Burnout in Stroke Patients Pre-and Post-COVID-19 Pandemic

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ABSTRACT

Background: Since the first appearance of COVID-19 numerous complications have been reported particularly within 1.48% of the population suffering from stroke. Maintaining positive mental health is crucial to modulate COVID-19 impacts involving burnout, depression, and anxiety.

Objective: The aim of the current study was to investigate the consequences of the COVID-19 pandemic in Egypt on the level of burnout in stroke cases.

Patients and methods: A total of 100 Egyptian stroke male and female cases participated in the study. Participants aged between 34 and 70 years old and their cognition score was >26 according to Montreal Cognitive Assessment (MOCA) scale. The Malach-Pines tool was used to measure burnout.

Results: The mean scores of all items of the burnout scale increased significantly post COVID-19 in comparison with that of pre COVID-19 (P<0.001). The highest score was for "I've had it" with a mean score of 4.17 (SD 1.08) pre COVID-19, which increased significantly post COVID-19 to 5.98 (SD 0.97). The score of "I've had it" also increased significantly post COVID-19 in both age classes, duration of illness classes, and in females and males (P<0.001), also increase significantly post COVID-19 compared with that pre COVID-19 in subjects with high, medium, and low educational levels (P<0.001).

Conclusion: Lockdown procedures related to the COVID-19 pandemic had a major impact on stroke cases whose post COVID-19 burnout levels had increased and led to worse management outcomes.

Keywords: Post COVID-19, Burnout, Stroke, Cross sectional study, Cairo University, Egypt.

INTRODUCTION

Since the first appearance of COVID-19, there are new insights into various clinical presentations beyond the acute respiratory illness, including cardiovascular and cerebrovascular complications in particular stroke [1].

Stroke has been defined as a non-traumatic, focal vascular-induced injury with rapid onset of symptoms of focal neurological dysfunction that affects nearly 13.7 million new strokes reported every three years [2]. It typically results in permanent damage and is reported as the third largest cause of disability and dementia [3].

Worldwide recorded stroke hospital visits incidence during the COVID-19 pandemic has decreased [4], which represents around 3.3% of all stroke admissions, which declined by 11.5% compared to immediately before [5].

The COVID-19 pandemic has had a substantial impact on stroke patients who exhibit extreme anxiety and possible infection anxieties while visiting hospitals, as well as phobia, somatization, and despair [6]. Additionally, neurological abnormalities slow the healing process and lower mental quality of life (QOL), especially in individuals with a history of stroke [7]. Recent reports have linked certain behaviours to detrimental effects on mental health and well-being, including stress, anxiety, or depression symptoms, as well as loneliness [8]. There was a marked shift in rehabilitation resources during the COVID-19 epidemic without taking into account the fundamental need for stroke cases who were released with little to no rehabilitation [9].

Low motivation and productivity, as well as mental and behavioural issues, are all associated with burnout [10]. Burnout and stress recently displayed a strong beneficial association during the COVID-19 epidemic [11]. Therefore, the aim of the current study was to investigate the consequences of the COVID-19 pandemic in Egypt on the level of burnout in stroke cases.

PATIENTS AND METHODS

A cross sectional study was conducted between October 2022 and January 2023. A total of 100 Egyptian stroke male and female cases participated in the study. They were diagnosed following a thorough clinical examination, brain MRI and computed tomography (CT), and sent to a physical therapy outpatient clinic.

Inclusion criteria were medically stable stroke patients living in Egypt within the time frame of pre- and post-COVID-19, both genders, ages ranged

from 34 to 70 years old, and cognition score >26 according to Montreal Cognitive Assessment (MOCA) scale.

Exclusion criteria were alcoholism, drug misuse, mental illnesses, or current treatments for mental illnesses, such as benzodiazepines, antipsychotics, mood stabilizers, antiepileptics, and other medications that could affect the assessment.
A quick interview was done to verify that the patients fit the research requirements and to gather demographic data.

Sample size:
G*POWER statistical software (version 3.1.9.2) is utilized to calculate the sample size for the observational one sample pre-post study.
 The calculation revealed that the needed sample size for this study was 100 stroke cases based on information about the WHOQoL-BREF score that was derived by **Thanakiatpinyo et al.** [12], who discovered a marked disparity in the WHOQoL-BREF score among people with stroke. The effect size was calculated with a value of 0.29, power 80%, and α=0.05.

