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# Assessment of Risk Perception and Preventive Practices of COVID-19 Among Maternity Health Care Providers

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## ABSTRACT

Background: The high exposure of healthcare providers to COVID-19 pandemic indicates high perception of the pandemic risks and high utilization of preventive practices. Aim: To evaluate how maternity health care providers perceive the risk of COVID-19 and the preventive measures they practice. Method: A descriptive cross-sectional design on a convenient sample of 100 healthcare providers was utilized at Obstetric and Gynecological inpatient department, Obstetric Clinics and Labor Unit at Damietta General Hospital, Egypt. Data collection Tools: Two tools were utilized; the first tool was a structured interview questionnaire to assess demographic data and risk perception of the studied maternity healthcare providers among COVID-19; the second tool was healthcare providers preventive practices observation checklist. Results: The present study showed that (99 % & 96 % respectively) of the studied maternity health care providers perceived that COVID-19 affected their physical and family physical health. Additionally, 95 % of them agreed if they were infected with corona virus they would be unable to visit their relatives and 82 % of them agreed that corona virus would lead to infection of a loved ones. Furthermore, (76 % & 73 % respectively) of them wore facemask and gloves and covered mouth and nose when cough or sneeze. Conclusion: The study conducted that three - quarters of the study maternity health care providers perceived COVID-19 as a significant risk and two-thirds of them demonstrated a high level of adherence to preventive measures. Recommendation: Designing educational package about importance of compliance with preventive practices during pandemic on maternity health care providers health.

**Keywords:** *COVID-19, Maternity Health care Providers, Preventive Practices, Risk perception.*

## Introduction

Maternity health care providers encompass a diverse range of professionals to safeguard the health of both mothers and babies during pregnancy, childbirth and the postpartum phase **(Ombere, 2021).** Obstetricians, midwives, family physicians, maternal-fetal medicine specialists, nurse practitioners, doulas and lactation consultants are the health care providers contact with mothers and each of them contribute unique expertise and support **(Backes, Scrimshaw & National Academies of Sciences, Engineering and Medicine, 2020)**.

Globally, COVID-19 had a substantial impact on healthcare providers, presenting major challenges and risks to both their physical and mental well-being **(Mushtaq et al., 2022)**. Health care Providers (HCPs) COVID-19 challenges include close and extended exposure to infected patients, the initial phases of the pandemic saw shortages of Personal Protective Equipment (PPE) and an overwhelming patient influx that strained healthcare systems **(Griswold, Gempeler, Kolias, Hutchinson & Rubiano, 2021)** .

Maternity health care providers risk perception of COVID- 19 is very important to overcome the challenges during this area of the pandemic. The chance of contacting the virus by the health care providers indicated the high perception of COVID- 19 risks and the high utilization of preventive practices **(Ezike et al., 2022)**. Health care providers' risk perception of COVID-19 has been multifaceted and dynamic. Initially, there was a heightened sense of vulnerability and fear among providers due to the uncertainties surrounding the virus's transmission, severity and the potential for nosocomial spread **(Qin, Sanders, Prasetyo, Syukron & Prentice, 2021)**.

Preventive practices for COVID-19 among maternity health care providers are paramount to safeguarding their health and that of their patients. These practices encompass several key practicing including ensuring the accessibility and correct usage of (PPE). During all patient interactions, emphasizing frequent hand washing and sanitization, implementing screening and testing

protocols for both patients and staff, maintaining physical distancing whenever possible and utilizing telemedicine for prenatal consultations **(Rieckert et al., 2021)**.

Additionally, vaccination was encouraged and facilitated for all healthcare providers, along with rigorous cleaning and disinfection protocols for clinical areas and equipment **(Islam et al., 2020)**. Continuous education and training on infection control measures, coupled with assistance for mental health and overall well-being are essential components of these preventive efforts **(Browne, Lewis, Burchill, Gilbert, Johnson, O'Donnell & Palmer, 2022)**. Through the consistent implementation of these measures, maternity healthcare providers can mitigate the risk of COVID-19 transmission within their healthcare settings **(Browne et al., 2022)**.

As the pandemic progressed and knowledge about the virus improved, providers adapted by implementing stringent strategies for preventing and managing infections and utilizing (PPE) effectively. Despite these measures, ongoing exposure to COVID-19 patients and the unpredictability of the virus have continued to pose significant risks, contributing to ongoing stress and anxiety among healthcare professionals **(Singh, Khawale, Chen, Zhang & Rai, 2022)**.

**Significance of the Study**

Lack of understanding the ways the virus spreads and the methods to prevent it during the initial stage of the pandemic lead to death of over 278 physicians affected by COVID-19, the majority (44%) being in Italy **(Ing, Xu, Salimi and Torun, 2020)**. Other studies in China reported indicating that there were 3,387 COVID-19 cases among healthcare workers, accounting for 4.4% of all cases, along with 23 reported deaths attributed to the virus **(Zhan, Qin, Xue, Zhu, 2020)**. In certain countries like Spain, it has been reported that health care professionals account for approximately 13% to 14% of the total cases **(Hussain et al., 2020)**.

By the first week of October 2020, Egypt had reported a rising number of COVID-19 cases, totaling around 104,000, with approximately 6,000 fatalities **(Abdelhafiz et al., 2020).** In several countries, up to 10% of healthcare workers have been infected with SARS-CoV-2 **(WHO, 2020b).** The World Health Organization implemented infection prevention and control measures at both national and healthcare facility levels to reduce coronavirus infections among healthcare professionals **(WHO, 2020c).** Consequently, the researcher decided to conduct this study.

**Aim of the Study**

This study aimed to assess risk perception and preventive practice of COVID-19 among maternity health care providers.

