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Research Article

**MENTAL HEALTH STATUS OF WORKING MOTHERS IN
PHCS DURING DISTANCE LEARNING DURING THE COVID-
19 PANDEMIC IN TAIF CITY, SAUDI ARABIA, 2023****RUNNING TITLE: MENTAL HEALTH OF WORKING MOTHER****Alwah Mohammed Alqahtani ^{a*}, Sarah Sami Bin Baz ^a, Waad Mohammed Malibarey ^a,
Reham Yousef Alghamdi ^a**^a Family Medicine Physician, Ministry of Health, Saudi Arabia**Abstract:**

Background/aim: COVID-19 outbreak negatively impacted various life aspects, including the learning process. Distance learning is one of the precautionary measures that the Saudi Ministry of Education applied to limit social contact. This study aimed to assess the mental health status of mothers working in internal primary health care centers (PHCs) during distance learning of their children during the COVID-19 pandemic in Taif City, Saudi Arabia.

Methods: We conducted a descriptive cross-sectional study between February and March 2023 among mothers working in internal PHCs during distance learning through the COVID-19 pandemic. The data collection tool was a combination of two previously validated questionnaires (PHQ-9 "Patient Health Questionnaire" and GAD-7 "General Anxiety Disorder") shared among the respondents.

Results: The study included 104 mothers working at Internal PHCs in Taif City, Saudi Arabia, with a mean (\pm SD) age of 38.3 (\pm 6.37). Most of them were from Saudi Arabia (93.1%), married (91.4%), held a university degree or higher (83.5%), and were nurses (68.3%). Of them, 57.7% had three children or less, and 64.4% had less than three children who experienced distance learning during the COVID-19 pandemic. Mothers working in administrative positions showed significantly more severe anxiety levels (25%) than those working in the medical field (8.5%) (p -value = 0.047).

Conclusion: Depression and anxiety were prevalent among mothers taking care of their children in homeschooling during the COVID-19 pandemic. It is recommended to support women who are working and taking care of their children during distance learning by decreasing the number of their working hours. In addition, this study could be the cornerstone for encouraging the development of training programs for women working in administrative roles on the importance of mental health and distance learning for their children.

Keywords: Depression, Anxiety, Distance learning, Mental health, Saudi Arabia

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INTRODUCTION:

The COVID-19 pandemic was first discovered in December 2019 in China and spread rapidly worldwide within months. The pandemic impacted all life areas, and many countries realized the importance of the issue and took strict measures to struggle with it. One of the critical methods of non-pharmaceutical interventions to fight against epidemics was social isolation.[1,2]

Certainly, COVID-19 has caused serious effects on the education systems, including students, instructors, and educational organizations worldwide, like many other aspects of life. When the situation got worse, the lockdown worldwide reached its peak, and educational institutions were urgently closed to ensure that circulation was reduced. Therefore, the Saudi Ministry of Education announced distance learning through online classes to keep the learning process secure and safe. All institutions and universities, including medical universities, were converted to online learning within days. Consequently, these precautionary measures resulted in a stressful situation for educational authorities with highly limited options. [1,2,3]

Studies have indicated that parental contribution to their children's education has a fruitful impact on their children's academic outcomes. In addition, parent support significantly impacted students' success in a virtual learning environment. However, during the COVID-19 outbreak, several parents were unprepared to participate in the education process as informal educators. In addition, they struggled to balance their work responsibilities and childcare. Thus, parents were at risk of burnout due to the stress they encountered from the demands they carried that outweighed the resources available to them. Psychological and clinical assessments indicate increased depression and anxiety levels among parents of children experiencing online learning during the COVID-19 outbreak. Many parents experience different psychosocial problems, including difficulty understanding children's lessons, financial pressure, and lack of time for other children due to work and family conflicts. In addition, Lee et al. reported that high parental stress and depression levels during the pandemic could impact parents' ability to assist their children in remote learning. [4,5,6,7,8]

Mothers usually are assumed to take the role of the primary caregiver. Therefore, this study was done to explore the mental health status of mothers working in internal primary health care centers (PHCs) during

distance learning of their children during the COVID-19 pandemic in Taif City, Saudi Arabia.

METHODOLOGY:**Study design:**

This cross-sectional, observational study was conducted in Taif City, Saudi Arabia.

