

Household Health Behaviors and Maternal Stress During Covid-19 Outbreak

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Abstract

Background: Covid-19 pandemic has interrupted millions of populations with life stress and day-to-day troubles having a potential influence on maternal mental wellbeing. Constraints related to pandemic such as lock-downs, quarantine and school closures. **Aim:** assessment of household health behaviors and maternal stress during the covid-19 outbreak. **Design:** descriptive design. **Setting:** at MCH centers in Beni-Suef city **Sample:** A convenient sample of 112 of mothers. **Tools:** an interviewing questionnaire includes demographic characteristics mothers' knowledge regarding Covid-19 outbreak. Second an observation checklist for self-reported practices regarding household maternal health Behaviors, the third tool is maternal stress scale regarding Covid-19 outbreak. **Results:** 47.3% of mothers were aged 30-<40 years old. 53.6% of them had accepted knowledge. 57.1% of them had inadequate practices regarding household maternal health behaviors & 53.6% of mothers had high level maternal stress during the Covid-19 outbreak. **Conclusion:** there was highly significant positive correlation between total mothers' knowledge and practices regarding covid19 outbreak and their total maternal stress level. **Recommendations:** Education program focus on providing accurate and accessible information, promoting effective practices, and addressing the emotional well-being of mothers to mitigate the potential negative impact of stress during these challenging times.

Key words: covid-19, health Behaviors, household, maternal Stress

Introduction

Covid-19 plague has had a profound effect on various aspects of society, including household health behaviors and maternal stress levels. The pandemic has necessitated changes in household health behaviors to prevent the spread of the virus. These behaviors include increased hand hygiene, wearing masks, and practicing social distancing. These changes have not only affected physical health but also impacted maternal stress levels **Ali & Shah (2020)**.

The outbreak has also influenced dietary patterns within households. Stress, changes in routine and limited access to fresh and healthy food options have led to shifts in eating habits. These changes may have implications for maternal stress levels and overall health **(Carmichael, et al., 2020)**.

The pandemic has had a significant impact on the psychological well-being of mothers. Increased stress levels, anxiety, and

feelings of uncertainty have been prevalent. These psychological challenges can have long-term implications for both maternal health and the well-being of the entire household **(Rundle, et al., 2020)**.

Strategies to promote health and reduce Stress level by empowering mothers with strategies to promote health and reduce stress is vital **Sherr, et al. (2020)**. Encouraging regular physical activity at home, providing guidance on healthy eating, and fostering social connections through virtual platforms can help mitigate the negative effects of the pandemic on household health **(Goyal, et al., 2020)**.

The roles of community nurses and responsibilities through instruct the family members especially women the guidelines for COVID-19 prevention and control about COVID-19 to the community **Widiasih, et al. (2021)**.an intention to improve the community's quality of life in dealing with various problems such as maternal stress

produce about covid19 outbreak is a major aim (Akbar, et al., 2022).

Significance of the study:

The Covid-19 outbreak has caused changes in household health behaviors and elevated maternal stress levels Lindberg, et al. (2020). Understanding these dynamics is essential for developing targeted interventions and support systems Chen, et al. (2020). Since; explores the relationship between the pandemic, household health behaviors and maternal stress during the COVID-19 outbreak and discussing the changes in health behaviors within households, such as hygiene practices, physical activity, and dietary patterns, Additionally, exploring the impact of these changes on maternal stress levels. Also; highlights the importance of understanding these dynamics to develop effective interventions and support systems for families during and beyond the pandemic Lebel, ital.(2020). Therefore this study aimed to assess household health behaviors and maternal stress during the covid-19 outbreak.

Study Aim

The aim was to assess household health behaviors and maternal stress during the covid-19 outbreak, through the subsequent objectives;

- Assess mothers' knowledge regarding COVID-19 outbreak.
- Determine level of maternal stresses during COVID-19 outbreak.
- Identify mothers' practices regarding household health behaviors to face COVID-19 outbreak

Research inquiry

1. What is the mothers' knowledge level regarding Covid-19 outbreak?
2. What are the mothers' household health behaviors practices to face Covid -19 outbreak?
3. What is the level of maternal stress during Covid-19 outbreak?
4. Is there a relationship between mothers' knowledge, practices

regarding COVID-19 outbreak and maternal stress level?