**Research questions**

To fulfill the aim of this study, the following research questions are formulated:

**$Q_1$:** What are the risk perceptions of COVID-19 among maternity health care providers?

**$Q_2$**: Do health care providers fully practice preventive practices that protect them against COVID-19?

**Method**

**Study design**

A descriptive cross-sectional study design was used. These types of observational studies outline the patterns of COVID-19 Pandemic based on variables such as person, place and time.

**Study setting**

This study was conducted in the obstetric and gynecological inpatient department as well as in the obstetric clinics and labor unit at Damietta General Hospital, Egypt. The inpatient obstetric and gynecological department located in the third floor and consisted of 6 inpatient rooms for women with obstetrical and gynecological conditions. Also, the labor unit found on the same floor. While the obstetric clinics located in the first floor and consists of 2 clinics, one for obstetrical conditions and the other for gynecological conditions. It's worth to mention that the hospital days including Friday and categorized as isolated hospital for cases with corona virus at the study time; follow rate of cases in this period 677 cases in inpatient and labor unit and 2420 cases in outpatient clinics from to September 2022 to November 2022.

**Sample type:** A convenient sample was utilized.

**Study Sample:**

The study samples included one hundred (100) maternity health care providers which was divided according to their categories on the previous mentioned settings, as follow; (35) gynecologist and obstetrician; (25) nursing professions; (20) intern student; (6) cleaners; (2) nutrition distributors; (8) lab technician and (4) radiologist.

**3.5 Data Collection Tools**

Data was collected using two tools.

**Tool 1 A self Administered Structured Interview Questionnaire:**

**It consists of two parts:**

**Part one: Demographic data of the studied maternity healthcare providers as** (age, gender, department, work experience and providers category, etc.....)

**Part Two: Risk perceptions questionnaire:**

The researcher developed it after reviewing relevant literature ( **Worldometers et al., 2020)** to evaluate healthcare providers' risk **perception** during COVID-19. It consists of three domain include 17 items; the **first domain** concerned with health care providers concern about their personal and family health, it includes (7) items related to physical health, mental health, psychological health, and loved one's health; the **second domain** concerned with health care providers perceived risk of being infected with corona virus, it includes (8) items related to becoming unemployed, inability to pay bills, inability to visit relatives, restricted access to food supplies, economic recession, companies running out of work, restricted liberty of movement, and health system being overwhelmed.; and the **third domain** concerned with the health care providers concern about the potential risk posed to their families, loved ones or others due to healthcare professionals' clinical roles in the hospital, it includes (2) items related to loosing loved ones, and loved one being infected .

***Scoring system***

Responses for each domain were evaluated using a three-point Likert scale: (1) = disagree, (2) = neutral and (3) = agree. With a total of seventeen items, the overall scores range from 17 to 51. A higher total score indicates a greater perceived risk of COVID-19.

**Tool II: Healthcare Providers Preventive Practices Observation Checklist.**

This tool was developed by the researcher after reviewing relevant literature (**WHO, 2020)** to evaluate the preventive practices of maternity healthcare providers during COVID-19. It includes nine items: wearing a facemask, washing hands for at least 20 seconds, covering the mouth and nose when coughing or sneezing, avoiding contact with the eyes, nose and mouth with unwashed hands using disinfectants for hand cleaning when soap and water are unavailable, maintaining physical distance, disinfecting mobile phones, cleaning surfaces and staying home when feeling unwell or having a cold .Each item was observed for practicing or not; if the item was practiced it had score one while if not practiced it had score zero.

**Validity of the Tool**

The tools were assessed for content validity by a panel of three experts in the field of Women's Health and Midwifery Nursing before being introduced to the healthcare providers. Minimal modifications were made, including adjustments to the order and sequence of some sentences and paraphrasing of others resulting in the final version used for data collection.

**Reliability of the Tool**

The Cronbach's alpha value of maternity health care providers risk perception about COVID-19-part II tool I was (0.893) and the maternity health care providers preventive practices during COVID-19 tool (2) was 0.901. Which indicated high reliability of the tools.

**3.8 Pilot Study**

After developing the tool, a pilot study was conducted with 10% of the study sample (10 maternity healthcare providers) from the total targeted sample at Damietta General Hospital. The pilot study aimed to evaluate the clarity and practicality of the tools, ensuring they effectively conveyed the intended meaning and objectives. It also helped gauge the time needed to complete the questionnaire. The results indicated that the statements were generally clear and relevant, requiring only minor wording adjustments and rephrasing of some sentences. Consequently, the pilot sample was excluded from the main study. This phase lasted one month (August 2022), with the actual fieldwork commencing in September 2022.

**Ethical Considerations**

Ethical approval for the study was obtained from the Research Ethics Committee at the Faculty of Nursing, Mansoura University. Prior to beginning the research, formal consent was secured from the maternity healthcare providers after explaining the study's nature and objectives. Participation was completely voluntary, and each provider had the option to withdraw at any time. Anonymity, privacy, safety and confidentiality were maintained throughout the study. The results were utilized to fulfill the requirements for a Master's degree, as well as for publication and educational purposes.

**Data Analysis Phase**

Data analysis and presentation were conducted using SPSS for Windows version 20.0 (SPSS, Chicago, IL). Continuous data were reported as means and standard deviations (SD), assuming a normal distribution. The chi-square test (or Fisher's exact test, as appropriate) was employed to compare categorical variables. The relationship between two continuous variables was assessed using the correlation coefficient test. The reliability (internal consistency) of the questionnaires used in the study was calculated with statistical significance set at $p<0.05$.

