

Psychological Resilience and Mental Health among Patients With COVID-19 Pandemic

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Abstract

Background. Corona virus disease 2019 (COVID-19) is an infectious diseases caused by severe acute respiratory syndrome corona virus, it's usually present with respiratory symptoms or may be asymptomatic that may have a negative impact on patients' mental health and many changes to how individual live, along with uncertainly, altered daily routines, financial pressures and social isolation. **Aim:** The aim of the present study was to assess the relationship between psychological resilience and mental health among patients with COVID-19 pandemic. **Design:** A descriptive correlational research design was used to achieve the aim of this study. **Setting:** The study was conducted in Outpatient Thorax Clinic at Benha University Hospital Governorate. **Subject:** A Purposive sample of 100 patients with COVID-19 during recovery stage was included from the above settings for conduction of this study. **Tools:** Three tools used for data collection. Tool I - A structured interviewing questionnaire was used to collect data about socio-demographic and clinical characteristics of the studied sample, Tool II - Resilience Scale, Tool III - Mental health scale. **Results:** About half of studied sample had moderate level of resilience. Also, more than quarter of studied sample had moderate level of mental health. **Conclusion:** There was highly statistically significantly positive correlation between total resilience and total mental health. This is mean when level of resilience increase, mental health become good and when level of resilience low, mental health become poor. **Recommendation:** Stress management and assertiveness training program should be given to COVID-19 patients to relieve the mental health problems and enhance psychological resilience patterns.

Keywords: Psychological resilience, Mental health, COVID-19, Patient.

Corona viruses are very contagious and potentially fatal viruses. Late in 2019, Wuhan, China, reported it for the first time, and it quickly spread to the rest of the world. Its rates of morbidity and mortality are rapidly increasing each day. The COVID-19 virus and its effects had a profound effect on people all over the world by the time it was formally proclaimed a pandemic in March 2020. The epidemic has had a significant influence on people's relationships with one another, as well as on financial and physical health. The epidemic has specifically impacted mental health as measured by stress, anxiety, and depression rates. There is unmistakable proof that the pandemic has increased stress levels. In

addition, the epidemic has caused an increase in anxiety and sadness (Senger,A.R., 2023).

The corona virus (COVID-19) is brought on by the corona virus associated with severe acute respiratory illness. It has a significant effect on people, societies, and health care systems. Unprecedented measures have been taken to combat the epidemic all across the world, including lengthy state-wide lockdowns and travel bans, with the goal of halting the spread of the SARS-CoV-2 virus. The first nationwide lockdown was put into effect when the government imposed physical separation restrictions. The general populace was instructed to remain at home, do business from home,

and only leave the house for necessities. It is mainly spread by respiratory droplets, such as coughs and sneezes, as well as via indirect contact with contaminated surfaces (**Bardsley et al., 2023**).

Resilience is known as the ability to bounce back from setbacks and preserve or even improve one's mental health. When considering resilience as a process, one must consider how the ecosystem as well as the individual are connected, as well as how the social environment has an effect (**Zhu et al., 2023**).

Prior to the COVID-19 pandemic, psychological resilience may have existed, as shown, for instance, by the absence of psychopathology and/or the presence of positive psychological functioning following trauma exposure. We might anticipate that people who have previously experienced trauma and then displayed relatively favorable psychological health, or demonstrated resilience, will avoid the negative mental health effects of future stressors like the pandemic, or even adapt more favorably than people who have never faced such challenges (**Choi et al., 2023**).

Mental health is a comprehensive concept, involving stress, sadness, anxiety, general self-efficacy, psychological resilience, post-traumatic growth, intentional ruminating, and other factors and so on. Evidently, the difficulty in diagnosing mental disorders has been acknowledged as a significant healthcare issue, and mental health issues may cause significant personal suffering. Numerous studies are focusing on enhancing mental health in this setting in light of the harm that COVID-19 poses to public mental health. Although studies on some components of mental health, such as creativity, self-efficacy, and psychological resilience, have been conducted, no research has yet examined the connection between psychological resilience and overall mental health (**Qin et al., 2023**).

Understanding the effect of COVID-19 on an individual's comprehensive mental health status may be more important than concentrating on certain areas of mental health since it may serve as

a guide for future comprehensive mental health intervention strategies. We employed the mental health scale to evaluate patients' mental health in order to comprehend the impact of COVID-19 on overall mental health. A screening tool for present mental disturbances and disorders, the mental health scale is self-administered. According to research, the mental health scale is the most effective screening instrument for evaluating mental health (**Xu et al., 2022**).