Subjects And Methods

Design

A Descriptive study was used

Setting

Family planning clinic and MCH centers in Beni-Suef city, Egypt.

Subjects:

A convenient sample of 112 mothers from total mothers attending for maternity services in MCH centers.

Tools of data collection:

Tool I. An interviewing questionnaire sheet:

This tool was adopted by researcher after appraising the nationwide and worldwide allied works (Abd Elhameed Ali et al., 2021 and Farah et al., 2022).

Part1: personal characteristics; includes age, married status, place of residence, education level, job, pregnancy status, family income before the outbreak of Covid19, family income after the outbreak of COVID-19: number of children, age stages for children, crowding index.

- **Part2: mothers' knowledge regarding Covid-19 outbreak:** this part concerned with mothers knowledge about covid19 such as what is coronavirus, source of information about the Corona virus, Symptoms, ways transmission, risks and complications of coronavirus, high risk group, protective measures, vaccine covid19 and dose.

- **Scoring system:**

The accurate response was scored "1", while the inappropriate was scored zero, classified as subsequent:

- $\geq 75\%$ was considered **good knowledge**.
- $\geq 50\% : < 75\%$ was considered **average knowledge**.
- $< 50\%$ was considered **poor knowledge**.

- **Part 3: Mothers' self-reported practices regarding household maternal health Behaviors:** this part concerned with mothers' practices regarding household health behaviors to face COVID-19 outbreak divided into two parts specific protective measures (1-22 items) and general measures (1-13 items).

Scoring scheme: Scoring follow following scheme rarely =0, sometimes =1, always =2. For calculating the total score of this scale taking into consideration that always as adequate practices while rarely or sometimes as inadequate practices. Accordingly total sentences ranged from 0-2, was classified into:

- $\geq 60\%$ was considered **adequate practices**.
- $<60\%$ was considered **inadequate practices**.

Tool II. Maternal Stress scale regarding Covid-19 outbreak:

It was used to assess mothers' stresses during COVID-19 outbreak. It was approved by **Al-Omiri, ital., (2021)** comprised 17 item that measure mothers' stresses during COVID-19 outbreak such as Feeling behavioral changes and distress (1-5items), Fears and concerns (6-15 items) and effects on opinions and beliefs (16-18 items).

- **Scoring:** items that scored by **yes = 1** or **no = zero** with total score was as the following:-
- $\geq 70\%$ considered **high stress level**.
- $\geq 60\% : < 70\%$ was considered **moderate stress level**.
- $< 60\%$ was considered **low level**.

Operational Design

Preparatory Phase:

During this phase, the researcher reviews relevant literature, both past and current, from national and international sources. This includes books, articles, and internet resources to gather theoretical knowledge

related to the study. The purpose is to develop tools for data collection.

Tools Validity and Reliability:

To ensure the quality of the tools, two aspects are addressed: content validity and reliability. Content validity is assessed by submitting the developed tools to three experts in Community Health Nursing from the faculty of nursing at Beni-Suef University. Their feedback helps determine the relevance, comprehensiveness, understanding, and applicability of the tools. Reliability is tested by examining the internal consistency of the questionnaire items using Cronbach's alpha coefficient.

Pilot Study:

A pilot study is conducted to test the clarity, applicability, and understanding of the questionnaire. It involved a small sample of 11 mothers who participate in the study. The feedback and results from the pilot study help refine the interview questionnaire and establish a time framework. The participants from the pilot study are included in the main study sample.

Field Work:

Data collection for the study takes place from October 2022 to January 2023. The researcher introduces herself to the mothers, explains the study's aim and implications, and provides instructions on how to fill in the knowledge questionnaire. Informed consent is obtained from the participants. The interviews are conducted in a specialized room at the Al-Ghamrawi Maternal and Child Health (MCH) center in Beni-Suef. The questionnaire takes approximately 15-20 minutes to complete. Data collection occurs twice a week (on Sundays and Tuesdays) for four months. The participants or the researcher complete the questionnaire sheet for each mother.

Administrative Design:

The researcher obtained a written approval from the Dean of the Faculty of Nursing at

Beni-Suef University to conduct the study. Additionally, official permission is sought from the directors of maternal and child health centres, these administrative steps ensure the study is conducted with the necessary approvals and permissions.