**Research Process**

The current study was carried out in two phases: preparatory and operational. The preparatory phase involved reviewing literature, designing the tools and conducting the pilot study while the operational phase focused on data collection and analysis.

**Preparatory Phase**

In this phase, the researcher secured an approval letter from the relevant authority of the previously mentioned setting. Data collection tools were created following a review of relevant local and international literature as well as theoretical knowledge regarding various aspects of the study, using papers, books, and journals. The questionnaire was first drafted in English and subsequently translated into Arabic.

**Operating Stage**

**Data Collection Phase**

- The current study was carried out from the beginning of September 2022 to the end of November 2022.
- An ethical approval letter was obtained from the Researcher Ethics Committee, Faculty of Nursing, Mansoura University.
- The researcher followed the recommended personal protective practices during data collection process as well as, privacy and safety were absolutely assured.
- Official permission to carry out the study was obtained from the director of Damietta General Hospital.
- Data of the current study was collected from the obstetric and gynecological department, obstetric clinics and labor unit at Damietta General Hospital.
- The researcher visited the specified setting once a week from 9 AM to 2 PM until the required sample size was achieved.
- At the beginning of the interview greeted each maternity health care providers, explained the purpose of the study and took her oral consent.
- The researcher collected demographic data from studied maternity health care providers (age, gender, residence, qualification, years of experience and place of work) and assessed their level of perception of the risk associated with COVID-19.
- The maternity healthcare providers involved in the study were allowed to request any clarifications or explanations.
- Each maternity health care providers were observed for at least 6 hours / shift until her practice covered the items of tool II (observational checklist for maternity health care providers preventive practices among COVID-19).
- This process was repeated until the researcher completed the predetermined sample.
- The gathered data was stored, categorized, coded, digitized, tabulated and analyzed using version 21 of the Statistical Package for the Social Sciences (SPSS).

**Results**

**Part I:** General data of the studied maternity health care providers

Table 1 shows that 37% of the studied maternity health care providers ages ranged from 25 – < 35 with the mean age of 34.2 ±7.6. Also (72%, 58%, 56% & 51% respectively) of them worked part time, were females, had a not enough monthly income and from rural residence. Additionally, (46%, 38%, & 32 % respectively) of them worked in obstetric and gynecological department, had an experience in health care less than 5 years and had a bachelor degree.

**Part II:** Risk perception among the studied maternity health care providers

Table 2 shows that (99%, 96%, 82 %, 81% & 78% respectively) of the studied maternity health care providers agreed that COVID-19 affected their physical health, family physical health, psychological health, their loved one health and their psychological health. While, (46 % & 47 % respectively) of them disagree that COVID-19 impacted their mental health as well as that of their families.

Table 3 shows that (95 %, 80% & 73% respectively) of studied maternity health care providers agreed if they were infected with corona virus, they would be unable to visit their relatives, their economic status would be affected and they

would be unable to pay their bills. Additionally, (67%, 66%, 66% & 65% respectively) of them agreed that they would have restricted access to food supplies, would be in the hospital running out of work, would have restricted liberty movement and would be unemployed.

Table 4. shows that (82% & 76% respectively) of the studied maternity health care providers agreed that corona virus would lead to infection and the loss a loved one.

Figure 1. illustrates that 75% of the maternity healthcare providers had a high perceived risk of COVID-19, while only 25% had a low perceived risk.

**Part III:** Preventive practices of the studied maternity health care providers regarding COVID-19

Table 5. shows that (76%, 73%, 68% & 65% respectively) of the studied maternity health care providers completely done the following preventive practices (wear facemask and gloves, cover mouth and nose when cough or sneeze, clean hands with disinfectants when or had a cold). Water and soap were not available and disinfect surface. While (55%, 48% & 47% respectively) of them not done and incompletely done the following preventive practices (physical distance, disinfecting mobile phone and staying home when feel sick

**Table 1. Distribution of the studied maternity health care providers according to their demographic data ( n=100 )**

| Items | No. | % |
|---|---|---|
| **Age (Years)** | | |
| 18 – <25 | 27 | 27.0 |
| 25 – < 35 | 37 | 37.0 |
| 35 – 45 | 17 | 17.0 |
| > 45 | 19 | 19.0 |
| **Mean ±SD** | **34.2 ±7.6** | |
| **Gender** | | |
| Male | 42 | 42.0 |
| Female | 58 | 58.0 |
| **Residence** | | |
| Rural | 51 | 51.0 |
| Urban | 49 | 49.0 |
| **Income** | | |
| Not enough | 56 | 56.0 |
| Enough | 37 | 37.0 |
| Enough and save | 7 | 7.0 |
| **Qualification** | | |
| Uneducated | 3 | 3.0 |
| Diploma | 7 | 7.0 |
| Technical institute | 27 | 27.0 |
| Bachelor degree | 32 | 32.0 |
| Postgraduate | 31 | 31.0 |
| **Place of Work** | | |
| Obstetric and gynecological department | 46 | 46.0 |
| Obstetric and gynecological outpatient clinics | 19 | 19.0 |
| Labor and delivery unit | 35 | 35.0 |
| **Working Hours** | | |
| Part time | 72 | 72.0 |
| Full time | 28 | 28.0 |
| **Years of experience in health care** | | |
| Less than 5 years | 38 | 38.0 |
| 5 – 10 years | 31 | 31.0 |
| More than 10 years | 31 | 31.0 |

