42 | 0.198 |
| | | | 62.63 | | | |
| Psychologists | 46.69 | | 40.23 | | 48.23 | |
| Social Workers | 57.95 | | 32.95 | | 34.91 | |
| Psychiatric Nurses | 51.89 | | 38.5 | | 38.05 | |

**Table 4:** Comparison of knowledge, practice and attitude between psychiatrists, psychologists, social Workers and nurses on covid-19

| Knowledge | Response | psychiatrists | psychologists | social workers | nurses | P |
|---|---|---|---|---|---|---|
| Special caution must be taken if a person presents with Fever, cough and Difficulty breathing? | Correct | 24(100%) | 34(97.1%) | 11(100%) | 18(94.7%) | 0.648 |
| | Incorrect | 0 | 1(2.9%) | 0 | 1(5.3%) | |
| COVID19 patients develop severe acute respiratory illness? | Correct | 23(95.8%) | 28(80%) | 8(72.7%) | 15(78.9%) | 0.251 |
| | Incorrect | 1(4.2%) | 7(20%) | 3(27.3%) | 4(21.1%) | |
| In epidemics, meat products can be safely consumed if | Correct | 24(100%) | 34(97.1%) | 9(81.8%) | 17(89.5%) | 0.108 |
| | Incorrect | 0 | 1(2.9%) | 2(18.2%) | 2(10.5%) | |
| these items get well cooked and prepared? | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| COVID-19 is a viral Infection? | Correct | 23(95.8%) | 34(97.1%) | 11(100%) | 18(94.7%) | 0.881 |
| | Incorrect | 1(4.2%) | 1(2.9%) | 0 | 1(5.3%) | |
| Washing hands vigorously (soap/water) for 20s? | Correct | 18(75%) | 30(85.7%) | 10(90.9%) | 7(36.8%) | 0.5 |
| | Incorrect | 6(25%) | 5(14.3%) | 1(9.1%) | 12(63.2%) | |
| Influenza vaccine also gives protection from COVID-19? | Correct | 2(8.3%) | 10(28.6%) | 1(9.1%) | 7(36.8%) | 0.076 |
| | Incorrect | 22(91.7%) | 25(71.4%) | 10(90.9%) | 12(63.2%) | |
| Should the nose and mouth be covered when coughing or sneezing? | Correct | 24(100%) | 35(100%) | 11(100%) | 18(94.7%) | 0.293 |
| | Incorrect | 0 | 0 | 0 | 1(5.3%) | |
| Psychiatric and neuropsychiatric patients are more susceptible for having complications from COVID-19? | Correct | 10(41.7%) | 11(31.4%) | 2(18.2%) | 4(21.1%) | 0.388 |
| | Incorrect | 14(58.3%) | 24(68.6%) | 9(81.8%) | 15(78.9%) | |
| Antibiotic is the first line treatment? | Correct | 2(8.3%) | 12(34.4%) | 5(45.5%) | 9(47.4%) | 0.025* |
| | Incorrect | 22(91.7%) | 23(65.7%) | 6(54.5%) | 10(52.6%) | |
| Polymerase Chain reaction can be used as diagnostic test for COVID-19? | Correct | 20(83.3%) | 20(57.1%) | 7(63.6%) | 14(73.7%) | 0.179 |
| | Incorrect | 4(16.7%) | 15(42.9%) | 4(36.4%) | 5(26.3%) | |
| Vaccination of Coronavirus is Available? | Correct | 16(66.7%) | 22(62.9%) | 0 | 11(57.9%) | 0.001* |
| | Incorrect | 8(33.3%) | 13(37.1%) | 11(100%) | 8(42.1%) | |
| Incubation period of COVID-19 is 2-14 days? | Correct | 20(83.3%) | 32(91.4%) | 10(90.9%) | 17(89.1%) | 0.797 |
| | Incorrect | 4(16.7%) | 3(8.6%) | 1(9.1%) | 2(10.5%) | |
| Is the disease transmitted only from people with symptoms? | Correct | 1(4.2%) | 9(25.7%) | 0 | 3(15.8%) | 0.059 |
| | Incorrect | 23(95.8%) | 26(74.3%) | 11(100%) | 16(84.2%) | |
| Can the disease be transmitted for a distance of more than two meters? | Correct | 4(16.7%) | 13(37.1%) | 3(27.3%) | 6(31.6%) | 0.397 |
| | Incorrect | 20(83.3%) | 22(62.9%) | 8(72.7%) | 13(68.4%) | |
| Does the medical (surgical) mask protect against the virus? | Correct | 17(70.8%) | 28(80%) | 7(63.6%) | 14(73.7%) | 0.706 |
| | Incorrect | 7(29.2%) | 7(20%) | 4(36.4%) | 5(26.3%) | |