Ethical Considerations:

Before the pilot study, ethical approval is obtained from the scientific research ethics committee. Official permission is also obtained from the relevant personnel at the maternal and child health centre's in Beni-Suef. Oral consent is obtained from all participating mothers after explaining the purpose and nature of the study. The researcher emphasizes that participation is voluntary, anonymity and confidentiality will be maintained, and participants have the right to withdraw at any time.

Statistical Design:

Data analysis is conducted using Microsoft Excel and the Statistical Package for Social Science (SPSS) version 22. Descriptive statistics such as frequencies, percentages, arithmetic mean, and standard deviation are used to present the data. Chi-square test and Pearson correlation test are employed to assess associations and correlations between variables. The significance of results is determined based on p-values.

Significance degree:

- P-value > 0.05 not significant
- P-value ≤ 0.05 significant
- P-value ≤ 0.01 highly Significant

Results

Table1 showed the characteristics of mothers. Out of the total sample, 47.3% were between the ages of 30 and less than 40, with a mean age of 33.82 ± 7.17 years (standard deviation). Additionally, 92.0% of the mothers were married, while 63.4% resided in rural areas. Among the mothers, 55.8% were

housewives, and majorities of 88.3% were not pregnant at the time of the study.

In terms of family income before the Covid-19 outbreak, 67.5% of the mothers reported having enough income. However, after the outbreak, 55.8% of them indicated that their income was not sufficient. Furthermore, 31.7% of the mothers had three children, and 37.5% had children attending primary and preparatory school. Additionally, 48.2% of the mothers had a crowding index greater than 2, indicating higher household density.

Figure (1): illustrates the educational background of the studied mothers. It reveals that 45.5% of the mothers had obtained a university education. Additionally, 40.2% of the mothers had completed secondary education.

Figure 2: shows that, 53.6% of the studied mothers had average knowledge regarding covid19 and 22.3% of them had good knowledge regarding Covid19. While, 24.1% of them had poor knowledge regarding covid19.

Table (2): provides insights about mother's behaviors and practices in relation to COVID-19 prevention. It indicates that 73.2% of the mothers always open the windows to ventilate their houses, while 75.9% always avoid sharing personal items with others. Furthermore, 76.8% of the mothers reported that they sometimes use a tissue when coughing or sneezing, and 92.0% sometimes immediately and safely dispose of the used tissue by throwing it in the trash.

Additionally, 65.2% of the mothers indicated that they sometimes isolate infected family members or individuals suspected of having COVID-19. Similarly, 65.2% of them reported sometimes changing clothes and washing them thoroughly after returning from outside the house.

Figure (3): shows that, 57.1% of them had inadequate practices regarding household maternal health behavior during covid19 outbreak. While, 42.9% of them have adequate practices.

Table (3): presents the concerns and fears expressed by the studied mothers during the

COVID-19 outbreak. It indicates that a significant percentage of the mothers reported various concerns related to the pandemic. Specifically, 79.5% of the mothers expressed fear of contracting COVID-19, highlighting their concern about their own health. Additionally, a majority of 81.3% of the mothers expressed worry about the safety of themselves and their families, emphasizing their priority for the well-being of their loved ones.

In contrast, 42.0% of the mothers reported not having fear when dealing with others, indicating a relatively lower level of concern in interpersonal interactions. Similarly, 42.9% of the mothers reported not being worried about the closure of schools, suggesting that this particular issue did not cause significant anxiety among them.

Figure (4): displays that, 53.6% of mothers had high maternal stress level during the epidemic. While, 46.4% of were low level.

Table (4): offerings the correlation coefficients and p-values indicating the relationship between total mothers' knowledge and practices regarding the COVID-19 outbreak and their total maternal stress scale. The results show a significant positive correlation between total knowledge and total maternal stress scale, with a correlation coefficient of 0.522 and a highly significant p-value of 0.000. This suggests that higher levels of knowledge about COVID-19 are associated with increased maternal stress during the outbreak.

Furthermore, significant positive correlation between overall practices and over-all maternal stress scale, with a correlation coefficient of 0.417 and a highly significant p-value of 0.000. This indicates that better practices related to the COVID-19 outbreak are associated with higher levels of maternal stress.

