

Correlation between Psychological Effects of COVID-19 Pandemic and Care Burden among Parents of Attention Deficit Hyperactivity Children

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Abstract

Background: Parents of children with attention deficit hyperactivity disorder faced particular difficulties as a result of pandemic COVID 19. During the outbreak, those parents reported experiencing increased levels of stress, depression, anxiety, and burden. **Aim of study:** was to investigate Correlation between psychological effects of COVID-19 pandemic and care burden among parents of attention deficit hyperactivity children. **Design:** A descriptive correlational design was utilized to achieve the aim of study. **Setting:** This study was carried out in pediatric outpatient of psychiatric & mental health in Benha city. **Sample:** Purposive sample of 100 parents of children with ADHD. **Tools of data collection:** Three tools were utilized to collect data, **Tool (I):** structured interview questionnaire sheet to assess socio demographic of parents and their children. **Tool (II):** The Zarit burden interview scale. **Tool (III):** Depression, Anxiety and Stress Scales (DASS -21). **Results:** nearly half (48%) of the studied parents had severe psychological problems, more than one third (34.0 %) of them had moderate psychological problems, while more than half (56.0%) of the them had severe level of burden of care and more than one third (34.0%) of them had moderate level of burden of care. **Conclusion:** There was a statistically significant correlation between psychological effect of COVID-19 pandemic and care burden among studied parents. **Recommendations:** conducting psycho educational program to enhance coping with psychological effect of covid 19 pandemic and alleviating care burden for parents of children with ADHD.

Keywords: Attention deficit/hyperactivity disorder, care burden, COVID-19 & Psychological effects.

Introduction

Attention Deficit-Hyperactivity Disorder ADHD is a neurodevelopmental disorder characterized by severe and age-inappropriate levels of hyperactivity/impulsivity and inattention which affects children's ability to function and that are present in at least two areas of life for over 6 months. ADHD is one of the most frequent psychiatric disorders within child and adolescent psychiatry. Covid19 affects people's behavior, children with ADHD can seem restless, may have trouble concentrating and may act on impulse more than more than they were before the pandemic (Magnus et al., 2021).

Attention deficit hyperactivity disorder is a complex disorder that characterized by an ongoing pattern of inattention, hyperactivity and/or impulsivity that caused by multiple factors making it difficult to identify the exact causes. Genetic and environmental factors, and their interactions, are known to contribute to this disorder. Environmental factors include maternal smoking during pregnancy and duration of breastfeeding. In recent years, the results of several studies have indicated that lifestyle factors

including the number of hours spent sleeping or watching television may influence the onset of ADHD (National Institute of Mental Health, 2019).

In addition, ADHD children faced many problems during Covid 19 pandemic. ADHD children naturally have difficulty controlling their physical energy or hyperactivity and concentrating attention. They find it challenging to stay still and avoid touching objects that could spread an infection. Moreover, as a result of Covid 19 lockdown they become limited to one location, their hyperactivity and impulsivity rise, and it is more challenging for the parents to involve these kids in beneficial endeavors. Additionally, children have emotionally repressed feelings of discomfort which may act out or turn inward in the form of fear. Due to their lack of understanding and maturity to fully comprehend the significance of the current pandemic, they may feel alienated or alone (Liu et al., 2020).

In addition to that appearance of covid-19 caused heavy losses around the world and led to great changes in all aspects of life which affected

all people especially vulnerable groups such as children and people with ADHD. Disability is a large and complex challenge as it greatly limits the performance of daily life activities and the ability to integrate with individuals. Parents of children with ADHD often face daily challenges such as reduced resources and limited access to healthcare services are at higher risk of encountering further challenges in the pandemic outbreak which increase care burden (Masi , 2021).

Care burden can refer to symptoms and behavior of parents, as well as the physical or psychological effects of the illness on parents. Caring for ADHD children is a challenge for parents around the world. Parents were distressed, and the stigma associated with caring for these children was distressing. Parents perceive significant burden while caring for their children and use limited coping patterns to maintain a functional family life due to self-stigma and a lack of resources and public and financial support. The financial burden is an increase in costs for the family and society as a whole, in terms of private sessions, and treatment, especially price increases during COVID 19. The physical burden is hypertension, lack of free time, sleep, for rest problems and fatigue (Wong, 2021).

Moreover, these self-protective behaviors against COVID-19 are different from daily routines; some of them, such as social distancing, even violate the developmental needs of children. Therefore, it is difficult for children to adopt and maintain self-protective behaviors against COVID-19. Parents may also worry about the risk of their child contracting COVID-19 if their child shows no or low cooperation with the requirements during the COVID-19 pandemic (Wang ,2020).

In addition to physical health and safety issues resulting from COVID-19 the increased psychological concerns are prevalent in the form of increased levels of depression, anxiety and stress among ADHD children and their parents. Dealing with children with ADHD necessitates a great deal of patience and consistency on the part of parents. It's not easy dealing with a hyperactive child that struggles to stay focused, listen to parents, and follow instructions. It's no surprise that parents of children with ADHD are more controlling and critical of their children. Their

attention is frequently drawn to their child's erratic and impulsive behavior. Caregivers are constantly repeating their commands and become angry with their child's lack of response. Following that, caregivers use more verbal directives while seeking to modify their child's behavior, which is then followed by verbal reprimands. This is a familiar situation among parents of ADHD children (Gans ,2019).