Study population:

All mothers working at 19 (Internal) Ministry of Health PHCs in Taif City, Saudi Arabia, regardless of their nationality, and having children practicing online learning were included in the study.

Data Collection:

Data were collected between February and March 2023 using a self-administered combination of two previously validated Arabic questionnaires (PHQ-9 "Patient Health Questionnaire" and GAD-7 "General Anxiety Disorder"). [9] The data collection tool included three sections; demographic characteristics of participants, questions of PHQ-9, and questions of GAD-7. The questionnaire in paper and Google Forms were shared with the respondents in the selected PHCs.

Statistical analysis:

Data were extracted, revised, and then coded. The statistical calculations were done using the computer program IBM SPSS (Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA), release 26 for Microsoft Windows. Frequencies and valid percentages were used for describing categorical variables.

For calculating the total scores of PHQ-9, items were scored on a four-point scale (not at all scored 0, several days scored 1, more than half the days scored 2, and nearly every day scored 3) with total scores ranging from zero to 27. The total scores of PHQ-9 were classified as minimal (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20-27) levels of depression.

In addition, for calculating the total scores of GAD-7, items were scored on a four-point scale (not at all scored 0, several days scored 1, more than half the days scored 2, and nearly every day scored 3) with total scores ranging from zero to 21. The total scores of GAD-7 were classified as minimal (0-4), mild (5-9), moderate (10-14), and severe (15-21) levels of anxiety. The recommended screening cutoff for PHQ-9 and GAD-7 was ≥ 10 , with at least moderate depression and anxiety.

Chi-square or Fisher's exact test was conducted to explore the effect of the demographic factors on

depression and anxiety severity. P-values less than 0.05 were considered statistically significant.

RESULTS:

A total of 104 mothers with a mean (\pm SD) age of 38.3 (\pm 6.37) were included in the study. Most of them were from Saudi Arabia (93.1%), married (91.4%), and held a university degree or higher (83.5%). About two-thirds of the participants were nurses (68.3%). In addition, 57.7% of the participants had three children or less, and 64.4% had less than three children who experienced distance learning during the COVID-19 pandemic. All details are illustrated in **Table 1**.

Table 1: Demographic characteristics of the participants:

Age	Mean (\pm SD)	38.3 (\pm 6.37)	
Parameters	Category	Total Count (n=104)	Percentage
Nationality (N=102)	Saudi	95	93.1
	Non-Saudi	7	6.9
Marital status (N=93)	Married	85	91.4
	Divorced	8	8.6
Job (N=101)	Physician	16	15.8
	Nurse	69	68.3
	Administrative job	16	15.8
Educational level (N=103)	Primary/intermediate	3	2.9
	Secondary	14	13.6
	University or higher	86	83.5
Children number	\leq 3 children	60	57.7
	$>$ 3 children	44	42.3
Number of children who experienced distance learning	$<$ 3 children	67	64.4
	\geq 3 children	37	35.6

The responses to the depression questionnaire (PHQ-9) are described in **Table 2**. Most participants (86.5%) did not think they would be better off dead or hurting themselves in some way. About two-thirds of them (57.7%) reported that they did not have the feeling of moving or speaking so slowly that other people could have noticed or were so fidgety or restless that they had been moving around a lot more than usual. In addition, approximately one-third of the participants felt poor appetite or overeating (32.4%) and trouble concentrating on things (42.3%) for several days.

Table 2: Participants' responses to patient health questionnaire-9 (PHQ-9):

Over the last two weeks, how often have you been bothered by any of the following problems during your children's distance learning period?	Response	Count (n=104)	Percentage
1. Little interest or pleasure in doing things (N=103)	Not at all	25	24.3
	Several days	41	39.8
	More than half the days	23	22.3
	Nearly every day	14	13.6
2. Feeling down, depressed, or hopeless	Not at all	34	32.7
	Several days	40	38.5
	More than half the days	21	20.2
	Nearly every day	9	8.7
3. Trouble falling or staying asleep or sleeping too much	Not at all	28	26.9
	Several days	38	36.5
	More than half the days	24	23.1
	Nearly every day	14	13.5
4. Feeling tired or having little energy	Not at all	21	20.2
	Several days	42	40.4
	More than half the days	24	23.1

