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Measurement of Psychological Health for Healthcare Workers Dealer with COVID-19 Cases in Medical Services Directorate in Baghdad, Iraq

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Keywords
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Abstract

Iraq is one of countries of the Middle East which was subjected to COVID-19 pandemic. Therefore, to study psychological effect of coronavirus outbreak among healthcare workers at medical services directorate in Baghdad, questionnaire was performed during the last quarter of 2021 that consists of four scales to measure anxiety disturbances, sleep disorder, public health and psychological stress.

A total of 68 participants worked at different departments & divisions at directorate and from different jurisdiction, where medical group were highest percent (29.41%) followed by pure sciences group (27.94%) and (13.24%) were medical lab technicians.

The results showed 37% of participants had anxiety, stress and nervous for many days, moreover 35% of them had sleep problems and intermitted sleeping which affect their daily activities (work, memory, focusing) that noticeable by others. While 38% of them were careless about doing any work and 53% were sad felling with chest tightness for many days, however 43% had got tired and less energetic most of days.

The prevalence of psychological stress and anxiety was estimated in participants were lab technicians and physicians who work at first lines receiving insufficient supplies for protection and lacking confidence in protection measures who were at risk factor for developing post traumatic diseases syndrome.

Psychologic intervention should be implemented among healthcare workers (HCWs) during the pandemic to minimize the psychological effect and prevent long-term psychological comorbidities. At the same times, HCWs should be sufficiently trained and well protected before frontlines exposure.

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1. Introduction

The new decade conveyed with it the first pandemic of Corona virus disease infection 2019 (COVID-19) (1). While it is not new one for than virus which cause an outbreak on 2003 (SARS-2003). COVID -19 classified as highly transmissible virus that have been cause at least 5,240,453 deaths as of 3 December, 2021 (2) and more than 264,709, 360 confirmed cases (2). The Wuhan strain has been identified as a new one of beta coronavirus with 96% similarity to a bat corona virus so it widely suspected to originate from bats as well (3, 4).

In Iraq the total number of cases 2.07 million and death 23.536 according to ministry of health statistic.

The sudden and widespread of a serious respiratory illness in china and the world makes a psychological stress for all community including health care workers regarding that they the first line facing (white army) as a common nomenclature hashtag with outbreak.

Previous date on mass existence, natural disaster's example, shows that large scale disruptive events are strongly associated with ill effects on mental health post-traumatic stress disorder (PTSD) being the most frequently encountered followed by depression, anxiety, and other behavioral and psychological disorder (5). There for the current pandemic poses a great risk for psychologic and psychiatric mortality.

Iraq is one of countries that faces the pandemic, the government begins its procedures and guidelines to limit this epidemic by applying quarantine and closing the most crowded places such as malls, markets, Universities, schools and roads to apply a healthy quarantine requirements.

The lockdown and quarantine had long term psychological impact that remains debatable. There is very limited data available on the mental health health aspect of previous medical outbreaks.

Medical services directorate as one of composites of ministry of interior, medical central unit for all ministry division, begins to receive corona cases since the beginning of pandemic in March 2020 by making nasal swabs to isolate and diagnose corona virus infection and sending these clinical specimens to ministry of health labs to complete diagnostic tests and recording results.

Furthermore, health care workers in our directorate were the first line defense against pandemic by making decontamination and sterilization of all most ministry sections as well as making awareness lectures & seminars to increase the basement knowledge about pandemic.

Officers and employees have been infected more than once, as well as some of them had died and even their relatives or families.

Some studies show that life threatening medical illnesses can result in signs and symptoms linked with (PTSD) after recovery (6, 7).

The aim of current study is to evaluate the psychological health for health care workers in medical services directorate and this is the first study performed in this

directorate about this subject especially after three corona virus pandemic faced our country till the end 2021.

2. Materials and methods

This cross sectional study was done in directorate of medical services/ Ministry of Interior during the last quarter of 2021 in Baghdad. Iraq.

3. Ethical approval and consent form

The scientific and ethical committee at directorate of medical services in Baghdad approved this study. This cross sectional survey study was conducted to Helsinki guidelines. The questionnaire that was submitted to the employees and officers was free from any psychological, social and personal harmful effect. Each one signed a consent form prior to the including of study and all the information was confidential.