Psychiatric mental health nurse has an important role when providing care for COVID-19 patients because they should see the patient as a whole, as a biological, psychological, social, and spiritual entity. When it comes to prevention, infection control, isolation, ongoing patient monitoring for COVID-19, and working on the front lines of an outbreak of the corona virus, nurses play a crucial role in healthcare settings. Additionally, nurses play crucial roles in the COVID-19 pandemic by caring for patients in hospitals, reducing suffering during and after COVID-19 management, actively participating in evaluation and monitoring in the community, and ensuring that all patients receive individualized, high-quality care regardless of their infectious condition (**Chen et al., 2022**).

Significance of the problem:

COVID-19 is a new viral disease that has caused a pandemic in the world. COVID-19 affects 547,850,260 of global population and about 515,645 in Egypt, with an equal the incidence in male and female patients and in all racial/ethnic groups. Corona viruses are highly infectious and life-threatening viruses. It was first reported in Wuhan China in late 2019 and it rapidly spread all over the world. Its morbidity and mortality rates are swiftly rising day by day. The virus and the ramifications of it had a dramatic impact on individuals worldwide. From changing the way people interact with one another to impacting finances and physical health, the pandemic has taken its toll. In particular, the pandemic has affected mental health as rates of stress, anxiety, and depression rose. There is clear evidence that

the pandemic has led to an increase in stress. Additionally, anxiety and depression have risen as a result of the pandemic, in part due to the stress of uncertainty. However, resilience factors have shown to be impactful in the midst of the pandemic (Senger,A.R.,2023).

Furthermore, COVID-19 is life threatening disease, that can lead to many psychological, social, occupational and familial problems for individual. The people may face numerous problems every day and less is known about impact of COVID-19 on psychological resilience and mental health. In recent years research has been conducted to study of psychological problems associated with COVID-19, there is limited researches done in COVID-19 and their relationship with psychological resilience and mental health. So, there is an important need for the researcher to conduct the study to determine psychological resilience and mental health among patients with COVID-19 pandemic.

Aim of the study

This study aims to determine the relationship between psychological resilience and mental health among patients with COVID-19 pandemic.

Research questions:-

1-What are the levels of psychological resilience and mental health among patients with COVID-19 pandemic?

2-What are the relation between psychological resilience and mental health among patients with COVID-19 pandemic?

Subject and methods

I-Technical design:-

1-Research Design:

A descriptive correlational design was utilized to achieve the aim of this study.

2-Research Setting:

This study will be conducted on patients during recovery stages in Outpatient Thorax Clinic at Benha University Hospital, Qalubia Governorate, which is affiliated to the Ministry of High Education. These selected hospital consists of four building (administrative building, ophthalmology building surgery building, and abdominal building) the administrative building contain six door, ophthalmology building contain three door, surgery building contain five door but abdominal building contain eight door).

Research Subject:

Sample type: A Purposive sample was used in the current study.

Sample size:

The study was included 100 patients post COVID-19 pandemic from both sexes, from Benha University Hospital.

The study subjects were collected during six months and selected according to the following criteria:-

- 1-With no psychotic problems and neurological disorders.
- 2-Patients willing to participate in the study.
- 3-During recovery stage.

Tools of data collection:-

In order to achieve the aim of the study, the following tools collected were being used.

Tool (I):- It was developed by the researcher after reviewing a related literature and translated in to Arabic language and consisted of two parts:

Part (1):- Socio-demographic data: which include (Age, sex, marital status, educational level, occupation, type of work, residence and income from patient point of views).

Part (2):- Clinical data: which include (Number of infected with COVID-19, number of hospital admission, family history of COVID-19 and family support).

Tool (II):- The Connor-Davidson Resilience Scale (CD-RISC):

This scale was originally developed by (Connor & Davidson, 2003), to measure the ability to cope with stress and adversity. This scale consists of 25 items and with 5 subdomains (Personal competence consisted of 7 items, control (5 items), acceptance of change and secure relationships (4 items), trust/tolerance/strengthening effects of stress (7 items) and spiritual influences (2 items). Each item was rated on 3-point likert scale from 0 to 2 (Not true at all=0, Sometimes true =1, True nearly all of the time =2).

Scoring system of resilience scale:-

* <60% (0-29) degree indicate low level of resilience.

*60-80% (30-43) degree indicate moderate level of resilience.