Table (1): Mother`s personal characteristics Frequency distribution (n = 112).

Personal characteristics	No.	%
Age :		
< 20	2	1.8
20-<30	30	26.8
30-<40	53	47.3
≥ 40	27	24.1
Mean SD	33.82 ± 7.17	
Marital status		
Married	103	92.0
Widowed	1	0.9
Divorced	8	7.1
Place of residence		
Rural	71	63.4
Urban	41	36.6
Job		
Housewife	67	55.8
working	53	44.2
Pregnant		
Yes	14	11.7
No	106	88.3
Family income before the outbreak of Covid19		
Enough	81	67.5
Not enough	37	30.8
Enough and saving	2	1.7
Family income after the outbreak of Covid19		
Enough	52	43.3
Not enough	67	55.8
Enough and saving	1	.8
Number of children		
One	23	19.2
Two	28	23.3
Three	38	31.7
More	31	25.8
Age stages for children		
Preschool or kindergarten	41	34.2
Primary or preparatory	45	37.5
Secondary or university	8	6.7
All stages	26	21.7
Crowding index		
<1	18	16.1
1-2	40	35.7
>2	54	48.2

Fig. (1): Mother`s educational level Percentage distribution (n = 112).

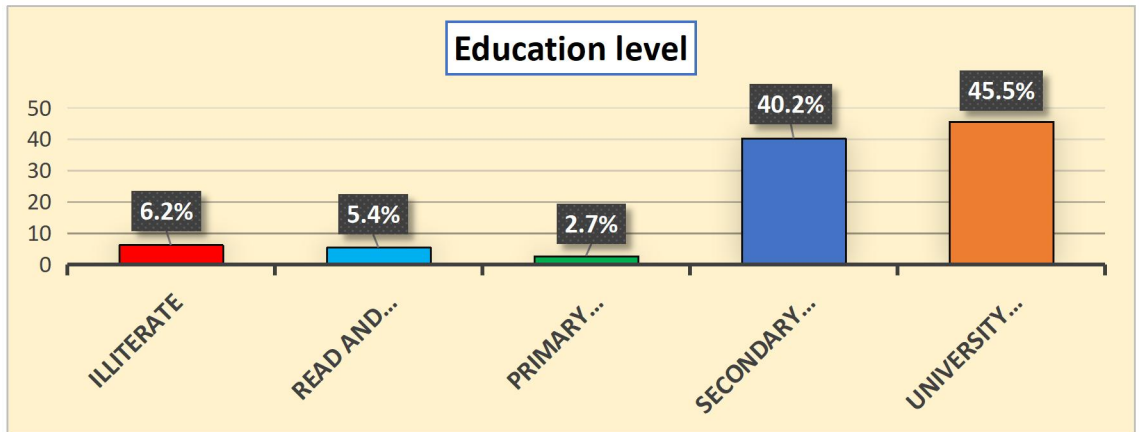


Fig.(2): Total mother's Covid-19 knowledge Percentage distribution (n=112).

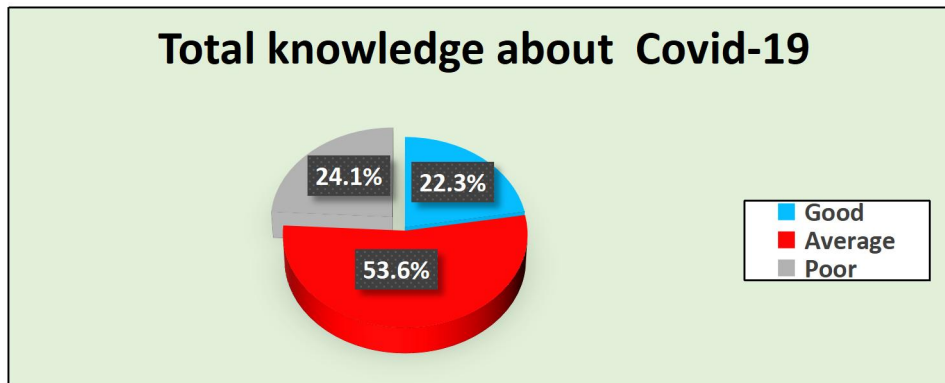


Table (2): Household maternal health behavior practices during covid19 outbreak (n = 112).