4. Setting

This cross section study was carried out in directorate of medical services/ Ministry of Interior in Baghdad during the last quarter of 2021. Officers and employees of all departments and divisions and of both sexes were eligible for this study.

5. Criteria of inclusion

Employees & officers aged between 23 and 55 years, living in any governorate of Iraq, whatever their financial or social status is.

6. Criteria of exclusion

Officers or employees who are less dealing with corona patients, or those with chronic diseases such as diabetes mellitus, kidney or liver disease, a history of recent tragedy or accident, and with a history of recent mental problem and trauma that facilitate or affect psychiatric action were excluded from the study.

7. Study design

This cross sectional study depend on self-assessment questionnaires. The researchers distribute it on officers and employees who work in departments and divisions that had more contact or dealing with corona virus patients, then the researchers explained each option of questionnaire and how to answer to each choice. Each one of sample study receive an Arabic form of questionnaire related to characteristic of participant, age, gender, rank, social status, specialization, highest qualification had gain, department/ division work at. In addition to scales for assessment of their psychological health which consist of four scales: anxiety disturbance, sleep disorder, public health and psychological stress as illustrated in appendix (1) .

8. Statistical analysis

Statistical analysis system SAS- 2012 (ref.) was used for data analysis for studying the required relation related to aims of study for independent factors and the items within the four scales that the questionnaire included, then the significant

differences between weights or averages for each scale using least significant difference (LSD).

The average or weight was obtained for each item by calculating the summation of numbers multiplication for each answer by answer degree which determined according to scale and importance, the first and third scales (1, 2, 3, 4) then divided by (10) which acted the summation of importance degrees mentioned above, the second and fourth scales (1, 2, 3, 4, 5) then divided by (15) which is the summation of importance degrees that mentioned previously. Next it was arranged from top to bottom.

The significant differences between percentages was compared by Chi-square test, the correlation coefficient was estimated between the independent factors and study scales according to simple coefficient law and finally, the stability and confidence factors had calculated.

9. Results

Table 1 shows that from a total of 68 sample study, 18 (26.47%) were officers, 12 (17.65%) were commissioners and 38 (55.88%) were civil employees with significance differences recorded between study groups.

Table 1. Number and percent of study sample based on rank

The rank	Number	Percentage (%)
Officers	18	26.47
Commissioners	12	17.65
Civil employees	38	55.88
Total	68	100 %
Chi-square (χ^2)	---	16.525 **
(P-value)		(0.0003)

($P \leq 0.01$)** high significance

The study sample are illustrated among different departments and division of directorate, the medical committee department was the highest (19.2 %) followed by martyr Dr. Ali Esmail Salih dispensary (11.76 %) these two department were interested by researchers since there more contacted with patients and auditors. While public health department, statistic and management divisions were (8.82 %), on the other hand, hospitals affairs and training departments (5.88 %) whilst planning and media departments (4.41 %), however (5.88 %) in health assurance and follow up divisions, (7.35 %) recorded in law division, the lowest percent (1.47 %) registered in anesthetic lab and engine divisions with significance differences ($P \leq 0.01$) as verified in table 2.

Table 2. Number and percent of study sample regarded to department/division of directorate

Department/division	Number	Percent (%)
Statistic	6	8.82
Management	6	8.82
Engines	1	1.47
Planning	3	4.41
Training	4	5.88
Public health	6	8.82
Healthy assurance	4	5.88
Media	3	4.41
Law	5	7.35
Medical committee	13	19.12
Follow up	4	5.88
Anesthetic lab	1	1.47
Hospitals affairs	4	5.88
Dispensary	8	11.76
Total	68	100 %
Chi-square (χ^2) (P-value)	---	6.722 ** (0.0089)

When the sample study statistically analyzed related to age, significance differences founded ($P \leq 0.01$), the age group (30-39) was the highest (52.94 %) compared to (10.29 %) in (20-29) age group and (25 %) in (40-48) whilst the lowest percent (11.76 %) at (50-59) age group as illustrated in table 3.

Table 3. The number and percent for study sample according to age

Age group (year)	Number	Percent (%)
24-29	7	10.29
31-39	36	52.94
40-48	17	25.00
50-59	8	11.76
Total	68	100%
Chi-square (χ^2) (P-value)	---	31.882 ** (0.0001)

($P \leq 0.01$)** high significance

The statistic results show significance differences ($P \leq 0.01$) with gender, that the highest percent found in males (72.06 %) as compared to females who recorded (27.94 %) as verified in table 4.