**Table 2. Distribution of the studied maternity health care providers regarding to their risk perception of COVID-19 ( personal and family health)** (N=100)

| | Disagree | | Neutral | | Agree | |
|---|---|---|---|---|---|---|
| Risk perception regarding Personal and family health | No. | % | No. | % | No. | % |
| - I think COVID-19 affected my physical health | 0 | 0.0 | 1 | 1.0 | 99 | 99.0 |
| - I think COVID-19 affected my family physical health | 1 | 1.0 | 3 | 3.0 | 96 | 96.0 |
| - I think COVID-19 affected my mental health | 46 | 46.0 | 28 | 28.0 | 26 | 26.0 |
| - I think COVID-19 affected my family mental health | 47 | 47.0 | 27 | 27.0 | 26 | 26.0 |
| - I think COVID-19 affected my psychological health | 9 | 9.0 | 13 | 13.0 | 78 | 78.0 |
| - I think COVID-19 affected my family psychological health | 9 | 9.0 | 9 | 9.0 | 82 | 82.0 |
| - I think COVID-19 affected my loved one health | 10 | 10.0 | 9 | 9.0 | 81 | 81.0 |

**Table 3. Distribution of the studied maternity health care providers regarding to their perceived risk of infection with corona virus** (N=100)

| Perceived risk with corona virus of infection | Disagree | | Neutral | | Agree | |
|---|---|---|---|---|---|---|
| I think that when being infected with corona virus, I will be | No. | % | No. | % | No. | % |
| - Becoming unemployed | 17 | 17.0 | 18 | 18.0 | 65 | 65.0 |
| - Unable to pay my bills | 12 | 12.0 | 15 | 15.0 | 73 | 73.0 |
| - Unable to visit relatives | 0 | 0.0 | 5 | 5.0 | 95 | 95.0 |
| - Restricted access to food supplies | 19 | 19.0 | 14 | 14.0 | 67 | 67.0 |
| - Affect my economic status | 6 | 6.0 | 14 | 14.0 | 80 | 80.0 |
| - Hospital running out of work | 10 | 10.0 | 24 | 24.0 | 66 | 66.0 |
| - Restricted liberty movement | 16 | 16.0 | 18 | 18.0 | 66 | 66.0 |
| - Health system will be overwhelmed | 8 | 8.0 | 34 | 34.0 | 58 | 58.0 |

**Table 4. Distribution of the studied maternity health care providers regarding to risk perception of COVID-19 to family** (N=100)

| | Disagree | | Neutral | | Agree | |
|---|---|---|---|---|---|---|
| Risk perception to family | No. | % | No. | % | No. | % |
| - I think that corona virus will lead to losing my loved on | 17 | 17.0 | 7 | 7.0 | 76 | 76.0 |
| - I think that corona virus will lead to infection of my loved one | 8 | 8.0 | 10 | 10.0 | 82 | 82.0 |

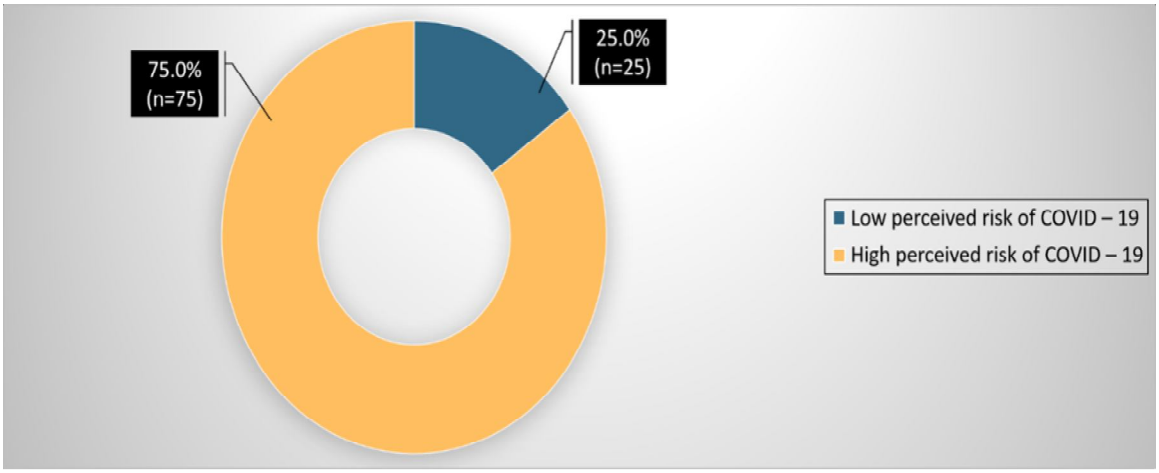


**Figure 1. Total risk perception of the maternity healthcare providers regarding COVID-19 (N = 100)**

**Table 5. Distribution of the studied maternity health care providers according to performance of preventive practices during COVID-19 (N=100)**

| Preventive practices | Not done | | Incompletely done | | Completely done | |
|---|---|---|---|---|---|---|
| | N0. | % | No. | % | No. | % |
| - Wearing facemask and gloves | 20 | 20.0 | 4 | 4.0 | 76 | **76.0** |
| - Hand washing for at least 20 second before every contact with new patient | 20 | 20.0 | 15 | 15.0 | 65 | **65.0** |
| - Covering mouth and nose when cough or sneeze | 19 | 19.0 | 8 | 8.0 | 73 | **73.0** |
| - Avoiding touching eye, nose and mouth with unwashed hands | 21 | 21.0 | 23 | 23.0 | 56 | **56.0** |
| - Clean hands with disinfectants when water and soap were not available | 21 | 21.0 | 11 | 11.0 | 68 | **68.0** |
| - Take physical distancing | 29 | 29.0 | 26 | 26.0 | 45 | 45.0 |
| - Disinfecting mobile phone | 13 | 13.0 | 35 | 35.0 | 52 | 52.0 |
| - Disinfecting surfaces | 6 | 6.0 | 29 | 29.0 | 65 | **65.0** |
| - Staying home when feel sick or had a cold | 32 | 32.0 | 15 | 15.0 | 53 | 53.0 |