Over the last two weeks, how often have you been bothered by any of the following problems during your children's distance learning period?	Response	Count (n=104)	Percentage
5. Poor appetite or overeating (N=102)	Nearly every day	17	16.3
	Not at all	40	39.2
	Several days	33	32.4
	More than half the days	20	19.6
	Nearly every day	9	8.8
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	Not at all	49	47.1
	Several days	33	31.7
	More than half the days	17	16.3
	Nearly every day	5	4.8
7. Trouble concentrating on things, such as reading the newspaper or watching television	Not at all	36	34.6
	Several days	44	42.3
	More than half the days	20	19.2
	Nearly every day	4	3.8
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	Not at all	60	57.7
	Several days	29	27.9
	More than half the days	12	11.5
	Nearly every day	3	2.9
9. Thoughts that you would be better off dead or of hurting yourself in some way	Not at all	90	86.5
	Several days	8	7.7
	More than half the days	5	4.8
	Nearly every day	1	1.0
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	25	24
	Somewhat difficult	52	50
	Very difficult	19	18.3
	Extremely difficult	8	7.7

Table 3 describes the participants' responses to the anxiety questionnaire (GAD-7). For instance, approximately half of the participants reported that they had been feeling nervous, anxious, or on edge or became easily annoyed or irritable for several days (54.8%, and 50%, respectively). On the other hand, about two-thirds of them (63.5%) indicated they did not feel afraid, as if something awful might happen.

Table 3: Participants' responses to generalized anxiety disorder assessment (GAD-7):

Over the last two weeks, how often have you been bothered by any of the following problems during your children's distance learning period?	Response	Count (n=104)	Percentage
1. Feeling nervous, anxious, or on edge	Not at all	15	14.4
	Several days	57	54.8
	More than half the days	21	20.2
	Nearly every day	11	10.6
2. Not being able to stop or control worrying	Not at all	32	30.8
	Several days	39	37.5
	More than half the days	23	22.1
	Nearly every day	10	9.6
3. Worrying too much about different things	Not at all	31	29.8
	Several days	39	37.5
	More than half the days	21	20.2
	Nearly every day	13	12.5

Over the last two weeks, how often have you been bothered by any of the following problems during your children's distance learning period?	Response	Count (n=104)	Percentage
4. Trouble relaxing (N=101)	Not at all	22	21.8
	Several days	46	45.5
	More than half the days	19	18.8
	Nearly every day	14	13.9
5. Being so restless that it is hard to sit still	Not at all	45	43.3
	Several days	39	37.5
	More than half the days	17	16.3
	Nearly every day	3	2.9
6. Becoming easily annoyed or irritable	Not at all	23	22.1
	Several days	52	50
	More than half the days	17	16.3
	Nearly every day	12	11.5
7. Feeling afraid, as if something awful might happen	Not at all	66	63.5
	Several days	24	23.1
	More than half the days	7	6.7
	Nearly every day	7	6.7
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	33	32
	Somewhat difficult	42	40.8
	Very difficult	22	21.4
	Extremely difficult	6	5.8
	Total		103

By interpreting PHQ-9 responses, 36.5% of the mothers suffered from depression. All data are shown in **Figure 1**.