* >80% (44-50) degree indicate high level of resilience

Tool (II):- Mental health Scale::

This scale was originally developed by (Derogatis et al., 1973), to assess psychological problems. This scale consisted of 90 questionnaire and with 10 subdomains (Somatization consists of 12 items, obsessive-compulsive-disorder (10 items), interpersonal sensibility (9 items), depression (12 items), anxiety (9 items), anger-hostility (6 items), social phobia (7 items), paranoid ideation (6 items), psychoticism (10 items) and additional items (9 items). Each item was rated on 5-point likert scales from 0 to 4 (Not at all =0, A little bit=1, Moderately =2, Quite a bit=3, Extremely=4).

Scoring system of Mental Health scale:-

*<60% (0-29) degree indicate poor level of mental health.

*60-80% (30-43) degree indicate average level of mental health.

* >80% (44-50) degree indicate good level of mental health.

II-Operational design:-

Preparatory phase:-

An extensive review of available literature related to the study area was done including electronic dissertation, available books, articles, researches and periodicals to acquire the needed knowledge to conduct the study and prepare the necessary tools of data collection

Content Validity:-

Tools were provided to a jury of five experts in psychiatric and mental health nursing field. Tools were checked for the relevancy, clarity, comprehensiveness and applicability of the questions. The tool proved to be valid according to the opinions, modification of some words of Arabic form of Resilience scale and Mental health scale to give the right meaning of the phrase and final form was developed.

Reliability of the tool:-

It was applied by the researcher for testing the internal consistency of the tool by administration of the same tools to the same subjects under similar condition on one occasion. Answer from repeated testing were compared (test –retest reliability). The Cronbach's coefficient alpha of Rosenberg' Resilience scale is 0.87for total score, while Mental health scale is 0.968.

Pilot study:

After the development of the tools, a pilot study was carried on 10% patients with COVID-19 who were excluded from the main study sample. The purpose of the pilot study was to ascertain the clarity, applicability, relevance and content validity of the tools, estimate the time needed to complete the sheet, and the necessary changes were undertaken.

The results of the pilot study:

After conducting the pilot study, it was found that:

1- The tools were clear and applicable; however, few modifications were made in rephrasing of some sentences in both resilience scale and mental health scale to be easier and more understandable.

2-Tools were relevant and valid.

3- No problem that interferes with the process of data collection was detected.

4-Following this pilot study the tools were made ready for use

Field work: -

*At the beginning of interview the researcher was introduced herself to the participating patients, explained the aim of the study and reassured them that the collected information would be confidential and it was used only for research purposes.

*The researcher took oral consent to participate in the study prior to data collection

*The researcher interviewed with each patient individually and took precautionary measures such as kept appropriate distance from the patient and wear face mask and gloves.

*The researcher was explained questionnaires items to the participants and the time needed to fill the questionnaires and provide the needed clarification of tools items for them.

*The actual field work was carried out with 6 months from the beginning of November 2022 up to the end of April 2023.

*The researcher interviewed 2 participants/days/week (Saturday & Tuesday from 9 Am to 12Pm), in the entertainment hall beside out patients Thorax clinic (includes chairs arranged in 2 rows).

*Filled interviewing questionnaire sheet and then each patient was asked to fill resilience scale and mental health scale.

*An individual interview was conducted for every patient and the average time needed was around (45-60) minutes

III- Administrative design:-

Administrative approval:-

Official letters from the Faculty of Nursing- Benha University were obtained to the director of Benha University Hospital to interview the patients. Oral consent of the subjects was taken to participate study and all authorized personal concerned the title, objective, tools to conduct the proposed study, a full explanation about the aim of the study would be explored

Consent and Ethical consideration:-:

All subjects were informed that participation in the study is voluntary; no name would be included in the questionnaire sheet. Anonymity and confidentiality of each participant respected and protected, confidentiality was assured and subjects were informed that the content of the tool would be used for research purpose only and also had the right to refuse to participate in the study or withdraw at any time without any consequences.

Statistical analysis:

The collected data were organized, computerized, tabulated and analyzed by using the statistical package for social science (SPSS) version 25 Data was presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, mean and standard deviation for quantitative variables. Qualitative variables were compared using the chi-square test and correlation coefficient was used to measure the direction and strength of the correlation between variables. A statistical significant difference was considered if P was <0.05. Avery highly statistical significant difference was considered if P was <0.001.