Table 4. Number and percent for study sample with respect to gender

Gender	Number	Percent (%)
Male	49	72.06
Female	19	27.94
Total	68	100 %
Chi-square (χ^2) (P-value)	---	13.235 ** (0.0003)

($P \leq 0.01$)** high significance

Table (5) explain the distribution of study sample according to social status with significance differences noticed ($P \leq 0.01$), the highest percent were married (82.35 %) the lowest percent were widow (2.94 %) while single and divorced were (7.35 %).

Table 5. Distribution of sample study related to social state

Social status	Number	Percent (%)
Single	5	7.35
Married	56	82.35
Widow	2	2.94
Divorced	5	7.35
Total	68	100 %
Chi-square (χ^2)	---	15.378 **
(P-value)		(0.0005)

(P≤0.01)** high significance

When sample study was distributed related jurisdiction as cleared in table (6), medical group was highest (29.41 %) who were focused by researchers since there are more handling and contacted with auditors, followed by pure sciences (27.94 %) who are working in labs and responsible of corona virus swab collection, then medical and health technology (13.24 %) and the lowest percent noticed in engineering group (2.94 %) while the other (not previously mentioned) was (26.47 %) with significance differences founded (P≤0.01).

Table 6. Number and percent for sample study related to jurisdiction.

Specialization	Number	Percent (%)
Medical group	20	29.41
Engineering group	2	2.94
Pure sciences	19	27.94
Health & medical technology	9	13.24
Others	18	26.47
Total	68	100 %
Chi-square (χ^2)	---	18.029 **
(P-value)		(0.0012)

(P≤0.01)** high significance

Table 7 shows that the Bachelor owners were highest (52.94 %) while diploma (16.18 %), master and other (not mentioned previously) were the same percent (13.24 %) the lowest percent was doctorate (1.47 %) with high significance differences (P≤0.01).

Table 7. Distribution of study sample according to qualification obtained

Qualification	Number	Percent (%)
Doctorate	1	1.47
Master	9	13.24
Bachelor	36	52.94
Diploma	11	16.18
Other	9	13.24
Total	68	100 %
Chi-square (χ^2)	---	53.697**
(P-value)		(0.0047)

Table (8) shows the first scale (anxiety disturbances) which consist of seven questions (items) as illustrated below, significance differences (P≤0.05) noticed between items. The highest average (20.3) found in people who have anxiety control while the lowest (17.4) average in people who have nervous, anxiety and stress feeling many days, however (18) have anxiety about several things in many days and (17.6) have relax difficulty in many days too, while who get angry easily

for any reason at approximately every day were (17) whilst (19.3) who are not fear of some bad thing may occur and (19.8) have ever anxiety that may prevent them from sitting for a long time.

Table 8. Anxiety disturbances scale

Items	Never	Many days	More than half a day	Approximately, Every day	Average (weight)	Rank
1	13	25	17	13	17.4	6
2	30	18	9	11	20.3	1
3	19	24	7	18	18.0	4
4	18	21	12	17	17.6	5
5	20	15	12	21	17.0	6
6	27	20	4	17	19.3	3
7	28	20	6	14	19.8	2
LSD value	-	-	-	-	2.071	-

*(P≤0.05) significance difference

The second scale studied in current study was sleep disturbance as verified in table (9) which consist of seven questions (items) too with significance differences within (P≤0.05), highest weight (17.26) noticed in people who have no noticeable sleep problem that effect their life style, and (16.33) have little difficulty in staying or sleep continuity while (15.26) have no difficulty on early waking up which is higher about (0.47) have mid satisfactory on their current sleep style and lower on (0.27) who their sleep problems affect their daily activities moderately, while (16.4) have no care about their current sleep problems or little care, however lowest weight (15.13) have little difficulty in sleeping.