Nurses are integral in care delivery and will be essential in recovery following the COVID-19 pandemic. The work of nursing will help identify and potentially minimize the inevitable impact of the pandemic and related health and social consequences on child mental health especially those with specific needs as children with ADHD. Psychiatric mental health nurse should make it easier for parents to find the information, parents need to clear up any misunderstandings and answer any concerns they may have about the usage of prescription ADHD medications (Henderson et al., 2020).

Moreover, access to credible information can help parents cope with their child's illness and reclaim control. It can also help parents feel more involved in their child's condition management, play an empowered role in treatment decisions, and reply to their child's queries while providing reassurance. Both in their parenting and in their decision-making and follow-up, parents require interdisciplinary support and supervision from the health service and employees at school and kindergarten. Therefore, it is critical for psychiatric mental health nurse to concentrate on the entire family during formulation of their work plans because early actions may benefit family members (Price et al ., 2019).

Significance of the study:

In children aged 5 to 19 years, the incidence rate of ADHD is around 7.2%, with boys being affected at a ratio of 2:1 to girls. In America, there are 5.4 million children between the ages of 2 and 17 who have an estimated 8.4% prevalence of ADHD. A study on the incidence of ADHD symptoms in a sample of Egyptian schoolchildren found that 20.9% of them had the disorder. Additionally, anxiety conduct and impulsive-hyperactive disorders all demonstrated a strong link with ADHD (Centers of Disease Control and prevention, 2020).

Additionally, the increased physical strain that results in musculoskeletal issues, tiredness, and fatigue may have a severe physical health impact on parents of children with ADHD. Due to the epidemic, parents had to provide more care for their kids, which came with additional duties and constrained access to medical and rehabilitation treatments. Moreover, because of others' ignorance of their requirements, parents of ADHD children may experience depression, anxiety, loneliness, and a decrease in communication. (Eminel, 2021).

Aim of the Study

- This study aimed to investigate the correlation between psychological effects of COVID-19 pandemic and care burden among parents of children with attention deficit hyperactivity disorder

Research Question:

What is the correlation between psychological effects of COVID-19 pandemic and care burden among parents of attention deficit hyperactivity children?

Subject and Methods

Research design

A descriptive correlational design was utilized to fulfill the aim of this research. Descriptive correlational design is a type of research design tries to explain the relationship between two or more variables without making any claims about cause and effect.

Research setting

The research was conducted at the psychiatric outpatient clinic for children with ADHD, at Benha psychiatric health and addiction hospital, Qalubya Governorate, which is affiliated to general secretariate. Psychiatric and mental health hospital, had 6 inpatient departments (5 men departments, 1 female department) and (addiction department), with capacity of 219 beds serving the patient with psychiatric and mental disorder. The psychiatric outpatient clinic for children is located in the first floor of the hospital. it serves all child psychiatric disorders for treatment and follow up. It works one day (Monday) / week. The outpatient included a bed for child examination, office for

doctor-parent interview for taking history and a gear containing emergency psychiatric drugs.

Sample Size

Based on total number of parents attending to the outpatient in the last year were 134, sample size has been calculated using the following equation: $n = (z^2 \times p \times q) / D^2$ at power 80% and CI 95%, so the sample of the study was purposive sample of (100) parents of ADHD children from the above mentioned setting and fulfilled the following inclusion criteria:

Inclusion criteria

- 1- Parents whose children diagnosed with ADHD
- 2- Parents having children aged between 6-12 years old.
- 3- Child lived with one or both parents.
- 4- Willingness to participate in the research.
- 5- Parents who were free from any psychiatric or mental disorders.

Tools of data collection:

The data was collected using the following tools:

Tool (I): Structured interview questionnaire:

It was developed by the researchers to elicit data about characteristics of parents and children, and it consisted of two parts:-

Part I: Socio-demographic data of the studied parents: It was used to elicit data about socio demographic characteristics of parents which included: 7 items such as age, sex, marital status, educational level, occupation, income, residence.

Part II: Socio-demographic & clinical data of the children: It was used to elicit data about socio demographic characteristics of children which included: age, sex, educational level, birth order.

Tool Two: Zarit burden interview scale:

This scale was originally developed by (Zarit et al., 1985), it used for assessment of level of burden of care among parents of children. It was translated into Arabic by the researchers. This scale consisted of 22 items assessed on a five-point Likert scale, ranged from 0=Never, 1=Rarely, 2=Sometimes, 3=Quite frequently, 4=nearly always.

Scoring system:

Items scores are added up to give a total score ranged from (0 to 88), with higher scores indicated greater burden. Interpretation of score included the following: -

- 22-41= mild burden of care.
- 42-60= moderate burden of care.
- 61-88= Severe burden of care.

Tool Three: Depression, Anxiety and Stress Scales (DASS -21)

This scale was originally developed by **Lovibond & Lovibond, (1995)**. It was consisted of three self-report scales designed to measure the emotional states of depression, anxiety and stress. It was translated into Arabic version by the researchers. Each of three DASS-21 scales contained of 7 items , items number (1, 2, 3, 4, 5,6, 7) to assess level of depression, Items number (8, 9, 10, 11, 12, 13, 14) to assess level of Anxiety and items number (15, 16, 17, 18,19, 20, 21) to assess level of stress .The scale was rated from (0 to 3) as follows: (0) did not applied to me at all,(1) applied to me some degree or some of the time,(2) applied to me to considerable degree,(3) applied to me very much or most of the time. The scale was rated items scores are added up to give a total score ranging from (1 to 63).Interpretation of total score of the scale include the following:

- Mild = 1-20.
- Moderate =21-41.
- Severe =42-63.