Results

This table (1) reveals that half (50.0%) of the studied patients their age ranged between 20-<30 years, the mean age of the studied patients are 30.32 ± 13.44 years. As regard to sex, the majority (84.0%) of the studied patients are females and more than half (52.0%) of the studied patients are married. Concerning the educational level, more

than half (56.0) of the studied patients have university education. Also, more than half (60.0%) of the studied patients are unemployed, more than three quarters (70.0%) of the studied patients employed in government sector and more than three quarters (78.0%) of the studied patients reside in rural area. Moreover, less than half (48.0%) of the studied patients mentioned that the monthly income is enough.

This table (2) reveals that, more than three quarters (76.0%) of the studied patients are infected with COVID-19 once time. Also, less than three quarters (74.0%) of the studied patients are hospitalized once time due to COVID-19. In addition, two thirds (66.0%) of the studied patients have family history of COVID-19 pandemic and the majority (89.4%) of the studied patients from first degree relatives. Also, more than two thirds (67.0%) of the studied patients have family support.

This table (3) shows that, there is highly statistically significantly positive correlation between total resilience and total mental health. This is mean when level of resilience become high, mental health become good and when level of resilience become low, mental health become poor.

Figure (1) shows that, more than two thirds (67.0%) of the studied patients have moderate level of resilience, while only (16.0%) of the studied patients have low level of resilience.

Figure (2) shows that, less than three quarters (74.0%) of the studied patients have good mental health, while only (6.0%) of the studied patients have poor mental health.

Table (1): Distribution of the studied patients according to their socio-demographic characteristics (n=100).

Socio-demographic characteristics	No.	%
Age		
10-<20	6	6.0
20-<30	50	50.0
30-<40	14	14.0
40-<50	12	12.0
>- 50	18	18.0
Mean \pm SD	30.32 \pm 13.44	
Sex		
Male	16	16.0
Female	84	84.0
Marital status		
Single	34	34.0
Married	52	52.0
Divorced	6	6.0
Separated	8	8.0

Educational level		
Illiterate	2	2.0
Read and write	4	4.0
Basic education	22	22.0
Secondary education	8	8.0
University education	56	56.0
Postgraduate	8	8.0
Occupation		
Employed	40	40.0
Unemployed	60	60.0
Type of work (n=40)		
Governmental sector	28	70.0
private sector	9	22.5
Freelance work	3	7.5
Residence		
Rural	78	78.0
Urban	22	22.0
Monthly income		
Enough	48	48.0
Not enough	42	42.0
Enough and save	10	10.0

Table (2): Distribution of the studied patients according to their clinical date (**n=100**).

Clinical date	No.	%
Number of infected with COVID-19		
Once	76	76.0
Twice	14	14.0
Three times	6	6.0
Four times and above	4	4.0
Number of hospital admission		
Once	74	74.0
Twice	12	12.0
Three times	6	6.0

Four times and above	8	8.0
Family history of Covid 19 infection		
Yes	66	66.0
No	34	34.0
Degree of relationship (n=66)		
First degree	59	59.0
Second degree	7	10.6
Family support		
Present	67	67.0
Absent	33	33.0

Table (3): Correlation between total level of resilience and total level of mental health among the studied patients with post COVID-19 pandemic.

Scales		Total Resilience	Total Mental health
Total Resilience	r	1	0.609
	P-Value		0.000**
	N	100	100
Total Mental health	r	0.609	1
	P-Value	0.000**	
	n	100	100

Figure (1): Distribution of the studied patients according to the total level of resilience (n=100)