**Table 5:** Comparison of attitude, practice and knowledge between psychiatrists, psychologists, social Workers and nurses on covid-19

| Attitude | Response | psychiatrists | psychologists | social workers | nurses | P |
|---|---|---|---|---|---|---|
| Level of your fear of COVID-19? | Always | 5(38.5%) | 3(23.1%) | 1(7.7%) | 4(30.8%) | 0.589 |
| | Most of time | 5(29.4%) | 7(41.2%) | 2(11.8%) | 3(17.6%) | |
| | Sometime | 12(32.4%) | 15(40.5%) | 4(10.8%) | 6(16.2%) | |
| | Occasionally | 2(13.3%) | 8(53.3%) | 2(13.3%) | 3(20.0%) | |
| | Rarely | 0 | 2(28.6%) | 2(28.6%) | 3(28.6%) | |
| Would you like to take a corona virus vaccine if the vaccine is provided? | Always | 19(40.4%) | 17(36.2%) | 3(6.4%) | 8(17.0%) | 0.013* |
| | Most of time | 1(50.0%) | 0 | 1(50.0%) | 0 | |
| | Sometime | 3(16.7%) | 7(58.3%) | 3(25.0%) | 0 | |
| | Occasionally | 0 | 2(40.0%) | 0 | 3(60.0%) | |
| Willingness to care for the psychiatric patients suffering from the COVID-19? | Always | 15(38.5%) | 12(30.8%) | 4(10.3%) | 8(20.5%) | 0.366 |
| | Most of time | 4(33.3%) | 6(50.0%) | 0 | 2(16.7%) | |
| | Sometime | 2(13.3%) | 5(33.3%) | 4(26.7%) | 4(26.7%) | |
| | Occasionally | 0 | 3(75.0%) | 0 | 1(25.0%) | |
| | Rarely | 3(15.8%) | 9(47.4%) | 3(15.8%) | 4(21.1%) | |