Specific protective measures	Always		Sometimes		Rarely	
	No.	%	No.	%	No.	%
Wash your hands frequently with soap and water for at least 20 seconds	41	36.6	64	57.1	7	6.3
Hand sanitizer with alcohol If soap and water are not available	51	45.5	40	35.7	21	18.8
Sidestep touching the eyes, nose and mouth	39	34.8	67	59.8	6	5.4
Usage a material when coughing or sneezing	23	20.5	86	76.8	3	2.7
Use the upper arm (sleeve) when coughing or sneezing in the absence of a tissue	37	33.0	61	54.5	14	12.5
Immediately safely dispose of the used tissue and throw it in the trash	9	8.0	103	92.0	0	0.0
Wearing a mask while sitting with more than two people or when outside the house	52	46.4	33	29.5	27	24.1
Avoid being in crowded places such as restaurants, cinemas, etc	42	37.5	53	47.3	17	15.2
Keep a distance of more than a meter from everyone around you, in any place such as gatherings	60	53.6	27	24.1	25	22.3
Not shaking hands or kissing others	54	48.2	32	28.6	26	23.2
Clean and disinfect surfaces and floors frequently	35	31.2	73	65.2	4	3.6
Disinfect door handles with diluted chlorine	39	34.8	51	45.5	22	19.7
Open the windows to ventilate the house	82	73.2	28	25.0	2	1.8
Isolation for infected family members or suspects persons	29	25.9	73	65.2	10	8.9
Medical counseling and follow up	42	37.5	52	46.4	18	16.1
Immunization against covid19	86	76.8	0	0.0	26	23.2
Change clothes and wash them well after returning from outside the house	29	25.9	73	65.2	10	8.9
Washing clothes with hot water and disinfectants and direct exposure to sunlight	31	27.7	71	63.4	10	8.9
Take off your shoes outside the house	31	27.7	66	58.9	15	13.4
Washing the feet with soap and water after removing the shoes and socks and drying them	24	21.4	68	60.7	20	17.9
Avoid sharing personal items with others	85	75.9	22	19.6	5	4.5
Avoid direct contact with animals	28	25.0	70	62.5	14	12.5

Fig. (3): Frequency distribution of the studied mothers according to their practices regarding specific protective measures (n = 112).

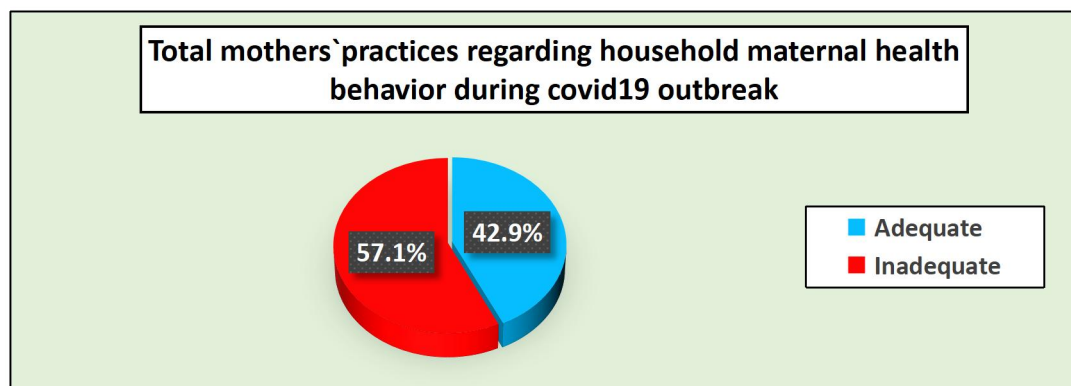


Table (3): Maternal stress scale items of feeling fears and concerns during panademic (n = 112).

Feeling fears and concerns	Yes		No	
	No.	%	No.	%
Afraid to get covid19	89	79.5	23	20.5
Afraid loss of jobs or a reduction in working hours for anyone within the family	72	64.3	40	35.7
Afraid of dealing with others	65	58.0	47	42.0
Afraid to be separated from my family or beloved ones	75	67.0	37	33.0
Afraid food and necessary things will not be available	78	69.6	34	30.4
Afraid providing care if anyone in the family infected	78	69.6	34	30.4
Worry about closing schools	64	57.1	48	42.9
Worry from low level of education for children	71	63.4	41	36.6
Worried about contamination of food or water source with corona virus	75	67.0	37	33.0

Fig.(4): Total maternal stress the Covid-19 outbreak (n=112).