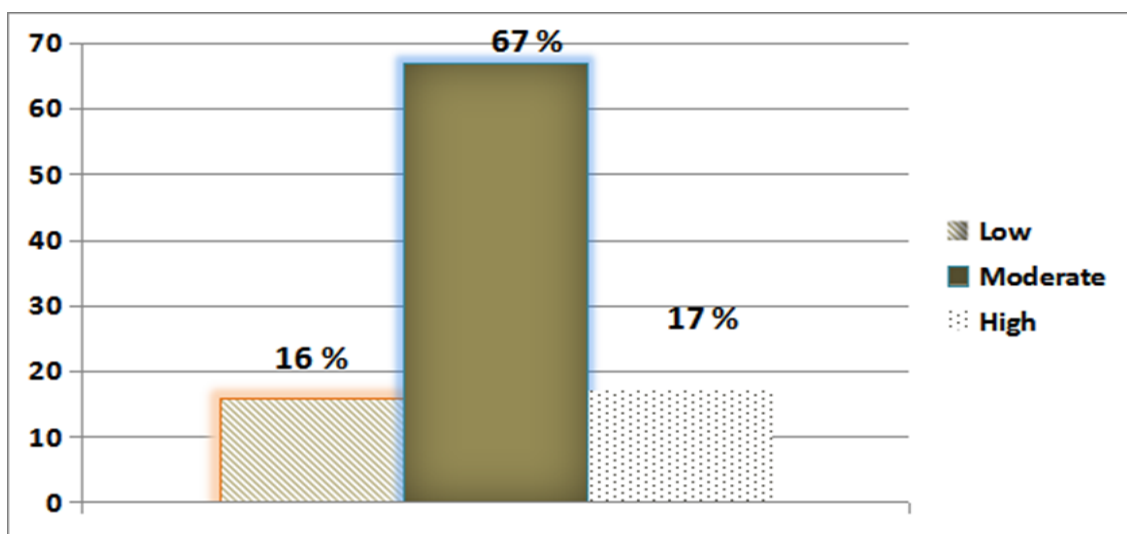
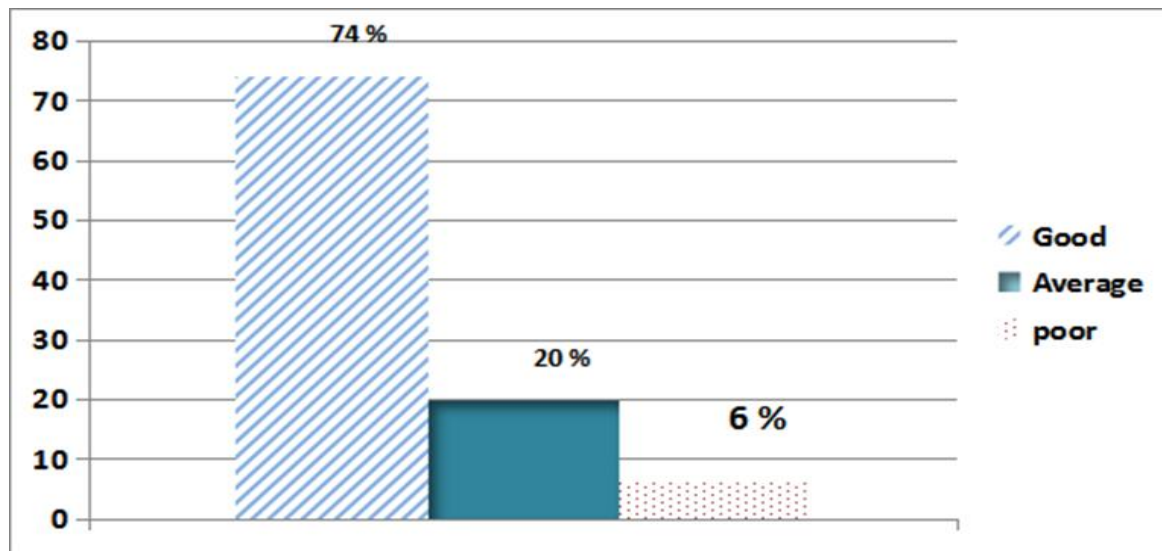


Figure (2): Distribution of the studied patients according to total level of mental health (n=100).



Discussion

Part I: Socio-demographic characteristics and clinical data among the studied patients with post COVID-19 pandemic

Regarding Socio-demographic characteristics of the studied patients, the current study showed that half of the studied patients their age ranged between 20-<30 years, the mean age of the studied patients are 30.32 ± 13.44 years. As regard to sex, the majority of the studied patients are females and more than half of the studied patients are married. Concerning the educational level, more than half of the studied patients have university education. Also, more than half of the studied patients are unemployed and more than three quarters of the studied patients reside in rural area. Moreover, less than half of the studied patients mentioned that the monthly income is enough.

From the researcher point of view, this finding may be related to two main reasons for women are most vulnerable to infection during COVID-19 peaks. First, given the infectious nature of COVID-19, women's predominant roles as caregivers within families and as frontline health care and community workers expose them to a high risk of infection.

Additionally, that the reason for the difference between the genders is that women are exposed to some stressors more frequently than men. Various

studies conducted before the COVID-19 outbreak reported that women had higher depression scores than men.