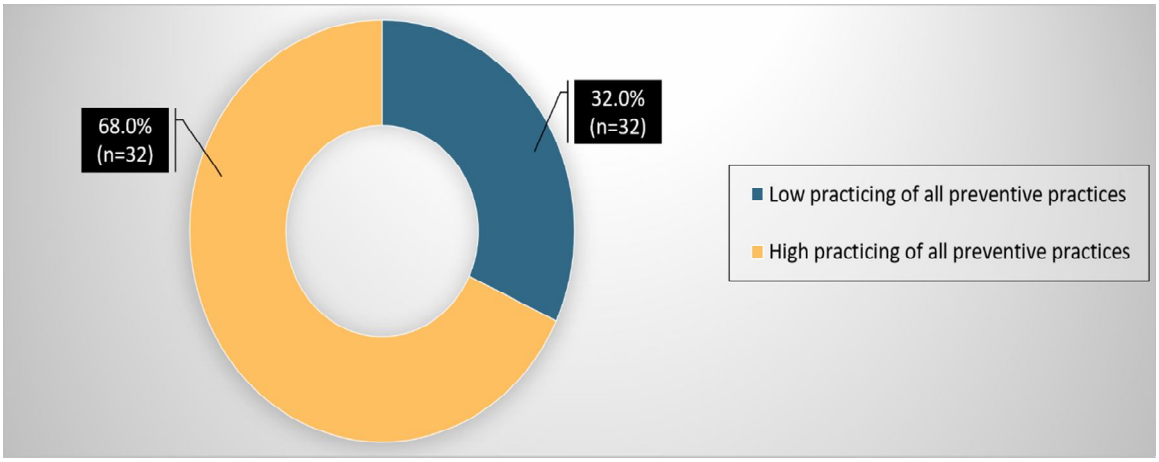


**Figure 2. Total level of performing preventive practices among the studied maternity healthcare providers regarding COVID-19-19 (N = 100)**

**Discussion**

The present study aimed to assess the risk perception and preventive practices of COVID-19 among maternity healthcare providers. This aim was achieved through the present study findings which revealed that, three quarters of the studied maternity health care providers had high risk perception regarding COVID-19 and more than two thirds of them practiced preventive practices of COVID-19, so the research questions were answer.

**Regarding the maternity health care providers risk perception of COVID-19 regarding personal health**

The results of the current study revealed that most maternity health care providers agreed that COVID-19 could affect their physical health. This aligns with a descriptive study which conducted by **Griffiths et al. (2021)** studied the impact of unemployment on mental and physical health during the COVID-19 pandemic. The researchers reported that majority of healthcare providers perceived that COVID-19 may affect their physical health. This similarity may be attributed to the same time of conducting both studies.

Conversely, the results of the current study differed from those of a Chinese study conducted by **Chan, Huang, Lo, Hung, Wong and Wong (2020)** who examined the socio-demographic predictors of health risk perception related to health-emergency disaster risk management. They reported that Over half of the maternity healthcare providers expressed concerns, believing that COVID-19 significantly affected their physical health. The difference between the studies may be due to time differences in conducting both studies as was conducted during the first peak of the pandemic. While the present study was conducted on the six wave of pandemic.

The results of the current study showed that over three-quarters of the studied maternity healthcare providers surveyed agreed that COVID-19 could impact their psychological health. The present study was in agreement with a descriptive study with conducted by **Centenaro et al. (2024)** who reported that more than three quarters of health care workers at risk of suffering psychological harms. The similarity between two studies may be due to normal response to anxiety and fear by the whole people especially healthcare providers to COVID- 19 as universal crisis.

The results of the current study indicated that over a quarter of the maternity healthcare providers believed that COVID-19 could impact their mental health. These findings were not aligned with those of a descriptive study conducted by **Badahdah, Khamis, Al Mahyijari, Al Balushi, Al Hatmi, Al Salmi & Al Noomani (2021)**. The researchers reported that more than three - quarters of health care workers think that COVID- 19 can affect their mental health by increasing stress and anxiety. The difference between two studies may be due to different culture and country beliefs of both regarding response to pandemic.

**Regarding the maternity healthcare providers risk perception of COVID-19 regarding family health**

The findings of the present study showed that most of the participants maternity HCPs agreed that COVID-19 can affect their family physical health. In addition, The majority of the health care providers surveyed agreed that COVID-19 could impact the psychological health of their families and loved ones. However, the present study found that half of the maternity healthcare providers disagreed with the notion that COVID-19 affected family mental health.

The current study did not align with a descriptive study by **Beschoner et al. (2023)**. The researchers found that approximately half of their participants indicated that COVID-19 impacted their family's mental health.

In conclusion, the present study finding showed that less than three quarters of the studied MHCP had high total risk perception of COVID-19 on personal and family health.

**Concerning MHCP risk perception of COVID-19 infection**

The findings of the current study revealed that more than half of maternity healthcare providers believed that an infection with the coronavirus would overwhelm the healthcare system. This aligns with the study conducted by **Deressa, Worku, Abebe, Gizaw, and Amogne (2021)** which investigated risk perceptions and preventive practices related to COVID-19 among health care professionals in public hospitals in Addis Ababa, Ethiopia. The researchers found that more than two-thirds of healthcare workers were worried about the possibility of contracting the virus and its potential impact on the health care system.

The present study found that over two-thirds of the maternity health care providers agreed that contracting the coronavirus would hinder their ability to pay bills. This contrasts with **Deressa et al. (2021)** which reported that more than one-third of healthcare providers were concerned about their ability to pay bills. The discrepancy between the two studies may be from differences in the economic conditions of the countries involved.