| Practice | Response | psychiatrists | psychologists | social workers | nurses | P |
|---|---|---|---|---|---|---|
| During outbreak ,whether maintained quarantine with family ? | Always | 14(25.0%) | 24(42.9%) | 8(14.3%) | 10(17.9%) | 0.806 |
| | Most of time | 6(30.0%) | 8(40.0%) | 1(5.0%) | 5(25.0%) | |
| | Sometime | 2(28.6%) | 1(14.3%) | 2(28.6%) | 2(28.6%) | |
| | Occasionally | 2(50.0%) | 1(25.0%) | 0 | 1(25.0%) | |
| | Rarely | 0 | 1(50.0%) | 0 | 1(50.0%) | |
| Do you wear personal protection equipment when dealing with all patients? | Always | 10(18.5%) | 27(50.0%) | 5(9.3%) | 12(22.2%) | 0.198 |
| | Most of time | 7(46.7%) | 4(26.7%) | 2(13.3%) | 2(13.3%) | |
| | Sometime | 4(33.3%) | 2(16.7%) | 2(16.7%) | 4(33.3%) | |
| | Occasionally | 2(66.7%) | 1(33.3%) | 0 | 0 | |
| | Rarely | 1(20.0%) | 1(20.0%) | 2(40.3%) | 1(20.0%) | |
| Do you wear personal protection equipment when dealing with patients suffering from respiratory symptoms? | Always | 18(27.3%) | 29(43.9%) | 7(10.6%) | 12(18.2%) | 0.28 |
| | Most of time | 4(30.8%) | 4(30.8%) | 2(15.4%) | 3(23.1%) | |
| | Sometime | 0 | 1(25.0%) | 1(25.0%) | 2(50.0%) | |
| | Occasionally | 2(50.0%) | 1(25.0%) | 1(25.0%) | 0 | |
| | Rarely | 0 | 0 | 0 | 2(100%) | |
| What protection do you wear | | | | | | |
| Medical mask | Medical mask | 20(27.8%) | 32(44.4%) | 7(9.7%) | 13(18.1%) | 0.31 |
| | Most of time | 3(37.5%) | 1(12.5%) | 1(12.5%) | 3(37.5%) | |
| | Sometime | 0 | 1(20.0%) | 2(40.0%) | 2(40.0%) | |
| | Occasionally | 0 | 0 | 0 | 0 | |
| | Rarely | 1(25.0%) | 1(25.0%) | 1(25.0%) | 1(25.0%) | |
| Fabric mask | Always | 7(30.4%) | 7(30.4%) | 3(13.0%) | 6(26.1%) | 0.662 |
| | Most of time | 3(37.5%) | 3(37.5%) | 1(12.5%) | 1(12.5%) | |
| | Sometime | 1(16.7%) | 2(33.3%) | 0 | 3(50.0%) | |
| | Occasionally | 0 | 3(42.9%) | 2(28.6%) | 2(28.6%) | |
| | Rarely | 13(28.9%) | 20(44.4%) | 5(11.1%) | 7(15.6%) | |
| N95 Mask | Always | 7(36.8%) | 8(42.1%) | 1(5.3%) | 3(15.8%) | 0.153 |
| | Most of time | 2(33.3%) | 2(33.3%) | 2(33.3%) | 0 | |
| | Sometime | 8(57.1%) | 3(21.4%) | 1(7.1%) | 2(14.3%) | |
| | Occasionally | 1(16.7%) | 3(50.0%) | 1(16.7%) | 1(16.7%) | |
| | Rarely | 6(13.6%) | 19(43.2%) | 6(13.6%) | 13(29.5%) | |
| Gloves | Always | 7(23.3%) | 15(50.0%) | 0 | 8(26.7%) | 0.264 |
| | Most of time | 5(41.7%) | 3(25.0%) | 2(16.7%) | 2(16.7%) | |
| | Sometime | 4(28.6%) | 3(21.4%) | 2(14.3%) | 5(35.7%) | |
| | Occasionally | 0 | 2(50.0%) | 1(25.0%) | 1(25.0%) | |
| | Rarely | 8(27.6%) | 12(41.4%) | 6(20.7%) | 3(10.3%) | |
| Face Shield | Always | 4(16.7%) | 7(20.0%) | 1(9.1%) | 2(10.5%) | 0.455 |
| | Most of time | 2(8.3%) | 2(5.7%) | 0 | 2(10.5%) | |
| | Sometime | 3(12.5%) | 1(2.9%) | 1(9.1%) | 1(5.3%) | |
| | Occasionally | 4(16.7%) | 1(2.9%) | 1(9.1%) | 0 | |
| | Rarely | 11(45.8%) | 24(68.6%) | 8(72.7%) | 14(73.7%) | |
| Medical gown | Always | 4(16.7%) | 3(8.6%) | 0 | 3(15.8%) | 0.331 |
| | Most of time | 2(8.3%) | 2(5.7%) | 1(9.1%) | 0 | |
| | Sometime | 3(12.5%) | 3(8.6%) | 0 | 3(15.8%) | |
| | Occasionally | 2(8.3%) | 0 | 1(9.1%) | 2(10.5%) | |
| | Rarely | 12(50.0%) | 27(77.1%) | 9(81.8%) | 11(57.9%) | |

## DISCUSSION

To the best of my knowledge, this is the first study in Sudan analyzing KAP on COVID-19 among psychiatrists, psychologists, social workers, and nurses' staff working in psychiatric facilities.

Psychiatric patients may contribute to the high risk of transmitting the infection to MHPs due to their impulsive behavior, therefore proper precautions in such an environment must be taken [15]

The present study is a majorly female dominated, married, and educated population, which is similar to previous studies [16,17]. In this study, (84.3%) of participants agreed that hand washing is a preventive measure against COVID-19 infection, Although less than this number 77.50% were committed to this practice, moreover, it was mostly followed after only being in direct contact with an actual patient. The overall knowledge score was 70.8% which signaled that participants have adequate knowledge toward COVID-19, which is comparatively lower than the previous study 79.42% even though the same study suggested that the knowledge score is higher in the more properly educated sample such as psychiatrists and nurses which does not apply in this study [18]. An estimate of (69.70%) gave an inadequate and erroneous answer to a question regarding the impact of COVID-19 on the psychiatry team where they stated that the current pandemic doesn't have any mentionable impact on them, signaling a conspicuous lack in knowledge regarding the full extent of the current pandemic's outrage and the role of psychiatry team in a hospital's setting or a private institution.