Finally, this might be because this age is the age of working in words and health care professionals who are older have more administrative work. These results may be attributed to the fact that young individuals, as well as unmarried people, may suffer a higher level of psychological distress in the presence of a pandemic disease or a disaster that may threaten their life compared to others, as they may feel that they are still in the prime of life, they have more optimism and attachment in life, and they have not accomplished what is supposed to be accomplished; Therefore, they had felt more anxious and stressed than others as a result of the emerging COVID -19 disease and its health consequences on them.

This finding was consistent with (Chan et al.,2021) who reported in a study in Minnesota and Hong Kong about "Resilience and mental health during the COVID-19 pandemic: Findings from Minnesota and Hong Kong" showed that half of the studied patients their age ranged between 20-<30 years. As regard to sex, the majority of the studied patients were females. Concerning the educational level, approximately two fifth of the studied patients had bachelor's degree.

Conversely, this finding was contraindicated with **(Karasar, & Canlı., 2020)** who revealed in a study on Turkey about "Psychological Resilience and Depression During the Covid 19 Pandemic in Turkey" that approximately one quarter of the studied patients their age ranged between 18-<30 years. As regard to sex, more than half of the studied patients were females and less than three quarters of the studied patients were married. Concerning the educational level, more than three quarters of the studied patients had university education.

Finally, this finding was inconsistent with **(Yin & Feng., 2022)** who conducted a study on hospital workers in China, about "The Effect of COVID-19 Safety Protocols on Hospital Workers' Mental Health: A Moderated-Mediation Model of COVID-19 Anxiety and Psychological Resilience". and revealed that minority of the studied patients their age ranged between 22–29 years. Regarding to sex, slightly less than two fifth were females. Concerning the educational level, less than two fifth of the studied patients had university education.

Clinical data among the studied patients with post COVID-19 pandemic.

Regarding to clinical date of the studied patients, the current study revealed that more than three quarters of the studied patients are infected with COVID-19 once time. Also, less than three quarters of the studied patients are hospitalized once time due to COVID-19. In addition, two thirds of the studied patients have family history of COVID-19 pandemic and the majority of the studied patients from first degree relatives. Also, more than two thirds of the studied patients have family support.

From the researcher point of view, this finding may be related to due to social-behavioural differences such as lack of masking and lack of social distancing in studied patients. Also, certain common medical conditions put people

at higher risk for severe illness from COVID-19. These include metabolic disorders like type 2 diabetes and obesity, as well as heart conditions like high blood pressure (hypertension) and heart failure. People with these four conditions are more likely to be hospitalized with COVID-19.

On the other hand, these findings were disagreed with **(Abdullah Sarkar & Ozair., 2021)** who conducted a study in Greece, about "Anxiety, Stress and the Resilience of University Students during the First Wave of the COVID-19 Pandemic" and showed that, minority of the studied patients been infected by COVID-19. Also, this finding was dissimilar with **(Elsayed et al., 2022)** who reported in a study in Germany about "Psychological Distress, Fear and Coping Strategies During the Second and Third Waves of the COVID-19 Pandemic in Southern Germany" and showed that one quarter of the studied patients were treated in hospital.

Part II: Total level of resilience among the studied patients with post COVID-19 pandemic.

Regarding to the total level of resilience of the studied patients, the present study showed that, more than two thirds of the studied patients have moderate level of resilience, while only of the studied patients have low level of resilience Figure (1).

Conversely, this study was in consistent with **(Zaki et al., 2021)** who revealed a study at Emergency Departments at Ain Shams University Hospitals, Cairo, Egypt, about "Relationship between Stress, Burnout, and Resilience among Emergency Department Nurses during COVID-19 Pandemic" and stated that about three quarters of the studied patients had low Psychological Resilience levels

Part III: Total level of mental health among the studied patients with post COVID-19 pandemic.

Regarding to the total level of mental health of the studied patients, the present study shows that, less than three quarters (74.0%) of the studied patients have good mental health, while only (6.0%) of the studied patients have poor mental health.

This result was fairly consistent with (**Abdelbaseer Mahmoud et al., 2022**) who conducted the study in obstetric and gynaecologic department at Benha University Hospital, Benha city, Qalybia Governorate, about "Effect of psycho-educational program on depressive symptoms, post-traumatic stress response and quality of life among women with hysterectomy".

Part (VII): Correlation between the studied variable among the studied patients:

Regarding to Correlation between total level of resilience and total level of mental health among the studied patients with post COVID-19 pandemic, the current study elaborated that, there is highly statistically significantly positive correlation between total resilience and total mental health. This is mean when level of resilience increase, mental health become good and when level of resilience low, mental health become poor.