Content validity:

Arabic translation and retranslation to English was done by researchers for tools of the research and tested for their translation. Validity of tools was done by a group of 3 experts in psychiatric and mental health nursing field at faculty of nursing, to check the relevancy, clarity, comprehensiveness and applicability of the questions. According to their opinion, no modifications were done.

Reliability of the research tools

Tool	Alpha Cronbach
The Zarit burden interview scale	.802
Depression, Anxiety and Stress Scale	.982

Pilot study:

Before starting of data collection, pilot study was carried out after the development of the tools and before embarking the field work on 10% (10) parents of the total sample to ascertain the clarity and applicability of the research tools and identifying time needed for each parent to fill the tools and to find out any problems that might interfere with data collection. According to the result of pilot research no modification was done. Therefore, the pilot research sample was included in the total sample.

Field work

Before starting data collection official permissions were obtained from The Dean of the faculty of nursing to the director of Benha psychiatric health and addiction Hospital then to the director of the general secretariate of mental health at Abbassia in Egypt and the other authorized personnel from various settings requesting their cooperation and permission to conduct the research. The researchers started to collect data by introducing themselves to the parents then explained the aim of the research to every one of them.

- A brief description for the purpose of the research and the type of questionnaires required to fill was given to each parent.
- Data collection was done through interviewing each parent individually in out-patient psychiatric clinic for children.
- The researchers collected data from parents two day/ week every (Monday& Thursday) from 9 A.m. to 12 P.M. The researchers collected data from approximately (4) parents per day equal 20/month. Each interview lasted for 15-20 minutes, depending on the response of the parents. This process of data collection took 3months and week from the beginning of January 2021 to the first week of April 2021.

Administrative approval:

Before taking an official permission to carry out the research from the director of Psychiatric Health and addiction Hospital at Benha city before, the aim of the research was explained to all administrative personnel to get their assistance and cooperation during

conduction of the research and collecting data without any resistance.

Ethical considerations:

Before conduction of the research, the researchers clarified the purpose and significance of the research to all the studied parents, and assured them about confidentiality of the collected data. All the studied parents were informed that the participation in the research was voluntary and no name was to be included in the questionnaire sheet. Studied parents were informed that the content of the tools was used for research purpose only, and that they had the right to refuse to participate or withdraw from the research at any time of data collection without any consequences. Moreover, an informed written consent for participation in the research was obtained from each parent before data collection.

Statistical analysis:

After completion of data collection, the collected data were organized, tabulated, statistically analyzed by using Statistical Package of Social Science (SPSS) version 21. Data were presented using descriptive statistics in form of number and percentage, mean, standard division, and Qualitative variables were comparing using the chi- square test. For quantitative data, Pearson correlation coefficient (r) was used for correlation analysis and degree of significance was identified. A statistically significant difference was considered if p -value was < 0.05 . A highly statistically significant difference was considered if p -value was < 0.001 .

Results

Table (1) shows that the mean age of the studied parents was 37 ± 10.77 . Regarding sex, it revealed that nearly three quarters (72.0%) of the studied parents were females. Regarding for marital status and educational level, the majority of them (86.0%) were married and more than one third of them (36.0%, 34.0%) had basic and intermediate educational level respectively. Regarding occupation, income and residence more than half of the studied parents (52%) were free workers, the majority of them (90%) had not enough income and nearly two thirds of them (64.0%) lived in rural areas.

Table (2) shows that mean age of the children was 10 ± 2.24 year, most of them (80.0%) were males, all of them (100.0%) had primary education, more than half of them (65.0%) were the first child in birth order.

Figure (1) shows that more than half (56.0%) of the studied parents had severe level of burden of care, more than one third (34.0%) of studied parents had moderate level of burden of care and one tenth (10.0%) of the studied parents had mild level burden of care.

Figure (2) shows that less than half (43.0%) of the studied parents had severe level of depression, while more than one third (39.0%) of them had moderate level of depression and less than one quarter (17.0 %) of them had mild level of depression.

Figure (3) shows that half (50%) of the studied parents had severe anxiety level, one third (30%) of them had moderate anxiety level and less than one quarter (20%) of them had mild anxiety level.

Figure (4) shows that more than half (53.0%) of the studied parents had severe level of stress, one third (33.0 %) of the studied parents had moderate stress level and less than of one quarter (14.0%) of them had mild stress level.

Figure (5) shows that nearly half (48%) of the studied parents had severe psychological problems, more than one third (34.0 %) of them had moderate psychological problems, while less than one quarter (18%) of the studied parents had mild psychological problems .

Table (3) illustrates that, there was a highly statistically significant relation between total level of burden of care among the studied parents regarding their age, sex and residence. Moreover, there was a statistically significant relation between total level of burden of care among the studied parents regarding their marital status, educational level, occupation and income.

Table (4) illustrates that, there was a highly statistically significant relation between total level of psychological problems among the studied parents and their age, educational level, income and residence. Moreover, there

was a statistically significant relation between total psychological problems among the studied parents and their marital status and occupation. While there was no statistically significant relation between total level of psychological problems and sex among the studied parents.