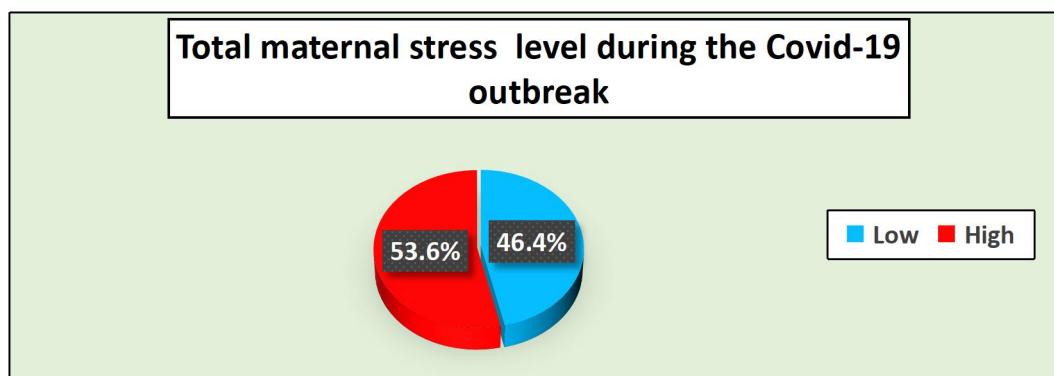


Table (4): Correlation between total mothers' practices and knowledge regarding covid19 outbreak and their total maternal stress level during the covid-19 outbreak (n=112).

Variables	total knowledge		total practices	
	r	P-value	r	P-value
Total knowledge			0.522	0.000**
Total maternal stress scale	0.458	0.000**	0.417	0.000**

Discussion

The current study studied **Socio-demographic** characteristics of the studied mothers, regarding the age of the mothers, less than half of them were between 30 and 40 years old, which was consistent with the findings of **Ahmed et al. (2021)**; **Gonzalez et al. (2022)**, who reported similar age distributions in their studies. The investigators suggested that this could be attributed to the increased need for maternity services in maternal and child health (MCH) during this age range.

Regarding family income before the outbreak of Covid-19, \geq two-thirds of mothers had sufficient income, similar to the findings of **Kracht et al. (2021)**. However, after the outbreak, more than half of them reported insufficient income, which aligned with the results of **Bazaid et al. (2020)**. The investigators suggested that this could be attributed to job losses or reduced working hours within families during the pandemic.

A minority of the studied mothers had children at primary and preparatory school, which was in line with the findings of **Glenister et al. (2021)**. They suggested that having school-aged children during the COVID-19 pandemic could contribute to increased maternal stress.

Regarding the crowding index, less than half of the studied mothers had a crowding index higher than two, which was consistent with the results of **Farah et al. (2022)** those proposed that a higher crowding index could lead to increased maternal stress during the COVID-19 outbreak.

Concerning educational level, less than half of mothers had a university education, and two-fifths had a subordinate education. These findings were similar to those reported by **Mata et al. (2021)** and **Torales et al. (2020)**. The investigators suggested that the prevalence of higher education among mothers might be attributed to the increased emphasis on girls' education during this time.

Regarding the overall knowledge about COVID-19, more than half of the studied mothers had average knowledge. This finding is in agreement with a study by **Farah et al. (2022)** that reported more than half of the participants had average knowledge about COVID-19. The researchers suggest that the high educational level of the studied mothers may have contributed to these results.

Regarding the specific protective measures adopted by the studied mothers, the findings of the study indicated that less than three quarters of them always open windows to ventilate their homes. This finding is consistent with a study conducted by **Prete et al. (2020)** in Italy, which showed that the majority of participants opened their windows to refresh their homes and prevent COVID-19 infection. This behavior may be attributed to the mothers' desire to improve air circulation and limit the spread of the virus within the household.

In terms of avoiding sharing personal items, more than three quarters of mothers always practiced this precautionary measure. This result aligns with a study by **Wang et al. (2020)** conducted in China, which found that the majority of

participants avoided sharing utensils. The high educational level of the studied mothers could contribute to their adherence to this protective measure.