This result consistent with (**Bozdağ & Ergün, 2020**) in their recent study titled "Psychological resilience of healthcare professionals during COVID-19 pandemic" and indicated that highly statistically significantly positive correlation between total resilience and total mental health. Also, this result was similar to (**Qin et al., 2023**) who assessed the study in in Hunan province of China, about "The fully mediating role of psychological resilience between self-efficacy and mental health: Evidence from the study of college students during the COVID-19 pandemic" and revealed that there was highly statistically

significantly positive correlation between total resilience and total mental health.

On the other hand, this result was contraindicated with (**Hassan Osman et al., 2023**) who carried out a study "Association between health-related quality of life, mental health and academic performance among adolescent students" and mentioned that There was high negative correlation between students' Academic performance and mental health.

Furthermore, this result agrees with (**Li et al., 2021**) who carried out a study "Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic" and mentioned that had a positive relationship between resilience and mental health.

Conclusion

Based on the results of the present study and research questions the following can be concluded:

Corona virus disease 2019 (COVID-19) is an infectious diseases caused by severe acute respiratory syndrome corona virus, it's usually present with respiratory symptoms or may be asymptomatic. life style, behavioral modifications and psychological interventions are essential for it's treatment with medication. The present study concluded that most patients with COVID-19 tend to report moderate resilience, experiencing less psychological consequences impact on their mental health.

There is highly statistically significant relation between patients' total level of resilience and socio-demographic characteristics as (age, sex, educational level and monthly income) at ($p < 0.001$). There is highly statistically significant relation between patients' total level of mental health and socio-demographic characteristics as age, sex, educational level and monthly income at ($p < 0.001$).

Recommendations

In the light of the results of the present study, the following recommendations are suggested:

For nursing practice:-

• There is a need for incorporation of psychological intervention in the management of COVID-19 patients for improvement the psychological well-being in patients.

*Stress management and assertiveness training program should be given to patients with COVID-19 to relieve the psychological problems and enhance coping patterns.

*Psychiatric support must be provided continuously as a part of routine nursing care for all patients with COVID-19.

*Psycho- educational programs should be conducted to improve people's knowledge about method of prevention from infected with COVID-19,

causes, early detection, and management to improve patient's physical and mental health.

*Increase awareness of patients about COVID-19 through social media, educated them about importance of follow up and change their life style to decrease spread of the virus and follow healthy diet to improve immune system.

In services:

• Providing training courses related to COVID-19 protection, personal protective equipment should be always available for all nurses, especially for nurses working in isolation hospital.

• Providing nurses with suitable personal protective equipment is one definite measure that can help to keep the lives of nurses safe and to decrease their fear of becoming infected.

For education:

* It is important to pay attention to COVID-19 patients ' psychological health status while fulfilling their responsibilities and educate the patient about the disease and ways to prevent it, such as wearing

gloves and face mask, and how to follow a health system to improve immunity and change his lifestyle to reduce the risk of infecting the people around him and reduce the severity of the spread of the virus.

• Provide opportunities for COVID-19 patients during recovery stage to discuss the stress they are experiencing, support one another, and make suggestions for workplace adaptations during this pandemic.

• Family involvement and support can also help the patient to come out of any distress.

• It is importance to providing comprehensive psychological support strategies to reduce the psychological impact of COVID-19 in an epidemic situation.

For government:-

• Financial support should be provided by the governments for patients with COVID-19.

For research:

• Providing psycho-social support programs for COVID-19 patients during recovery stage may be effective to alleviate negative psychological effects and to enhance mental health for them.

• Further study is needed to distinguish of psychological symptoms during and after infectious disease outbreak.

• Further studies should be conducted to replicate the current study on large sample of patients with COVID-19 in different geographical area for generalization of the study findings.

References

Senger, A. R. (2023). Hope's relationship with resilience and mental health during the COVID-19 pandemic. *Current Opinion in Psychology*, 101559.