The present study finding showed that majority of MHCP agreed that when being infected with corona virus, their economic status will be affected. The present study finding disagreed with **Chan et al. (2020)** reported that less than three - quarters of health care workers not believing that COVID-19 had a significant impact on their financial status. The difference between two studies may be due to health workers own response to COVID-19 and how many will they pay to be healthy. The difference between two studies may be due to the differences of both country economy.

The present study finding showed that most of the studied maternity health care providers (MHCP) agreed that when being infected with corona virus, they would be unable to visit relatives. The findings of the present study differed from those of an Egyptian study by **Ahmed, Ramadan, Refay, and Khashbah (2021)** which compared knowledge, attitudes, socioeconomic challenges, and mental health disorders related to the COVID-19 pandemic between the general population and healthcare workers in Egypt. They reported that more than half of health care providers unable to visit relatives.

The present study finding showed that around two - thirds of maternity health care providers (MHCP) think that when being infected with corona virus, they would be becoming unemployed. In this context **(Bhandari, Batra, Upadhyay & Cochran (2021)** reported that little of health care workers think of becoming unemployed if they infected with COVID-19. The difference between two studies may be due to difference between hospital policy about how to deal with infected person.

The present study finding showed that more than three - fifths of the studied maternity health care providers think that when being infected with corona virus, they would have restricted access to food supplies. The present study finding disagreed with an Egyptian study conducted by **(Salem, Al Hanafy, Bayad, Abdel-Aziz, Shaheen & Amin (2021)** who reported that less than one quarter of health care providers eating more than usual and increase access to food supplies.

The findings of the current study indicated that just over three-quarters of the maternity healthcare providers had a high-risk perception concerning COVID-19 infection. This may be attributed to the timing of the study which took place during the sixth wave of the pandemic (September 2022 to November 2022) when there were numerous informational resources about the pandemic on social media presented by the WHO recommendations for COVID-19 preventive practice.

**Regarding maternity health care providers risk perception of COVID-19 to families**

The findings of the current study revealed that more than three-fifths of the maternity health care providers believed that the COVID-19 virus could lead to the loss of loved ones. the present study finding was agreed with **Deressa et al. (2021**) who reported that more than two - thirds of health care workers worried about corona virus lead to losing loved ones. The similarity between two studies may be due to worsen of COVID-19 pandemic that deteriorate life. Thus, the first research question was answered.

**Regarding maternity health care providers preventive practices during COVID-19**

The present study finding showed that more than half of the studied maternity healthcare providers washed hands for at least 20 seconds before every contact with new patient. The present study finding agreed with an Indian study conducted by **Agarwal, Ranjan, Saraswat, Kasi, Bharadiya, Vikram & Chakrawarty (2021)**, the researchers reported that more than half of Indian health care workers washed hands for at least 20 seconds before every contact with new patient. The similarity between two studies may be due to application of the universal precaution for hand washing even prior to the COVID-19 pandemic.

Also, the present study finding showed that around three - quarters of the studied maternity health care providers completely cover mouth and nose when cough or sneeze. In addition, around two – thirds of them hand washed for at least 20 seconds before every contact with new patient. These study findings were disagreed with **Bhagavathula, Aldhaleei, Rahmani, Mahabadi & Bandari (2020)** who investigated knowledge and perceptions of COVID-19 among healthcare workers, the researchers reported that almost healthcare workers practiced hand hygiene and covered their nose and mouth while coughing. These studies differences may be attributed to the

difference between both countries' availability of and adherence to preventive practices.

The findings of the current study revealed that more than three-quarters of the maternity health care providers did not disinfect surfaces. This finding is consistent with **Bhagavathula et al. (2020)** who reported that more than three - quarters of health care workers didn't disinfected equipment. The similarity between both studies may be attributed to the universal hospital program compliance about infection control precautions.

The findings of the current study indicated that over three-quarters of the maternity health care providers wore facemasks. Additionally, this finding aligns with the research by **Tsehay, Hareru, Molla, Mengistu, Kaso, Ashuro and Soboksa (2021)** investigated factors associated with preventive practices of COVID-19 among healthcare workers at Dilla University Hospital in Southern Ethiopia. The researchers reported that more than three - quarters of health care workers using face mask. The similarity between studies may be due to the universal hospital program compliance about infection control precaution.

The present study finding showed that majority the studied maternity health care providers avoided touching eye, nose and mouth with unwashed hands. The present study finding was agreed with **Tsehay et al (2021)** reported that majority of health care workers avoided touching mouth, eye and nose with unwashed hands.

The findings of the current study showed that three-quarters of the studied maternity healthcare providers stayed home when feeling sick or having a cold. This finding disagreed with **Ahmed et al. (2021)** who reported that most of health care workers stay at home and reduce outdoor activities. The studies differences may be attributed to the difference times of conducting the studies and the variation of the pandemic symptoms from one to another.

Concerning the studied MHCP preventive practices, the present study finding showed that more than two – thirds of them had high total level of preventive practices regarding COVID-19.

## Conclusion

The present study concluded that maternity health care providers showed that three quarters of the studied maternity healthcare providers had high perceived risk regarding the COVID-19 pandemic and two-thirds of them engaged in a high level of preventive practices for COVID-19.

## 7. Recommendations

**Based on the study finding, the study is recommending the following**

- Designing educational package about importance of compliance with preventive practices during pandemic on maternity health care providers health.

**Further studies are recommended to explore**

- Effect of educational intervention on the maternity healthcare providers compliance with coping practices during the pandemic.
- Barriers of following or adhering to different forms of coping practices among maternity healthcare providers during the pandemic.
- Provide training session about proper practicing of all preventive measures during pandemic.