Table (5) illustrates that, there was a highly statistically significant correlation between total burden of care and parents' depression and stress at (p-value= 0.004&.002), while there was no statistically significant correlation between total burden of care and parents' anxiety.

Table (1): Socio-demographic characteristics of the studied parents (n=100)

Socio-demographic characteristics	No.	%
Age (years)		
20<30 year	44	44.0
30 <40 year	18	18.0
40 <50 year	10	10.0
50 year and more	28	28.0
Mean ± SD	39 ± 10.77	
Sex		
Male	28	28.0
Female	72	72.0
Marital status		
Married	86	86.0
Widowed	10	10.0
Divorced	4	4.0
Educational level		
Illiterate	5	5.0
Read and write	17	17.0
Basic education	36	36.0
Intermediate	34	34.0
University education	6	6.0
Post graduate	2	2.0
Occupation		
Free work	52	52.0
Employee	48	48.0
Income		
Not enough	90	90.0
Enough	5	5.0
Enough and save	5	5.0
Residence		
Rural	64	64.0
Urban	36	46.0

Table (2): Socio-demographic characteristics of the studied children (n=100)

Socio-demographic characteristics	No.	%
Age (years)		
6 -<10 year	75	75.0
10 -12 year	25	25.0
Mean ± SD	10 ± 2.24	
Sex		
Male	80	80.0
Female	20	20.0
Educational level		
Primary Education	100	100.0
Birth order of child		
First	65	65.0
Second	27	27.0
Final	8	8.0

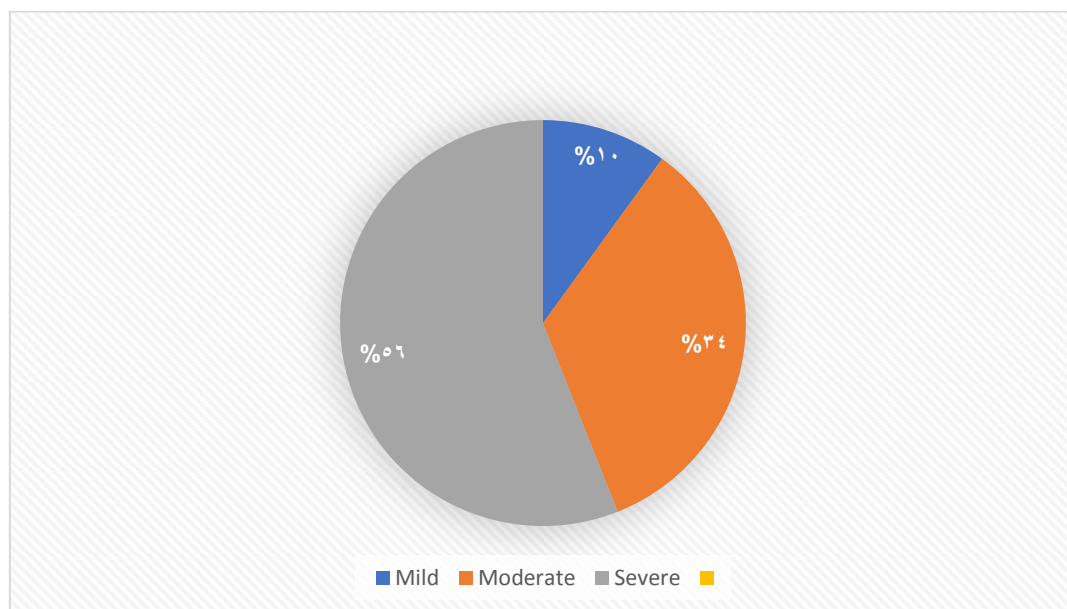


Figure (1): Total level of burden of care among the studied parents (n=100).

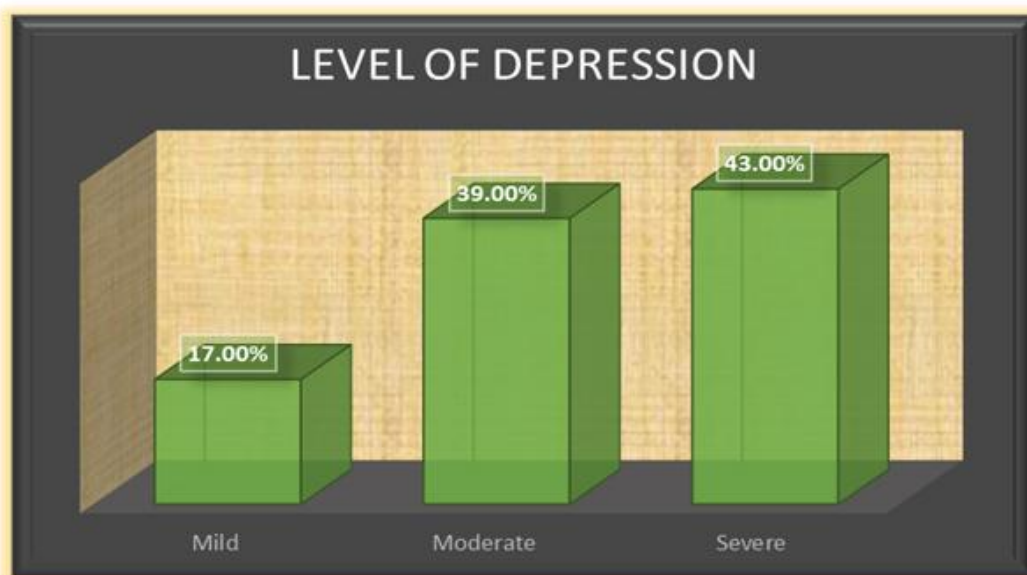


Figure (2): Total level of depression among the studied parents (n=100).