Bardsley, M., Morbey, R., Hughes, H., Beck, C., Watson, C., Zhao, H., and Elliot, A. (2023): Epidemiology of respiratory syncytial virus in children younger than 5 years in England during the COVID-19

- pandemic, measured by laboratory, clinical, and syndromic surveillance: a retrospective observational study. *The Lancet Infectious Diseases*; 23(1): 56-66.
- Zhu, H., Song, J., Zhang, R., Wang, B., & Shen, X. (2023): Developmental changes in and the relationship between psychological resilience and mental health problems in adolescents relocated for poverty alleviation in the context of COVID-19 epidemic prevention and control. *Frontiers in Public Health*, 11.
- Choi, K. W., Nishimi, K., Jha, S. C., Sampson, L., Hahn, J., Kang, J. H., ... & Kubzansky, L. D. (2023): Pre-pandemic resilience to trauma and mental health outcomes during COVID-19. *Social Psychiatry and Psychiatric Epidemiology*, 58(3), 453-465.
- Qin, L. L., Peng, J., Shu, M. L., Liao, X. Y., Gong, H. J., Luo, B. A., & Chen, Y. W. (2023, February). The Fully Mediating Role of Psychological Resilience between Self-Efficacy and Mental Health: Evidence from the Study of College Students during the COVID-19 Pandemic. In *Healthcare* (Vol. 11, No. 3, p. 420). MDPI.
- Xu, Y.; Yang, G.; Yan, C.; Li, J.; Zhang, J. (2022): Predictive effect of resilience on self-efficacy during the COVID-19 pandemic: The moderating role of creativity. *Front. Psychiatry* 2022, 13, 1066759.
- Chen, Q., Liang, M., Li, Y., Guo, J., Fei, D., Wang, L., He, L., Sheng, C., Cai, Y., Li, X., Wang, J., and Zhang, Z. (2022): Mental health care for medical staff in China during the COVID-19 outbreak. *Lancet Psychiatry* 7, Pp.15–16.
- Senger, A. R. (2023). Hope's relationship with resilience and mental health during the COVID-19 pandemic. *Current Opinion in Psychology*, 101559.
- Connor, K. and Davidson, J. (2003): Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC): *Depress Anxiety*, 18 (2), Pp. 76–82.
- Derogatis, R., Lipman, S., and Covi, L. (1973): SCL-90: An outpatient psychiatric rating scale—Preliminary Report. *Psychopharmacol. Bull*, 9, 13–28.
- Chan, A. C., Piehler, T. F., & Ho, G. W. (2021). Resilience and mental health during the COVID-19 pandemic: Findings from Minnesota and Hong Kong. *Journal of Affective Disorders*, 295, 771-780. <https://doi.org/10.1016/j.jad.2021.08.144>
- Karasar, B., & Canlı, D. (2020). Psychological resilience and depression during the COVID-19 pandemic in Turkey. *Psychiatria Danubina*, 32(2), 273-279. <https://doi.org/10.24869/psyd.2020.273>
- Riehm, K. E., Brenneke, S. G., Adams, L. B., Gilan, D., Lieb, K., Kunzler, A. M., ... & Thrul, J. (2021). Association between psychological resilience and changes in mental distress during the COVID-19 pandemic. *Journal of affective disorders*, 282, 381-385.
- Yin, F., & Feng, Z. (2022). The effect of COVID-19 safety protocols on hospital workers' mental health: A moderated-mediation model of COVID-19 anxiety and psychological resilience. *Behavioral Sciences*, 12(12), 477. <https://doi.org/10.3390/bs12120477>
- Zaki, R. A., Ibrahim Morsi, Z. M., & Ibrahim Morsi, F. M. (2022). Relationship between Stress, Burnout, and Resilience among Emergency Department Nurses during COVID-19 Pandemic. *Egyptian Journal of Nursing and Health Sciences*, 3(1), 303-325.
- Bozdağ, F., & Ergün, N. (2020). Psychological resilience of healthcare professionals

during COVID-19 pandemic. *Psychological Reports*, 124(6), 2567-2586. <https://doi.org/10.1177/0033294120965477>.

Qin, L., Peng, J., Shu, M., Liao, X., Gong, H., Luo, B., & Chen, Y. (2023). The fully mediating role of psychological resilience between self-efficacy and mental health: Evidence from the study of college students during the COVID-19 pandemic. *Healthcare*, 11(3), 420. <https://doi.org/10.3390/healthcare11030420>.

Hassan Osman, Z., Farrag Hamza, E., Amin, F., Salama, L., & Eladham, N. (2023).

Association between health-related quality of life, mental health and academic performance among adolescent students. *Tanta Scientific Nursing Journal*, 30(3), 67-82.

<https://doi.org/10.21608/tsnj.2023.315136>.

Li, F., Luo, S., Mu, W., Li, Y., Ye, L., Zheng, X., Xu, B., Ding, Y., Ling, P., Zhou, M., & Chen, X. (2021). Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic. *BMC Psychiatry*, 21(1). <https://doi.org/10.1186/s12888-020-03012-1>.