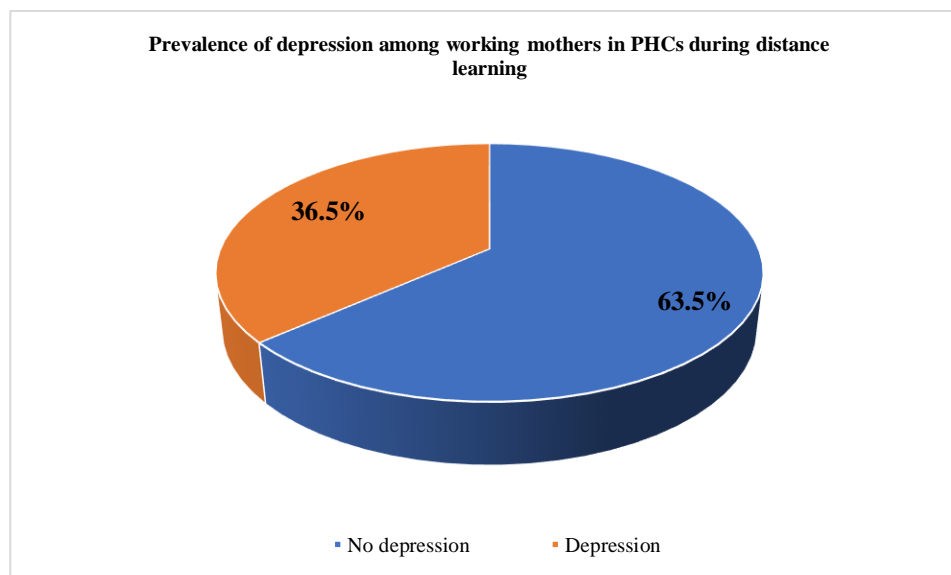


Figure 1: Prevalence of depression among working mothers in PHCs during distance learning

By interpreting GAD-7 responses, 29.8% of the participants suffered from anxiety. All data are shown in **Figure 2**.

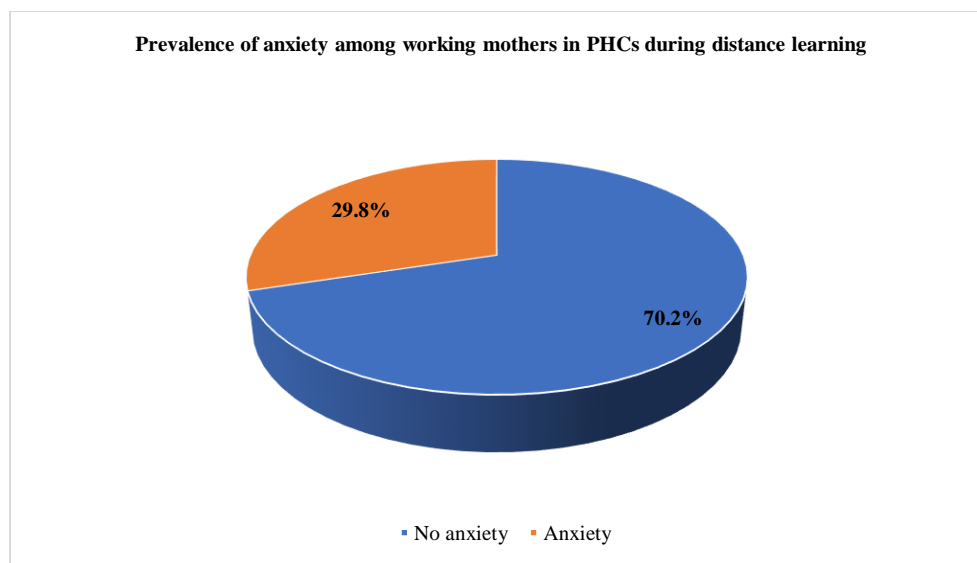


Figure 2: Prevalence of anxiety among working mothers in PHCs during distance learning

Based on PHQ-9 and GAD-7 scores, most participants showed a mild depression level (34.6%) and a minimal depression level (28.8%). On the other hand, only 2.9% of them reported a severe depression level. Regarding anxiety levels, the prevalence of minimal and mild anxiety levels among participants was 34.6% and 35.6%, respectively. In addition, 10.6% of them had a severe anxiety level. Full details are shown in **Figures 3 and 4**.