## Conflict of Interest

The researchers assert that there are no conflicts of interest.

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## References

Abdelhafiz, Ahmed Samir, *et al.* (2020)"Prevalence, associated factors, and consequences of burnout among Egyptian physicians during COVID-19 pandemic." *Frontiers in public health* 8:864. https://doi.org/10.3389/fpubh.2020.590190

Agarwal, A., Ranjan, P., Saraswat, A., Kasi, K., Bharadiya, V., Vikram, N., ... & Chakrawarty, A. **(2021).** Are health care workers following preventive practices in the COVID-19 pandemic properly? -A cross-sectional survey from India. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, *15*(1),69-75. https://doi.org/10.1016/j.dsx.2020.12.016

Ahmed, G. K., Ramadan, H. K. A., Refay, S. M., & Khashbah, M. A. (2021). Comparison of knowledge, attitude, socioeconomic burden, and mental health disorders of COVID-19 pandemic between general population and health care workers in Egypt. *The Egyptian journal of neurology, psychiatry and neurosurgery*, *57*, 1-11.https://doi.org/10.1186/s41983-021-00280-w

Alijanzadeh, M., Ahorsu, D. K., Alimoradi, Z., Mahmoudi, N., Griffiths, M. D., Lin, C. Y., ... & Pakpour, A. H. (2021). Fear of COVID-19 and trust in the healthcare system mediates the association between individual's risk perception and preventive COVID-19 behaviours among Iranians. *International journal of environmental research and public health*, *18*(22),12146. https://doi.org/10.3390/ijerph182212146

Backes, E. P., Scrimshaw, S. C., & National Academies of Sciences, Engineering, and Medicine. (2020). Maternal and Newborn Care in the United States. In *Birth Settings in America: Outcomes, Quality, Access, and Choice*. National Academies Press (US).https://www.ncbi.nlm.nih.gov/sites/books/NBK555484/

Badahdah, A., Khamis, F., Al Mahyijari, N., Al Balushi, M., Al Hatmi, H., Al Salmi, I., ... & Al Noomani, J. (2021). The mental health of health care workers in Oman during the COVID-19 pandemic. *International Journal of Social Psychiatry*, *67*(1), 90-95. https://doi.org/10.1177/0020764020939596

Beschoner, P., Jerg-Bretzke, L., Erim, Y., Geiser, F., Baranowski, A. M., Weidner, K., ... & Morawa, E. (2023). The prevalence of effort-reward imbalance and its associations with working conditions, psychosocial resources and burden among health care workers during the COVID-19 pandemic: Results of the egePan-Voice study. *PloS One*, *18*(8), e0287509. https://doi.org/10.1371/journal.pone.0287509

Bhagavathula, A. S., Aldhaleei, W. A., Rahmani, J., Mahabadi, M. A., & Bandari, D. K. (2020). Knowledge and perceptions of COVID-19 among health care workers: cross-sectional study. *JMIR public health and surveillance*, *6*(2),e19160. Doi: 10.2196/19160

Bhandari, N., Batra, K., Upadhyay, S., & Cochran, C. (2021). Impact of COVID-19 on healthcare labor market in the United States: lower paid workers experienced higher vulnerability and slower recovery. *International Journal of Environmental Research and Public Health*, *18*(8),3894. https://doi.org/10.3390/ijerph18083894

Centenaro, A. P. F. C., Andrade, A. D., Silva, R. M. D., Bonow, C. A., Costa, M. C. D., Brum, K., ... & Santos, G. K. D. (2024). Common mental disorders and risk perception in nursing work at COVID 19 hospital units, Brazil. *Texto & Contexto-Enfermagem*, *33*,e20230019. https://doi.org/10.1590/1980-265X-TCE-2023-0019en

Chan, E. Y. Y., Huang, Z., Lo, E. S. K., Hung, K. K. C., Wong, E. L. Y., & Wong, S. Y. S. (2020). Sociodemographic predictors of health risk perception, attitude and behavior practices associated with health-emergency disaster risk management for biological hazards: the case of COVID-19 pandemic in Hong Kong, SAR China. *International journal of environmental research and public health*, *17*(11),3869. https://doi.org/10.3390/ijerph17113869

Deressa, W., Worku, A., Abebe, W., Gizaw, M., & Amogne, W. (2021). Risk perceptions and preventive practices of COVID-19 among healthcare professionals in public hospitals in Addis Ababa, Ethiopia. *PloS one*, *16*(6),e0242471. https://doi.org/10.1371/journal.pone.0242471

Enabulele, O., & Esther, A. (2021). The risk perception of COVID-19 and practice of precautionary measures amongst healthcare workers in the National Health Insurance Scheme Clinic of a tertiary hospital in Nigeria. *Pan African Medical Journal*, *38*(1). Available at: https://www.panafrican-med-ournal.com//content/article/38/73/full

Ezike, O. C., Odikpo, L. C., Onyia, E. N., Egbuniwe, M. C., Ndubuisi, I., Nwaneri, A. C., ... & Abdussalam, A. W. (2022). Risk perception, risk involvement/exposure and compliance to preventive measures to COVID-19 among nurses in a tertiary hospital in Asaba, Nigeria. *International Journal of Africa Nursing Sciences*, *16*, 100385. https://doi.org/10.1016/j.ijans.2021.100385

Griffiths, D., Sheehan, L., van Vreden, C., Petrie, D., Grant, G., Whiteford, P., ... & Collie, A. (2021). The impact of work loss on mental and physical health during the COVID-19 pandemic: baseline findings from a prospective cohort study. *Journal of occupational rehabilitation*, *31*, 455-462. https://doi.org/10.1007/s10926-021-09958-7