Measurement Instrument:
Malach-Pines is a frequently used self-report burnout indicator. The current study describes the 10-item, condensed version of the BM (BMS), which was created in response to the demand from researchers and practitioners for a simple-to-use tool requiring less questionnaire space. A spectrum of academic work across various nations and cultures has examined its reliability and validity **(Malach-Pines, 2005).**

Procedures:
Adopting Malach-Pines, burnout was gauged carefully. Cases were instructed to thoroughly read each of the questionnaire's 10 questions before responding on a seven-point like scale (from 1 for never to 7 for always) to express how they felt about their illness. A simple arithmetic mean of the aforementioned 10 items yields the calculated burnout score. Up to a score of 2.4 denotes very little burnout; 2.5 to 3.4, dangerous symptoms of burnout; 3.5 to 4.4-, burnout; and 4.5 to 5.4-, a very serious burnout issue. Any score greater than 5.5 necessitates prompt expert assistance [13].

Ethical Approval:
The study was approved by the Physical Therapy Research Ethical Committee at Cairo University in Egypt (P.T. REC/012/004096). An informed written consent outlining the details of the study's methods and goals was signed by the participating cases. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical Analysis
The collected data were introduced and statistically analyzed by utilizing the Statistical Package for Social Sciences (SPSS) version 25 for windows. In order to portray the cases' demographic information and the data that was gathered, Qualitative data were defined as numbers and percentages, and quantitative data were described as mean and standard deviation (SD). A paired t-test was employed for contrasting the burnout score before and after the COVID-19. The burnout score was compared between age and illness duration classes, as well as between genders, using an unpaired t-test. To compare the purpose of comparing the burnout score across educational levels, one-way ANOVA was utilized. P value ≤0.05 was considered to be statistically significant.

RESULTS
The mean age of subjects was 56.33 years with a minimum of 34 and a maximum of 70 years. The mean duration of illness was 7.07 (SD 2.57) years with a minimum of 2 and a maximum of 13 years **(Table 1).**

Table (1): General characteristics of participants.

Variable	Mean	SD
Age (years)	56.33	9.45
Duration of illness	7.07	2.57
Variable	**Number**	**%**
Age Classes		
34-57 years	50	50
58-70 years	50	50
Duration of illness classes		
2-6 years	55	55
7-13 years	45	45
Sex distribution		
Female	43	43
Male	57	57
Education		
High	35	35
Medium	37	37
Low	28	28

SD: Standard deviation.

The mean overall score of burnout score increased markedly post COVID-19. The mean scores of all items of the burnout scale of subjects increased significantly post COVID-19 in comparison to that pre COVID-19 (P<0.001) **(Table 2).**

Table (2): Comparison of mean scores of burnout scale pre- and post- COVID-19.

Burnout Scale score	Pre COVID-19 Mean ± SD	Post COVID-19 Mean ± SD	MD	t-value	P-value
Tired	3.94 ± 0.86	5.84 ± 1.04	-1.9	-23.44	**0.001**
Disappointed with people	3.67 ± 1.21	5.57 ± 1.36	-1.9	-14.45	**0.001**
Hopeless	3.60 ± 0.98	5.22 ± 0.96	-1.62	-18.79	**0.001**
Trapped	3.59 ± 1.42	5.73 ± 1.09	-2.14	-15.95	**0.001**
Helpless	4.01 ± 1.09	5.87 ± 1.01	-1.86	-18.32	**0.001**
Depressed	4.01 ± 1.16	5.96 ± 1.13	-1.95	-20.59	**0.001**
Physically weak/ Sickly	4.06 ± 0.93	5.95 ± 1.02	-1.89	-23.54	**0.001**
Worthless/ Like a failure	3.43 ± 1.30	5.37 ± 1.08	-1.94	-15.18	**0.001**
Difficulties sleeping	3.77 ± 1.14	5.75 ± 1.23	-1.98	-17.83	**0.001**
"I`ve had it"	4.17 ± 1.08	5.98 ± 0.97	-1.81	-20.21	**0.001**
Overall score	**4.64 ± 1.06**	**6.91 ± 1.08**	**-2.27**	**-23.36**	0.001

SD: standard deviation; MD: mean differences; P value: probability level.

Burnout increased noticeably post COVID-19 compared with that pre COVID-19 in both age classes, duration of illness classes, and in females and males (P<0.001). There was a crystal-clear increase in burnout overall score pre and post COVID-19 in cases with 2-6 years duration of illness in comparison to others with 7-10 years duration of illness (P<0.01) **(Table 3).**

Table (3): Comparison of overall score of burnout scale pre- and post- COVID-19 between age groups, duration of illness classes, and both genders.