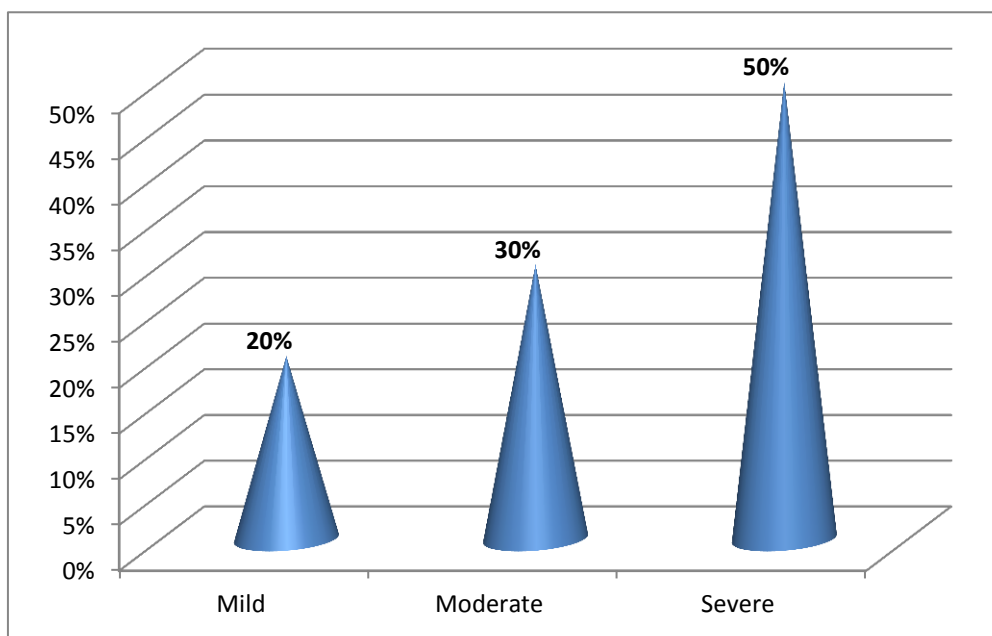


Figure (3): Total level of anxiety among the studied parents (n=100).

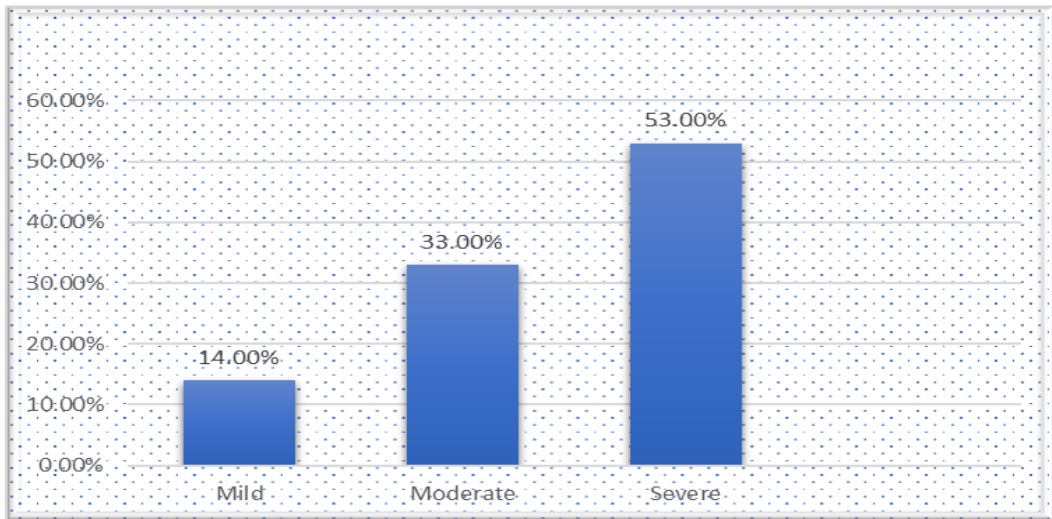


Figure (4): Total level of stress among the studied parents (n=100).