Concerning of isolating infected family members or suspected individuals, fewer than two-thirds of mothers reported doing so sometimes. This result is agreed by **Bukata et al. (2022)**, which reported that the majority of participants isolated and treated family members who contracted COVID-19 to prevent the spread of the virus. The mothers' fear of transmitting the infection to the rest of the family may explain their occasional implementation of this measure.

Regarding changing and washing clothes after returning home, fewer than two-third of mothers reported doing so sometimes; The finding is reinforced by **Sanchez-Arenas et al. (2021)** in Mexico, which found that less than half of the participants changed and washed clothes after returning home. The mothers' motivation to eliminate any potential presence of the coronavirus on their clothes and protect their family members may explain their occasional adherence to this practice.

Generally; more than half of the studied mothers had inadequate practices regarding specific protective measures and general measures of household maternal health behavior during the COVID-19 outbreak. These results are consistent with studies conducted by **Machida et al. (2020)**, **Knell et al. (2020)**, and **Bukata et al. (2022)**, which reported poor practices among participants in implementing preventive measures against COVID-19. The mothers' limited adherence to these practices might be influenced by factors such as low family income after the outbreak of COVID-19.

More than three-quarters of the mothers in the study were afraid of contracting COVID-19 and worried about the safety of themselves and their family. This aligns with **Mustafa, (2020)**, which found that a majority of respondents were concerned about their family members getting infected. The fear of dealing with

others and closing schools were also significant concerns for more than half of the mothers, as found in **Balkhi et al. (2020)** and **Dymecka et al. (2021)**, respectively.

As regards maternal stress level, more than half of mothers had high stress level during the Covid-19 outbreak. These results supported by **Cortes-Alvarez et al., (2020)**, who stated that, a total more than half of respondents reported severe psychological stress. Another study conducted by **Torales et al., (2020)**, who reported that, the mainstream of mothers reporting a moderate level of perceived stress. Since the detective point of view, these might be due to that the grievance and death of a large number of people during covid19 outbreak and fear for income, loss of jobs, education, etc.

Regarding to the correlation between general mothers' knowledge and their maternal stress during covid-19 outbreak, our study results showed a significant positive correlation between total knowledge and total maternal stress level. Which agreed with **Maarefvand et al., (2020)** in Iranians" entitled as "coronavirus outbreak and stress who found that, there was a significant correlation of stress scores level & knowledge of Covide-19. From the detective opinion; these results may be due to good knowledge of mothers regarding covid19 which make them able to ease their maternal stress

Additionally: there is a significant positive correlation between total practices and total maternal stress level. These results approved with study conducted by **Rizwan et al., (2021)** who study "social media use, psychological distress and knowledge, attitude, and practices regarding the COVID-19 among a sample of the population of Pakistan "and found a significant positive correlation between total practices scores and total anxiety, depression, and stress scores. From the investigator point of view, these results might be due to that adequate practices regarding household maternal health behavior during covid19 outbreak covid19

makes them able to reduce maternal stress during the covid-19 outbreak.

Conclusion

In conclusion; extra half of mothers had accepted knowledge level regarding covid19, & above two fifths, of them had adequate practices regarding household maternal health behavior as well as more than half of them had high level of maternal stress during the Covid-19 outbreak. There was a highly statistical significant relation between mothers' knowledge, practices regarding household maternal health behavior and their total maternal stress level during the covid-19 outbreak.

Recommendations

Suggested recommendations:

- Education package focus on providing accurate and accessible information, promoting effective practices, and addressing the emotional well-being of mothers to mitigate the potential negative impact of stress during these challenging times.
- Place banners and distribution booklets to women in MCH centers for addressing the gaps in knowledge and promoting appropriate behaviors, to enhance household maternal health behavior during the ongoing COVID-19 outbreak.
- Targeted interventions and educational programs can be developed to promote appropriate practices among different groups of mothers, taking into account their specific socio-demographic backgrounds.
- A need for comprehensive support and interventions to address their mental well-being and provide coping strategies during these challenging times.
- Developing effective communication strategies and interventions to address their concerns and promote positive health behaviors.
- Further studies to improve women's knowledge and practices regarding

household health behaviors to face the COVID-19 outbreak.

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