Table 9. Sleep disturbance

Item	Never	Fair	Moderate	More	Much more	Average (weight)	Rank
1	12	24	13	13	6	15.13	7
2	19	21	12	11	5	16.33	3
3	21	12	13	15	7	15.26	6
4	16	17	22	9	4	15.73	4
5	18	17	13	15	5	15.46	5
6	24	21	12	8	3	17.26	1
7	22	22	8	8	8	16.40	2
LSD value	-	-	-	-	-	1.944	-

*(P≤0.05) significance difference

Table (10) verify the results of third scale included in current study (public health) which consist of ten items (questions) that the highest average (22.5) noticed in people who don't have thoughts about death or hurting others, while those who don't speak slowly or rapidly as usual were (21.5), on the other hand people who have not fast motion or talking were less than two than previous, whilst (18.2) had focusing difficulty many days while self -satisfactory feeling were (19.6) and (17.2) of sample study had little appetite or over eating than usual for several days, however (16.6) had tired or less energy feeling for several days too, while those who had sleep difficulty or increase or intermitted in sleep hours many days were more about (1.3) than previous ones, while those who has sad feeling were (18),

furthermore a less care for doing any work noticed in (21) for several days with significance differences ($P \leq 0.05$) between scale items as illustrated in table below.

Table 10. Public health scale

Items	Never	Many days	More than half a day	Approximately, Every day	Average (weight)	Rank
1	25	26	15	2	21.0	3
2	11	36	7	14	18.0	7
3	8	36	9	15	17.3	9
4	7	29	19	13	16.6	10
5	12	31	9	16	17.5	8
6	26	18	14	10	19.6	5
7	19	20	17	12	18.2	6
8	34	17	11	6	21.5	2
9	28	21	11	8	20.5	4
10	45	7	8	8	22.5	1
LSD value	-	-	-	-	2.97	-

*($P \leq 0.05$) significance difference

The last and fourth scale in current study is psychological stress evaluation during the last month that based on ten questions, significance differenced recorded between them ($P \leq 0.05$) as illustrated in table (11), the highest average (16.6) those who unable to control their life fairly, followed by (15.86) who had fair felling of disturbance because of unexpected events occurrence, then (15.73) who had ever felling that their life go on as they like, whilst (15) had fell often that their problems are accumulated so they cannot control, and (14.86) had not adapt with thing they had to do, while (14.13) those who don't have trust on their capacity for dealing with their personal problems, that less with (13.86) fell with stress moderately, however (13.86) were able to control disturbing sources in their life, further more (13.53) were fairly angry because of uncontrolled thing of their life.

Table 11. Psychological stress scale

Item	Never	Fair	Some times	Often	More often	Average (weight)	Rank
1	13	27	14	9	5	15.86	2
2	15	26	19	5	3	16.60	1
3	7	24	17	9	11	14.06	7
4	17	16	8	12	15	14.13	6
5	21	15	12	15	5	15.73	3
6	8	28	12	15	5	14.86	5
7	5	29	8	17	9	13.86	8
8	10	16	13	16	13	13.20	10
9	6	21	15	18	8	13.53	9
10	15	20	12	13	8	15.00	4
LSD value	-	-	-	-	-	1.812	-

*($P \leq 0.05$) significance difference

When studying the correlation between independent factors and the fourth scales in current study which verified in table (12), shows that there is strong significant correlation between age and anxiety scale (0.53) and higher significant correlation with sleep disorders (0.71) and (0.58) with psychological stress, while there is no

significant correlation with public health (0.08), while gender correlate significantly with anxiety disturbance (0.67) and psychological stress (0.37) and no significant correlation with rest scales (0.02) & (0.19), rank don't record any significant correlation with any scale, oppositely the social status correlate significantly with all scales, while jurisdiction correlate significantly with sleep disturbance and psychological stress only, however qualification show significant correlation with public health and psychological stress, finally there are no correlation between department/division with any scale.

Table 12. Coefficient factor between independent factors with each scale of study

Factors	Coefficient factor r-			
	Anxiety disturbances	Sleep disturbances	Public health	Psychological stress
Age	**0.53	**0.71	NS 0.08	**0.58
Gender	**0.67	NS 0.02	NS 0.19	*0.37
Rank	NS 0.11	NS 0.07	NS 0.16	NS 0.006
Social status	*0.62	*0.38	*0.66	*0.42
Specialization	NS 0.21	*0.36	NS 0.10	*0.27
Qualification	NS 0.06	NS 0.12	**0.56	*0.031
Department/division	NS 0.04	NS 0.17	NS 0.08	NS 0.02

*(P≤0.05) significance difference, **(P≤0.01) highly significance difference, NS: non significance

Furthermore the correlation between scales with each other were studied as showed in table (13), since there is high significant correlation between anxiety disturbance and sleep disorder (0.69) and public health (0.77) and psychological stress (0.26), while significant correlation between sleep disorder with public health (0.55) and psychological stress (0.61), on the other hand public health correlate significantly with psychological stress (0.28).