The analysis of MHPs' knowledge and the factors affecting their attitude and practices could provide a reference for preventing the further spread of the epidemic among MHP's and psychiatric patients. The fact that half of the participants receive their knowledge from social media and the news needs to be pressingly addressed as it affects the integrity and the accuracy ofthe knowledge and reflects on their attitude and practice.

Close to (45%) of participants were not willing to take the COVID-19 vaccine which is a major finding that should be followed with an intent to study this aversion as vaccination is even more important for controlling the COVID-19 pandemic especially in facilities that lack proper infection.

In this study, an overall knowledge questionnaire score was (70.8%) which indicates the participants have adequate knowledge of COVID-19, which is comparatively lower than the previous study conducted in China where the estimated score was 89.51%, whereas a similar study was also conducted in India with an estimated score of 79.42%, the reason could be due to negligence in following protective protocols and safety measures, despite the participants being selected from a higher educated sample of psychiatrists and nurses, in addition to the lack of sufficient training and promotion to the working staff. (70.8%) of the participants from this study conceded that Insufficient training was a barrier in infection control. (57.3%) were willing to care for psychiatric patients who were infected by the COVID-19 virus in contrast to the previous study (77.17%). The self-contained measures for the willingness to care for the infected patients included advanced training, experience in regard to caring for patients with COVID-19, and the confidence to know the risk and how to navigate them for proper protection of themselves and their patients.

89.9% of participants were wearing a surgical mask and 28.1% wearing an N95 mask, According to previous studies the use of cotton masks, surgical masks, and N95 masks contributes to having a protective effect concerning the transmission of infective droplets/aerosols of SARS-CoV-2 and that the protective efficiency was higher when masks were worn by a virus spreader, importantly, medical masks (surgical masks and even N95 masks) were not able to completely block the transmission of virus droplets/aerosols even when completely sealed, moreover, evidence from laboratory studies of potential airborne spread of influenza from shedding patients indicates that guidelines related to the current 1-meter respiratory zone may need to be extended to a larger respiratory zone and include protection from ocular inoculation. Despite the slight margin of difference in the rate of the protective effect of surgical masks against N95 masks, where the latter reported to have a better protective effect during aerosol generating procedures, surgical masks are actually more adopted into society due to conveniences, availability and relatively affordable prices compare to the N95 masks [19]. However, more protective measures such as hand washing and personal's hygiene also need to be adopted to limit the spread of the virus and to maximize the indiviuals' level of protection against the current pandemic [20,21].

Despite the availability of infection control materials such as masks and gloves worldwide, (73%) of participants reported that such materials are scarce in Sudan, (55.1%) lack of gloves and masks, and (70.8%) lack of isolation rooms. The study recommends that the Ministries of Health should promote all COVID-19 precautionary and preventative materials to adhere to the guidelines recommended by the World Health Organization to minimize the rate of infection.

80.90% of the participants concurred with the lack of an official specialized unit in infection control. The presence of a specialized infection control unit is critical for training and monitoring the medical staff especially in accommodating with COVID-19 outbreak [22]. Meanwhile (74.2%) consented that overcrowding in psychiatric patients' rooms and the Lack of policy procedures of infection control practice were also a barrier in infection control.

## LIMITATION

A pilot study before the administration of the questionnaire wasn't taken which may contribute to the validity of data.

## CONCLUSION

Mental health professionals tend to have proper knowledge toward COVID-19 transmission but it does not apply to their practice, therefore Special needs by the government toward facilities' infection control materials are required.

## DATA

Data may be made available to qualified researchers upon request to the author.

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## CONFLICT OF INTEREST

None

## ETHICAL STANDARDS

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000.

## CONSENT FOR PUBLICATION

Provided

## AVAILABILITY OF DATA AND MATERIALS

Applicable

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