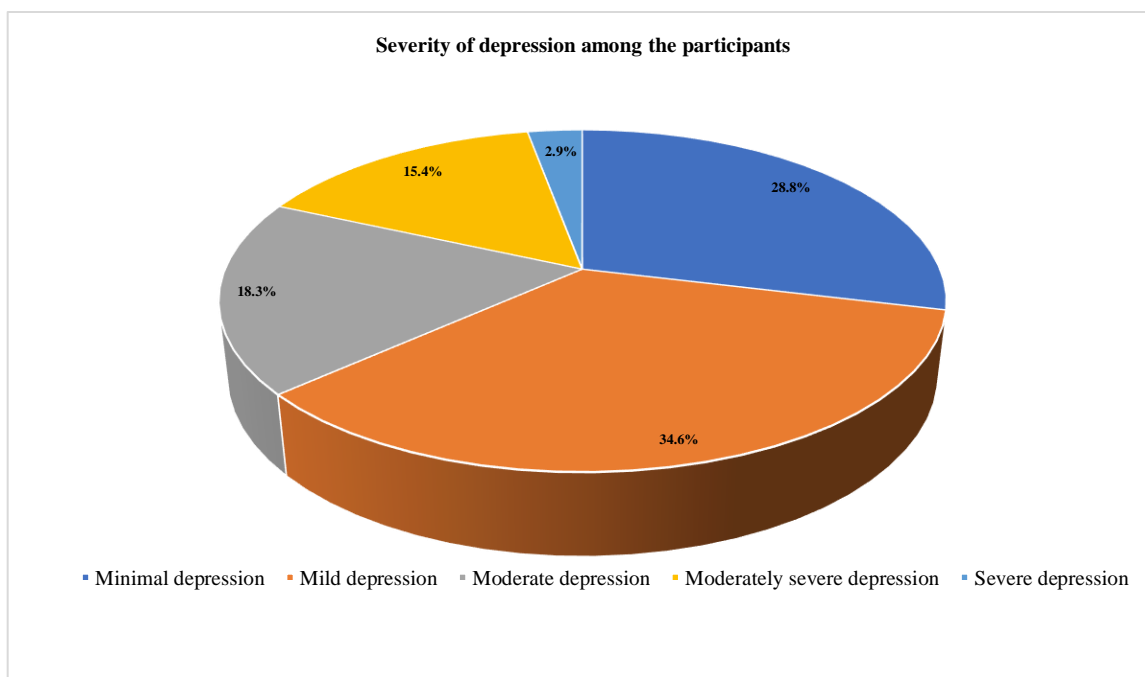


Figure 3: Severity of depression among working mothers in PHCs during distance learning

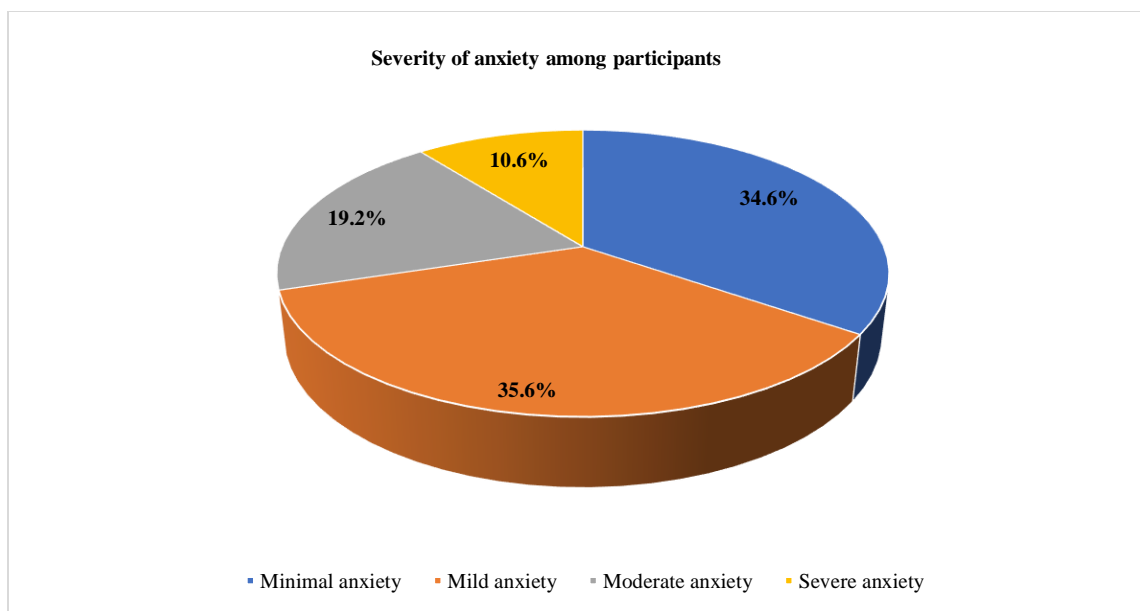


Figure 4: Severity of anxiety among working mothers in PHCs during distance learning

By exploring the effect of demographic characteristics of the mothers on depression severity, all factors (age, nationality, marital status, job, educational level, the total number of children, and the number of children who experienced distance learning during the COVID-19 pandemic) had no significant impact on the depression severity. Full details are in **Table 4**.