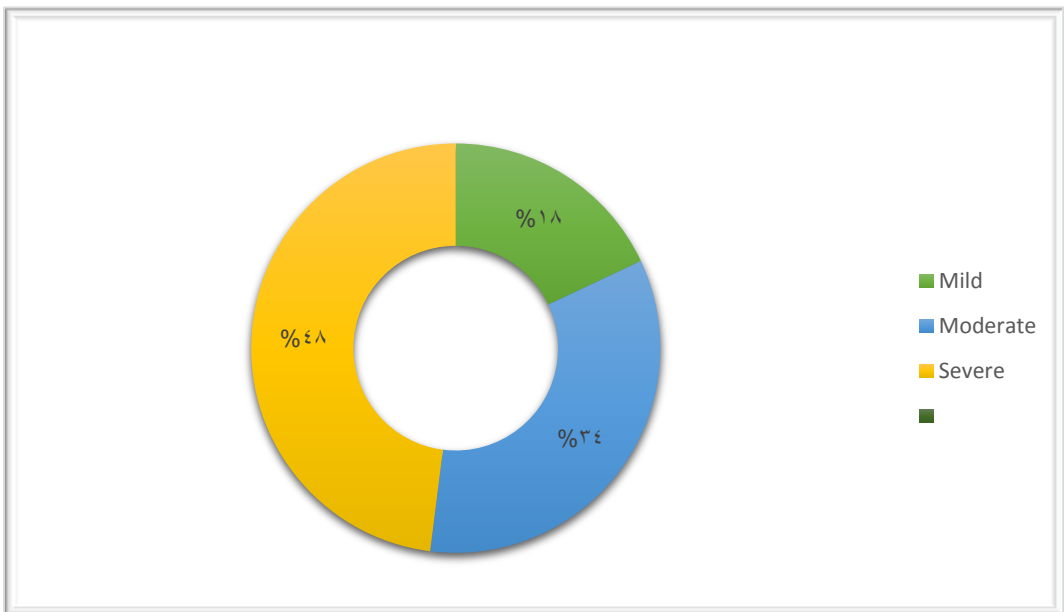


Figure (5): Total level of psychological problems among the studied parents (n=100).

Table (3): Relation between socio-demographic characteristics of the studied parents and their total level of burden of care (n=100).

Socio-demographic characteristics		Mild (n=10)		Moderate (n=34)		Severe (n=56)		X ²	P-Value
Age (years)	20<30 year	0	00.0	17	50.0	27	48.3	8.820	.005**
	30 <40 year	0	00.0	6	17.6	12	21.4		
	40 <50 year	2	20.0	2	5.9	6	10.7		
	50 year and more	8	80.0	9	26.5	11	19.6		
Sex	Male	2	20.0	8	23.5	18	32.1	22.209	.000**
	Female	8	80.0	26	76.5	38	67.9		
Marital status	Married	5	50.0	29	58.3	52	92.9	25.935	.032*
	Widowed	4	40.0	3	8.8	3	5.3		
	Divorced	1	10.0	2	5.9	1	1.8		
Educational level	Illiterate	0	0.0	0	0.0	5	8.9	13.562	.050*
	Read and write	2	20.0	5	14.7	10	17.8		
	Basic education	2	20.0	14	41.1	20	35.7		
	Intermediate	3	30.0	10	29.4	21	37.5		
	University graduate	3	30.0	3	8.8	0	0.00		
	Post graduate	0	0.0	2	5.9	0	0.00		
Occupation	Free work	6	60.0	20	58.8	26	46.4	5.420	.017*
	Employee	4	40.0	14	41.1	30	53.6		
Income	Not enough	8	80.0	32	94.0	50	89.3	6.935	.042*
	Enough	1	10.0	1	3.0	3	5.3		
	Enough and save	1	10.0	1	3.0	3	5.3		
Residence	Rural	8	80.0	15	44.1	41	73.2	2.831	0.004**
	Urban	2	20.0	19	55.9	15	26.7		

(*) Statistically significant at p<0.05.

(**) highly statistically significant at p<0.05.

Table (4): Relations between socio-demographic characteristics of the studied parents and their total level of psychological problems (n=100).

Socio-demographic characteristics		Mild (n= 18)		Moderate (n= 34)		Severe (n= 48)		X ²	P-Value
Age (years)	20<30 year	6	33.3	16	47.0	22	45.8	525.432	.001**
	30 <40 year	0	0.00	10	29.4	8	16.7		
	40 <50 year	6	33.3	4	11.8	0	0.00		
	50 year and more	6	33.3	4	11.8	18	37.5		
Sex	Male	8	44.4	8	23.5	12	25.0	6.743	.401
	Female	10	55.6	26	76.5	36	75.0		
Marital status	Married	15	83.3	30	88.2	41	85.4	26.935	.022*
	Widowed	2	11.1	3	8.8	5	10.4		
	Divorced	1	5.6	1	3.0	2	4.2		
Educational level	Illiterate	1	5.6	1	3.0	3	6.25	22.831	0.003**
	Read and write	5	27.8	7	20.6	5	10.4		
	Basic education	6	33.3	10	29.4	20	20.8		
	Intermediate	6	33.3	8	23.5	20	20.8		
	University graduate	0	0.00	6	17.6	0	0.00		
	Post graduate	0	0.00	2	5.9	0	0.00		
Occupation	Free work	10	55.6	23	67.6	19	39.6	4.93	.032*
	Employee	8	44.4	11	42.4	29	60.4		
Income	Not enough	13	72.2	30	88.2	47	98.0	30.831	0.004**
	Enough	3	16.7	1	3.0	1	2.0		
	Enough and save	2	11.1	3	8.8	0	0.00		
Residence	Rural	12	66.7	25	73.5	27	56.2	8.231	0.005**
	Urban	6	33.3	9	26.5	21	43.8		

(*) Statistically significant at p<0.05.

(**) highly statistically significant at p<0.05.

Table (5): Correlation between total burden of care and psychological problems subscales (n=100).

	Psychological problems subscales					
	Depression		Anxiety		Stress	
Total Burden of care	.258	.004**	.043	.638	.150	.002**

(*) statistically significant correlation at P-value <0.05

(**) Highly statistically significant correlation at P-value <0.01

Discussion

The results of this research clarifies and provide understanding of the effect of COVID 19 pandemic on psychological problems and burden of care among parents of ADHD children and these results supported by results of studies from before and after COVID 19 outbreak.