Stability and confidence averages were studied as illustrated in table 14.

Table 13. Coefficient factor between the four study scales

Scales	Coefficient factor r-	
	Scale	Coefficient factor r-
Anxiety disturbance	Sleep disturbance	**0.69
	Public health	**0.77
	Psychological stress	*0.26
Sleep disturbance	Public health	**0.55
	Psychological stress	**0.61
Public health	Psychological stress	*0.28

*(P≤0.05) significance difference, **(P≤0.01) highly significance difference

Table 14. Stability and confidence factors according to study scales

Scales	stability and confidence factors
Anxiety disturbance	0.86
Sleep disturbance	0.71
Public health	0.84
Psychological stress	0.68
Total	0.81

10. Discussion

Our study is the first one that explore the effect of corona virus pandemic on mental health of health care workers in ministry of interior.

This cross sectional study based on 68 participants of health care workers (HCWs) at medical services directorate, Baghdad assessed acute psychological effect of corona virus pandemic. The percent of anxiety were 37% which was higher than Wang et al. (8) in China.

Overall, males and those who worked in directorate, worked at front lines had inadequate training courses and protection supplies, furthermore lacked confidence in protection measures and worry of getting infection had a significantly higher psychological stress as well as anxiety disturbance and that result disagree with (8) who found females were higher. Generally, medical group specialist health care workers of physicians, nurses and lab technicians were at risk of depression (35%) and difficulty in sleeping that effect their daily activities such as work, memory and focusing.

The martial status of participants was studies and noticed that there is significant correlation with the four study scales where married were the higher percent which agree with (8) study.

Specialization factor is significantly associated with psychological stress only where the majority of participants were physicians and lab technicians since those more contacted and dealers with patients of corona virus, it is expected that as the pandemic progress, more healthcare professionals will be found at the brink of psychological breakdown (13).

On the other side scientific qualification significantly associated with psychological stress & public health where most of contributors were Bachelor and other (not mentioned previously) that can be explained that most of officers and employees had Bachelor degree when appointed while (other) which is lower than diploma that had by commissioners when they joined in preparatory institute of commissioners.

The difference between results of current study with others may be due to variation in sample size, geographic area, time of study accomplishment compared with the beginning of pandemic when vaccines not available and not fully applicable treatment regimens.

The result of present study showed (53%) of participant had sad feeling for many days and in equal percent those who had intermitted sleeping, scientific articles verified that corona pandemic increase the level of stress that can cause tiredness and low energy feeling which noticed in present study (43%) in response to actual or possible threat, stress enhance the possibility of forming trauma related memories (9). Moreover, stress plays a critical role in post-traumatic syndrome disease development (10) and different psychiatric disorders (11).

There is evidence that psychological stress can trigger significant increase inflammatory reactions (12) which cause elevation of CRP (C - reactive protein) which has been reported in patients with anxiety and depression due to complex

physiological mechanisms. Therefore, it is important to understand and explore the psychological impact of the pandemic to better prepare physicians whatever their specialization, to actively look signs of their patients. This will help in early diagnosis and identification as well as management of large number of patients with psychological disorders (14).

A stumbling block in providing HCWs to a vast majority of community is the insufficient equipped and moderately watched health care set-up along with limited number of psychologic & psychiatric health providers in the directory. Hence, that pandemic should be a wakeup call to support and give interest and strength our healthy system so as to be ready to fight all future medical threats and trauma.

11. Conclusions

- The percent of felling anxiety, stress, nervous for many days were (37%) and (31%) were un able for relax
- People who had sleep difficulty which affect their daily activities (work, memory, focusing) were (35%) that make problems are noticeable by others.
- Percent of (38%) don't care on doing any work
- Employees who had get sad many days were (53%) the same nearly had intermitted sleep or more sleeping than normal
- About (43%) were tired and less energetic
- Nearly (41%) were unable for adapting with things they had to do.

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Conflict of interest

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