Table 4: The association between the demographic factors and depression severity among participants:

Factors		Depression severity					P-value
	Categories	Minimal depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression	
Age	≤35 years	9 (23.1)	18 (46.2)	7 (17.9)	3 (7.7)	2 (5.1)	0.158
	>35 years	19 (30.6)	17 (27.4)	12 (19.4)	13 (21)	1 (1.6)	
Nationality	Saudi	27 (28.4)	30 (31.6)	19 (20)	16 (16.8)	3(3.2)	0.433*
	Non-Saudi	3 (42.9)	4 (57.1)	0 (0)	0 (0)	0 (0)	
Marital status	Married	25 (29.4)	27 (31.8)	17 (20)	14 (16.5)	2 (2.4)	0.452*
	Divorced	2 (25)	2 (25)	1 (12.5)	2 (25)	1 (12.5)	
Job	In the medical field	23 (27.1)	31 (36.5)	17 (20)	13 (15.3)	1 (1.2)	0.168*
	Administrative position	5 (31.3)	5 (31.3)	1 (6.3)	3 (18.8)	2 (12.5)	
Educational level	University degree or higher	23 (26.7)	30 (34.9)	18 (20.9)	12 (14)	3 (3.5)	0.388*
	High school or less	7 (41.2)	5 (29.4)	1 (5.9)	4 (23.5)	0 (0)	
Children number	≤ 3 children	17 (28.3)	21 (35)	10 (16.7)	10 (16.7)	2 (3.3)	0.976
	> 3 children	13 (29.5)	15 (34.1)	9 (20.5)	6 (13.6)	1 (2.3)	

Factors		Depression severity					P-value
	Categories	Minimal depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression	
Number of children who practiced distance learning	≤ 3 children	25 (29.8)	29 (34.5)	15 (17.9)	12 (14.3)	3 (3.6)	0.956*
	> 3 children	5 (25)	7 (35)	4 (20)	4 (20)	0 (0)	

*Fisher test

Furthermore, by examining the effect of participants' characteristics on anxiety severity, factors such as age, nationality, marital status, educational level, the total number of children, and the number of children who practiced distance learning during the COVID-19 pandemic had no significant impact on the anxiety severity. Meanwhile, the nature of the participants' jobs significantly impacted the anxiety severity; more severe anxiety levels were found among mothers working in administrative positions (25%) than those working in the medical field (8.5%) (p-value=0.047). All details are presented in **Table 5**.

Table 5: The association between the demographic factors and anxiety severity among participants:

Factors		Anxiety severity				P-value
	Categories	Minimal anxiety	Mild anxiety	Moderate anxiety	Severe anxiety	
Age	≤35 years	13 (33.3)	17 (43.6)	5 (12.8)	4 (10.3)	0.438
	>35 years	21 (33.9)	19 (30.6)	15 (24.2)	7 (11.3)	
Nationality	Saudi	33 (34.7)	31 (32.6)	20 (21.1)	11 (11.6)	0.412*
	Non-Saudi	3 (42.9)	4 (57.1)	0 (0)	0 (0)	
Marital status	Married	31 (36.5)	30 (35.3)	14 (16.5)	10 (11.8)	0.540*
	Divorced	2 (25)	2 (25)	3 (37.5)	1 (12.5)	
Job	In the medical field	29 (34.1)	26 (35.3)	19 (22.4)	7 (8.2)	0.047*
	Administrative job	6 (37.5)	6 (37.5)	0 (0)	4 (25)	
Educational level	University degree or higher	29 (33.7)	32 (37.2)	16 (18.6)	9 (10.5)	0.920*

Factors		Anxiety severity				P-value
	Categories	Minimal anxiety	Mild anxiety	Moderate anxiety	Severe anxiety	
	High school or less	7 (41.2)	5 (29.4)	3 (17.6)	2 (11.8)	
Children number	≤ 3 children	23 (38.3)	21 (35)	10 (16.7)	6 (10)	0.775
	> 3 children	13 (29.5)	16 (36.4)	10 (22.7)	5 (11.4)	
Number of children who practiced distance learning	≤ 3 children	30 (35.7)	29 (34.5)	15 (17.9)	10 (11.9)	0.741*
	> 3 children	6 (30)	8 (40)	5 (25)	1 (5)	