According to the results of this study, nearly half of the parents who were subjected to it were between the ages of 20 and 30. Nearly three-quarters of them were women, the majority of them were married, and more than one third of them had basic and intermediate education. Additionally, more than half of them were free workers, the majority of them did not make enough money, and nearly two thirds of them lived in rural areas.

Concerning socio-demographic characteristics of the studied children this study concluded that three quarters of the children under study ranged between the ages of 6 and 10, most of them were males, all had primary education and more than half were the first child in their birth order.

Regarding the total level of burden of care among the studied parents the current study showed that more than half of the studied parents had severe level of burden of care, more than one third of them had moderate level of burden of care and one tenth of them had mild level burden of care. According to the researchers, this outcome may be related to the COVID 19 pandemic, which raised the parents' burden of care due to their inability to access various services to assist them in caring for their children during the epidemic and an increase in their levels of anxiety and depression. Furthermore, the majority of parents in this study had children who were still too young to be independent, which added to their caregiving responsibilities.

Additionally, the researcher viewed that parents in this study had increased level of caregiving burden during covid 19 because of the

inability to teach their children at home without help of experienced teachers. Moreover, burden of care among parents of children with ADHD increased during covid 19 pandemic due to lack of access to recreational places and sports to reduce over activity among their children.

These results came in same line with those of (Lovino et al., 2021) who concluded that parents of children with ADHD continued to report significantly higher levels of caregiver burden compared to parents of children without ADHD because of decreased opportunities to engage in self-care. In addition to this (Beach et al., 2021) reported in their study that, challenges of caregiving were exacerbated by the COVID-19 pandemic and family parents reported increased duties, burdens, and resulting adverse health, psychosocial, and financial outcomes.

Moreover, these findings were in line with those of (Alnakhli et al., 2020), who found in their study that almost half of their studied parents had severe to moderate level of caregiving burden and concluded that burden of care is highly common among parents of ADHD children. Moreover, this study findings were consistent with (Wong & Wong, 2021), who found that parents of ADHD children had increased level of burden of care in many ways social, academic and financial.

However, these findings were at odds with those of (Mostafavi et al., 2020), who did their research prior to the pandemic and came to the conclusion that a minority of parents experienced severe burden and that almost half of them experienced medium burden. Similar to how (Al-Balushi et al., 2019) discovered that more than two thirds of the examined sample had no burden, these results were in conflict with their findings.

According to the study's findings on the overall depression level among the studied parents, less than half of the studied parents had severe level of depression, while more than third of them had moderate level of depression and less

than quarter of them had mild level of depression. This could be as a result of the fact that during COVID 19, the burden of care for parents of children with ADHD climbed to a high degree, their inability to get care and fear of infection all contributed to a rise in depression.

This result, which was corroborated by (Paruk & Ramdhial, 2018), revealed that about half of parents suffered from depression. However, these results were at contrast with those of (Elhadad, 2017), who came to the conclusion that the majority of the parents under research did not suffer from depression.

On the basis of the overall level of anxiety among the parents, the study's findings revealed that half of the studied parents had severe anxiety level, one third of them had moderate anxiety level and less than one quarter of them had mild anxiety level. The researcher claims that as more is learned about children and COVID-19 and as parents struggle to control their ADHD children's impulsivity and inattention to rules, which may increase their vulnerability to infection, parents' concerns about the spread of infection during the pandemic have grown, which in turn increased their anxiety.

These results were consistent with those of (Hammuda et al., 2019), who discovered that more than half of their sample under analysis displayed extreme anxiety. Additionally, this outcome was in line with (Elbaseta et al., 2021), who found that more than two thirds of parents had anxiety diagnoses, with nearly a third having moderate anxiety. Additionally, these findings were in line with those of (Paruk, & Ramdhial, 2018), who demonstrated in their study that more than half of the analyzed sample had experienced feelings of anxiety. These findings, however, contrasted sharply with those of (Bernabe & Mariano, 2019), who found that more than two-thirds of parents did not experience any anxiety, while a minority reported moderate to severe anxiety.

In terms of the overall stress levels of the studied parents, the findings of this study revealed that more than half of them had severe levels of stress, a third experienced moderate levels, and less than quarter experienced mild levels. According to the researchers, the fact that they couldn't guide or manage their kids, especially

when COVID-19 was present, causes tremendous stress in the majority of parents.

These results conflicted with those of (Bernabe & Mariano, 2019), who asserted that more than half of the parents in their study reported no stress, more than a third reported mild stress, and less than a quarter reported moderate stress.

Concerning the total psychological problems level among the studied parents the current study showed that, nearly half of the studied parents had severe psychological problems, more than one third of them had moderate psychological problems, while less than one quarter of the studied parents had mild psychological problems.

From the researchers' point of view, this result may be due to increased burden and responsibility on parents of ADHD children most of time especially during COVID 19 outbreak which raises the level of psychological distress globally. Moreover, this may be due to the impacts of the pandemic itself in increasing psychological problems as a result of fear from infection transmission and lack of ability of ADHD parents to reach facilities that provide help to care for their children.