The overall Burnout Scale score	Pre COVID-19 Mean ± SD	Post COVID-19 Mean ± SD	MD	t-value	P-value
Age					
34-57 years	4.49 ± 1.09	6.81 ± 1.27	-2.32	-17.49	**0.001**
58-70 years	4.77 ± 1.01	7.01 ± 0.83	-2.24	-15.52	**0.001**
MD	-0.28	-0.2			
t-value	-1.31	-0.94		---	
P value	0.19	0.34			
Duration of illness					
2-6 years	4.89 ± 0.96	7.22 ± 0.82	-2.33	-18.83	**0.001**
7-10 years	4.32±1.08	6.53 ± 1.22	-2.21	-14.18	**0.001**
MD	0.57	0.69			
t-value	2.8	3.3		---	
P value	0.006	0.001			
Sex					
Female	4.36 ± 1.01	6.73 ± 1.22	-2.37	-20.31	**0.001**
Male	4.84 ± 1.06	7.04 ± 0.94	-2.2	-15.02	**0.001**
MD	-0.48	-0.31			
t-value	-2.27	-1.41		---	
P value	**0.02**	**0.16**			

SD: standard deviation; MD: mean differences; P value: probability level.

There was no marked disparity in overall burnout scores pre and post COVID-19 between different educational levels (P>0.05). Overall Burnout score increased markedly post COVID-19 compared with that pre COVID-19 in cases with high, medium, and low educational levels (P<0.001) as highlighted in **Table (4)**.

Table (4): Comparison of overall burnout score pre-and post COVID-19 between different educational levels

Burnout Score	High Mean ± SD	Medium Mean ± SD	Low Mean ± SD	F-value	P value
Pre COVID-19	4.69 ± 1.13	4.36 ± 0.54	4.92 ± 1.37	2.43	**0.09**
Post COVID-19	6.83 ± 1.09	6.96 ± 0.77	6.95 ± 1.38	0.14	**0.86**
MD	-2.14	-2.6	-2.02		
t-value	-12.57	-18.03	-11.09	**---**	
P value	**0.001**	**0.001**	**0.0001**		

SD: standard deviation; MD: mean differences; P value: probability level.

DISCUSSION

The outcomes of this academic work demonstrated that all scores on the burnout scale increased markedly post COVID-19 in stroke cases. Moreover, it has been found that the male gender was a predisposing factor for burnout pre COVID-19 and the level of burnout differed markedly by the duration of the stroke.

Based on the study consequences, the COVID-19 pandemic in Egypt resulted in a very high incidence of burnout among stroke patients. The study's outcomes are in line with earlier research that found a rise in burnout among healthcare workers and carers during the COVID-19 epidemic [14]. People's daily lives, particularly those of stroke cases, have changed substantially as a result of the epidemic, leading to an increase in stress, worry, and burnout. Stroke cases were already coping with the effects of their disease, and the pandemic's additional stress has made their mental health even worse.

On one level, the conclusions of this study can be explained in light of prior reports describing the rapid deployment of medical personnel and hospital resources during the COVID-19 emergency, which inevitably results in serious impairment, particularly for stroke patients, and that there was a 15.3% weekly decrease in stroke presentation in 2020 compared to 2019 [15]. A recent study also found that 53% of stroke patients reported missing or delaying medical appointments because of ignorance or social isolation intended to stop the spread of COVID-19, raising concerns about the detrimental effects of excessive stress and exhaustion [16].

On another level, the outcomes of this study may also be based on the fact that stroke is a complex lesion with a wide range of etiologies that causes varying degrees of disability [17], and that the ability of stroke populations to carry out their ADLs is a crucial factor that is directly correlated to their psychological distress, also controlling the associated higher anxiety and depression symptoms [18].

Backhaus et al. [19] report that an intervention could change patients' maladaptive coping mechanisms during rehabilitation was supported by the significant increase in burnout pre and post COVID-19 of subjects with 2-6 years of illness duration compared with subjects with 7-13 years of illness. Training initiatives may hasten the process of coping with the effects of stroke and improve survivors' health-related quality of life.

Furthermore, the findings of the current study supported prior stated conclusions regarding the COVID-19 pandemic that has negative social, economic, and psychological effects including stress, anxiety, loneliness, depressive symptoms, and burnout. It also agreed with recent facts released about the COVID-19 mass influx that intuitively cause delays in stroke treatment, which is a measure of critical importance [20].

On the contrary other studies neglect COVID-19's negative impacts and had stated that stroke consequences in those who suffer from functional dependency and mainly impairments in activities of daily living and high levels of psychological (one-third) distress, even their caregivers [21].

In the same vein as the current findings, Due to restrictive measures put in place to stop the spread of COVID-19, periodic follow-up visits have been recommended globally and previously planned stroke rehabilitation has been scaled back in Italy [22]. As a result, telemedicine platforms were set up to enable patient visits, avoiding direct contact with operators and waiting areas [23].

CONCLUSION

COVID-19's pandemic-associated lockdown measures had significant effects on survivors of stroke and have raised significantly post COVID-19 burnout that resulted in poorer stroke management outcomes.

DECLARATIONS

- **Consent for publication:** I attest that all authors agreed to submit the work.
- **Availability of data and material:** Available
- **Competing interests:** None
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- **Conflicts of interest:** No conflicts of interest.

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