*Fisher test

DISCUSSION:

The COVID-19 pandemic has changed teaching and learning methods worldwide, with a huge shift to remote learning. It was revealed that more than half a billion children had been forced to be distant learners in their homes. At the same time, parents and other family members have participated in the learning process as facilitators, pseudo-teachers, and coaches.¹⁰

In Saudi Arabia, several education centers have introduced open-access resources for students and their parents in response to the COVID-19 pandemic. [11]

Mothers are more concerned about their children's education; therefore, we aimed to evaluate the mental health status of mothers working in 19 internal PHCs during distance learning of their children during the COVID-19 pandemic in Taif City, Saudi Arabia.

Several previous studies have been established to evaluate the effect of COVID-19 on the general population and the influence of the closure on the relationship between children and parents; thus, data on the psychological impact of the pandemic lockdown on mothers with school-aged children is limited. [12]

A previous study has shown that the restrictions associated with quarantine during COVID-19 could affect the mental health of adults. Moreover, mothers seem to be more affected by the pandemic followed by

the lockdown and become more anxious about their children's health and other family members, the isolation of their children from teachers, and the management of homeschooling. [12] Additionally, another research has revealed that women are more susceptible to stress and usually show greater emotional responses. [13]

Our results support that the epidemic has an adverse effect on mothers' mental health, and about one-third of the participants from working mothers suffered from depression and anxiety (36.5% and 29.8%, respectively). This moderate percentage may result from the fact that school closures have put more responsibilities on working mothers. In addition, several factors were reported to be associated with parental stressors related to COVID-19, such as disruptions to work/learning, fears of infection, and limited reliable information accession. [4]

A similar study in Riyadh, Saudi Arabia, showed a higher prevalence of depression and anxiety among mothers who cared for their children on remote learning during the pandemic (72.1% and 62%, respectively). [12] The difference between these results and ours may be due to the fact that the latter study conducted in Riyadh was performed in 2021 during the pandemic peak. Meanwhile, our study was conducted in the late period of the pandemic, and anxiety and depression among mothers may have been relieved.

A study by Claudia Calvano et al. in 2021 revealed that about 50% of parents were anxious about schools' closure, social isolation, and childcare facilities. [14] On the other side, in 2020, a Chinese study reported lower depression and anxiety rates in parents (6.1% and 4.0%, respectively). [13]

A past study established in Switzerland demonstrated a relationship between the stress the parents felt and how much they thought that COVID-19 was a potential danger. Additionally, the more parents believed that COVID-19 was a potential danger, the more they felt stressed about distance learning which affected their children. [15]

On the other hand, the present study showed that 2.9% of participants reported a severe depression level, followed by 15.4% having a moderately severe depression level, and 18.3% of them suffered from a moderate depression level. Furthermore, the distribution of severe anxiety among our participants was 10.6%, and 19.2% reported a moderate anxiety level.

Compared to a previous study in South Korea, it was shown that moderate to severe depression was prevalent among 17.5% of the parents, and mild depression was reported among 29.0% of the parents. [4] According to previous German research, 12.3% of the parents had high levels of depressive symptoms, and 9.7% of them suffered from anxiety. [14]

Interestingly, our study also indicated that the nature of the mothers' jobs significantly impacted the anxiety severity, and higher severe anxiety levels were found among mothers working in administrative positions than those working in the medical field (p -value=0.044). These findings may result from mothers working in the medical field having more medical information about the pandemic due to the nature of their job.

Limitation:

The current study was carried out in the late period of the COVID-19 pandemic, and anxiety and depression among mothers may have been relieved. Therefore, a long-term study of the impact of social isolation and subsequent effects on working mothers would aid in a better understanding of their mental health.

CONCLUSION:

This study highlights the importance of mental health evaluation of working women with children experiencing distance learning. Depression and

anxiety were prevalent among one-third of mothers taking care of their children in homeschooling during the COVID-19 pandemic. Additionally, mothers working in administrative positions had higher severe anxiety levels.

It is recommended to support women working and taking care of their children during distance learning by decreasing the number of their working hours. In addition, this study could be the cornerstone for encouraging the development of training programs for women working in administrative roles on the importance of mental health and distance learning for their children.

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