Griswold, D. P., Gempeler, A., Kolias, A., Hutchinson, P. J., & Rubiano, A. M. (2021). Personal protective equipment for reducing the risk of COVID-19 infection among health care workers involved in emergency trauma surgery during the pandemic: An umbrella review. *Journal of Trauma and Acute Care Surgery*, *90*(4), e72-e80. *DOI:* 10.1097/TA.0000000000000307

Hussain, Z.B., Shoman, H., Yau, P., Thevendran, G., Randelli, F., Zhang, M., et al., (2020) "Protecting healthcare workers from COVID-19: learning from variation in practice and policy identified through a global crosssectional survey. Bone & Joint Open, 1(5), 144-151. DOI https://doi.org/10.1302/2633-1462.15.BJO-2020-0024.R1

Hussein, R. S., Manzour, A. F., & Wahdan, M. M. (2021). COVID-19 knowledge, risk perception, and precautionary behavior among medical students in Egypt. *Journal of High Institute of Public Health*, *51*(1), 25-32. DOI: 10.21608/jhiph.2021.161285

Ing, E.B., Xu, Q.A., Salimi, A., Torun, N. (2020) "Physician deaths from corona virus (COVID-19) disease" *Occupational Medicine*, https://doi.org/10.1093/occmed/kqaa088PMID: 32409839

Islam, M. S., Rahman, K. M., Sun, Y., Qureshi, M. O., Abdi, I., Chughtai, A. A., & Seale, H. (2020). Current knowledge of COVID-19 and infection prevention and control strategies in healthcare settings: A global analysis. *Infection Control & Hospital Epidemiology*, *41*(10), 1196-1206. Doi:10.1017/ice.2020.237

Mushtaq, H., Singh, S., Mir, M., Tekin, A., Singh, R., Lundeen, J., ... & Kashyap, R. (2022). The well-being of healthcare workers during the COVID-19 pandemic: a narrative review. *Cureus*, *14*(5). Doi: 10.7759/cureus.25065

Ombere, S. O. (2021). Access to maternal health services during the COVID-19 pandemic: experiences of indigent mothers and health care providers in Kilifi County, Kenya. *Frontiers in sociology*, *6*, 613042. https://doi.org/10.3389/fsoc.2021.613042

Qin, H., Sanders, C., Prasetyo, Y., Syukron, M., & Prentice, E. (2021). Exploring the dynamic relationships between risk perception and behavior in response to the Coronavirus Disease 2019 (COVID-19) outbreak. *Social Science & Medicine*, *285*, 114267. https://doi.org/10.1016/j.socscimed.2021.114267

Rieckert, A., Schuit, E., Bleijenberg, N., Ten Cate, D., de Lange, W., de Man-van Ginkel, J. M., ... & Trappenburg, J. C. (2021). How can we build and maintain the resilience of our health care professionals during COVID-19? Recommendations based on a scoping review. *BMJ open*, *11*(1), e043718. http://bmjopen.bmj.com/ BMJ Open: first published as 10.1136/bmjopen-2020-043718 on 6 January 2021.

Robins-Browne, K., Lewis, M., Burchill, L. J., Gilbert, C., Johnson, C., O'Donnell, M., ... & Palmer, V. J. (2022). Interventions to support the mental health and well-being of front-line healthcare workers in hospitals during pandemics: an evidence review and synthesis. *BMJ open*, *12*(11), e061317. http://bmjopen.bmj.com.

Salem, M. R., Al Hanafy, S. H., Bayad, A. T., Abdel-Aziz, S. B., Shaheen, D., & Amin, T. T. (2021). Assessment of knowledge, attitudes, and precautionary actions against COVID-19 among medical students in Egypt. *Journal of Infection and Public Health*, *14*(10),1427-1434. https://doi.org/10.1016/j.jiph.2021.07.022

Singh, S. K., Khawale, R. P., Chen, H., Zhang, H., & Rai, R. (2022). Personal protective equipments (PPEs) for COVID-19: a product lifecycle perspective. *International journal of production research*, *60*(10), 3282-3303.https://doi.org/10.1080/00207543.2021.1915511

Tsehay, A., Hareru, H. E., Molla, W., Mengistu, N., Kaso, A. W., Ashuro, Z., & Soboksa, N. E. (2021). Factors associated with preventive practices of COVID-19 among health care workers in Dilla University Hospital, Southern Ethiopia. *Environmental Challenges*, *5*, 100368. https://doi.org/10.1016/j.envc.2021.100368

"WHO, (2020)" How to Protect Health Workers Now: WHO COVID-19 Briefing". *World EconomicForum.* https://www.weforum.org/agenda/2020/04/1

0-april-who-briefing-healthworkers-covid-19- ppe-training/.

WHO, (2020) "Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19). Interim guidance.

WHO. Regional Office for Europe. Survey tool and guidance: rapid, simple, flexible behavioral insights on COVID-19. 2020. WHO/EURO:2020-696-40431-54222. https://apps.who.int/iris/handle/10665/333549.

Wouters, O. J., Shadlen, K. C., Salcher-Konrad, M., Pollard, A. J., Larson, H. J., Teerawattananon, Y., & Jit, M. (2021). Challenges in ensuring global access to COVID-19 vaccines: production, affordability, allocation, and deployment. *The Lancet*, *397*(10278), 1023-1034. https://coronavirus.jhu.edu/map.

Zhan, M., Qin, Y., Xue, X., and Zhu S. (2020)" Death from COVID-19 of 23 healthcare workers in China". *New England Journal* of Medicine 382.23: 2268-2270.DOI: 10.1056/NEJMc2005696