This result was supported by (Chafouleas & Lovino, 2021) who reached through their study to the conclusion that during the COVID 19 outbreak, parents of ADHD children reported considerably greater levels of burden, depression, anxiety, and stress. This finding was further reinforced by (Yousef et al., 2021) who demonstrated that COVID 19 affected mothers of children with ADHD in their study and that more than half of them experienced depressive symptoms, nearly two thirds experienced anxiety symptoms, and more than half experienced stress symptoms.

Regarding the relationship between socio-demographic characteristics of the studied parents and total burden of care level the study results indicated that, there was a highly statistically significant relation between total level of burden of care among the studied parents regarding their age, sex and residence. Moreover, there was a statistically significant relation between total level of burden of care among the studied parents regarding their marital status, educational level, occupation and income.

From the viewpoint of the researchers, these results may be due to the facts that single parents especially mothers need more caregiving help which increased their burden and suffering especially during COVID 19, and parents with lower educational level and from lower socioeconomic groups had a greater burden which increased as a result of loss of work during the pandemic. Moreover, the younger the parents the more the need for caregiving help.

These results were consistent with those of (Mostafavi et al. 2020), who demonstrated in their research from before the pandemic how the level of family collaboration and household income might have a substantial impact on the average caregiver load. Additionally, these findings were in line with those of (Al-Balushi et al., 2019), who reported in their study which conducted before COVID 19 that need for assistance from others, lower income, and occupation all played a bigger statistically significant impact in raising the burden of care.

Additionally, these results supported those of (Alnakhli et al., 2020), who conducted study before COVID 19 and found a strong relationship between sex and caregiving strain in their study. In the other hand, these study results were odd with (Adeosun et al., 2017), who revealed at their study that there was no statistically significant association between level of parents' burden and sex, marital status and educational level.

Regarding to the relationship between socio-demographic characteristics of parents and total psychological problems the current findings illustrated that, there was a highly statistically significant relation between total level of psychological problems among the studied parents and their age, educational level, income and residence. Moreover, there was a statistically significant relation between total psychological problems among the studied parents and their marital status and occupation. While there was no statistically significant relation between total level of psychological problems and sex among the studied parents.

From the researchers' point of view, this could be due to that lower education levels, low income and loss of employment as a result of the COVID 19 pandemic significantly influenced level of anxiety, depression and stress among parents during the pandemic. Moreover

psychological problems increased significantly among parents who had more burdens and need more help from others and those from rural areas which farthest from facilities provide help in education and health care. Additionally, stress and anxiety levels increased among female parents because of their worries about infection transmission to them and their children. The results are inconsistent with those of (Elbaseta et al., 2021), who found a statistically significant relationship between mothers' psychological discomfort and exclusively their place of residence in their study.

Concerning the correlation between total burden of care and psychological problems, the current study illustrated that there was a highly statistically significant correlation between total burden of care and parents' depression and stress, this means when burden of parents increases, depression and stress increase, while there is no statistically significant correlation between total burden of care and parents' anxiety.

According to the researchers, these findings could be the result of parents' inability to perform their usual obligations to their children and other family members as a result of the burden of care. It results from an increasing care burden, physical exhaustion, and a lack of help to deal with children's issues.

Moreover, increased burden of parents then feel helpless and felt bad parents were in turn increase level of stress and depression. These study findings were consistent with (Chafouleas & Lovino, 2021) who reached to the conclusion that COVID 19 pandemic increased the level of caregiver's burden which in turn exaggerated severity of stress and depressive symptoms among parents during the pandemic.

Conclusion:

Based on the findings of the current research, it can be concluded that:

The covid-19 pandemic was causing a number of psychological effects for many people particularly parents of children with attention deficit hyperactivity disorder who may be vulnerable to stress, anxiety and depression due to the pandemic, which led to increase level of care burden among parents of children with ADHD, in other words, there was a highly

statistically significant correlation between psychological effects of COVID19 and care burden among the studied parents.

Recommendations

Based on the findings of the current research, the following recommendations were suggested:

For research:

- Implementing psycho educational program to reduce psychological effect of covid 19 pandemic and care burden among parents of children with ADHD .
- Application of stress management program for mothers of ADHD children to reduce their stress related to covid 19 out break
- Implementing educational program targeting school teachers to improve their knowledge and skills about how to deal positively and meet educational needs of children with ADHD.

For the parents

- Implementing workshops for parents of children with ADHD to increase their awareness about parenting and positive approaches to deal with their children.
- Family counseling, training programs, group sessions and peers support discussions should be directed toward parents having children with ADHD to help them to deal with the disruptive behavior of the child and its consequences.
- Regular follow up and observation for any psychological effect on parents of ADHD children and referring them to psychiatrist for proper early intervention.

For the educational institutions:

- Identify and implement training needs of teachers to improve their knowledge about ADHD and prepare them to deal with students with ADHD and provide them with the necessary support.
- Implement training sessions for teachers to enable them to help students with ADHD to take the necessary precautions needed to be in school with each others and outside the house to prevent spread of infection during covid 19.

For community:

- Collaboration of governmental and civilized society's efforts to reshape the residential institutions to elevate psychological wellbeing and decrease burden of care for families having children with ADHD particularly for parents.
- The government most organize programs to raise society's awareness to reduce the spread of infection, especially among children during corona pandemic and provide safe places for children with to release their energy and provide them with places to receive medication and psychotherapy easily during pandemic.

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