INTRODUCTION

The Covid-19 pandemic is caused by severe acute respiratory syndrome 2 virus, SARS-CoV-2. The outbreak was identified in Wuhan, China, in December 2019, it was declared a public health emergency of international concern on 30 January 2020, and recognised by the WHO as a pandemic on March 11, 2020.1

In Jordan, the Governorate of Irbid witnessed the first outbreak of the Covid-19 in the country. Only one case was reported in Jordan in early March 2020, but by 10 April 2020, the number of confirmed cases had increased rapidly. The country initiated a complete lockdown of the city of Irbid, where the outbreak started on 14 March, and was isolated from the rest of the country.2

Jordan hosts around 658 000 registered Syrian refugees. The real total number is estimated at around 1.3 million when those not registered are taken into account. The majority, estimated 81%, live in camps,3 with 20.6% living in the Governorate of Irbid.4

The World Health Organization (2020) reports that 80% of infections are mild or asymptomatic, 15% are severe, requiring oxygen and 5% are critical infections, requiring ventilation.5 The American Centers for Disease Control and Prevention recommends that individuals with breathing difficulty, persistent chest pain or pressure, sudden confusion, difficulty awakening, or bluish face or lips should seek immediate medical attention and support.6

Exclusive breastfeeding for six months has many benefits for the infant and mother which far outweigh any risk from the new
coronavirus pandemic, according to WHO. These advantages include the fact that breastmilk, including expressed milk, provides lifesaving antibodies that are protective in childhood.7

The World Health Organization recommends that mothers suspected or confirmed to be Covid-19 positive could initiate or continue breastfeeding. Mothers should be advised that the benefits of breastfeeding significantly outweigh the potential risks of disease transmission. Mother and infant could “room in” and may practice skin-to-skin contact, after washing hand and wearing a face mask, especially immediately after birth and during breastfeeding.7

The latest available evidence indicates that smoking is associated with increased illness and death in hospitalised Covid-19 patients. Furthermore, the WHO recognises the potential damage associated with tobacco and exposure to second-hand smoke.8

In the middle of the Covid-19 pandemic, knowledge and attitudes towards its spread and prevention are important components of the management strategy for combating this highly contagious disease.9

Mothers’ primary duties are the children and the household, fathers are the main breadwinners. Even though fathers do take interest in the in the household and being more present, research shows that mothers interact more than fathers and take most of the responsibility for running of the household and the children.10 Alas, there is not enough information about refugee mother’s knowledge and attitudes toward the Covid-19 pandemic, hence this study.

1.1 | Study significance

This study is the first of its kind in Jordan, exploring Syrian refugee mothers’ knowledge and attitudes towards the Pandemic of Covid-19 in Governorate of Irbid, where the first outbreak of Covid-19 took place. The study provides baseline information for implementing initiatives to identify the educational needs and modify routine practices in the fight against this pandemic.

1.2 | Study objectives

The objective of this study was to assess knowledge and attitude among Syrian refugee mothers in Jordan in relation to the Covid-19 pandemic, consequently enhance protection.

2 | METHODS

2.1 | Study design, setting, and population

This is a cross-section study of Syrian refugee mothers, who were currently pregnant or have a newborn child, in the Governorate of Irbid in the north of Jordan. Data were collected during April 2020. All data from any participant with missing values were deleted.

What’s already known about this topic?

In Jordan, the Governorate of Irbid witnessed the first outbreak of Covid-19 in the country. Only one case was reported in Jordan in early March 2020, and by 10 April 2020, the number of confirmed cases had increased rapidly, with little knowledge on its immediate, short and long term effects. To compound matters further, there was little information on the knowledge and attitude of the refugees in relation to this new Covid-19 pandemic.

What does this article add?

This study highlights the knowledge and attitude of refugee mothers towards Covid-19 epidemic. It is the first of its kind that targets the refugees in Jordan.

2.2 | Study tools

The survey questionnaire consisted of 3 sections that covered demographics, knowledge and attitudes related to Covid-19 infection, based on the main information that is published by the World Health Organization.1,5,7,8 The questionnaire was pilot tested for readability and clarity.

For reliability, the questionnaire was pilot tested for face validity, entered into a spreadsheet, cleaned, principal component analysed and revised. The survey link was distributed in April 2020, through Facebook pages and WhatsApp groups. The contact information was obtained from community centres and the non-profit organisations.

2.3 | Ethical consideration

The study was approved by the Human Research Ethics Committee of the Jordan University of Science and Technology. The survey was conducted according to guidelines on security and confidentiality. Participation in the survey was based upon participants’ agreement to access the survey through the provided link.

2.4 | Data analysis

Data were analysed using SPSS software. A descriptive statistical analysis was performed to produce the frequencies and percentages for data.

3 | RESULTS

A total of 389 Syrian refugee mothers from the Governorate of Irbid completed the survey. Eighty-four per cent were aged between 20
and 45 years. The majority, having at least school degree (71%). Eighty-two per cent of them having at least one child aged less than 6 years at home, with 21% being currently pregnant, and another 11% planning to get pregnant in the near future.

The study investigated knowledge and attitude related to transmission, prevention, and precautionary steps among refugee mothers against Covid-19, including measures that should be taken when outside home, and when returning home, and awareness of aspects that should be considered when diagnosing Covid-19 disease (Table 1).

A high percentage (77%) of mothers believed that Covid-19 could be transmitted by sneezing, and 80% of mothers considered that shaking hands could transmit the virus, while only 27% of mothers believed that touching contaminated surfaces could be a source of infection. In addition, 17% of mothers thought that transmission could take place through close contact with animals (Table 1).

In addition, it shows the results on preventive measures that should be taken when outside home, when returning home, need to wear gloves and masks when outside home, social distancing, avoidance of large gatherings, and handshaking, procedures that should be taken when returning home, taking-off shoes outside home, hand sanitization before touching any objects upon returning home, disposal of the outer shopping bags, washing of vegetables and fruits, hand washing with soap and water for 30 seconds, taking off outside clothes and washing them separately (Table 1).

Furthermore, the mothers were asked to indicate the aspects that should be considered when diagnosing Covid-19, including contact with infected others, travelling to infected areas and symptoms of contracting the disease (Table 1).

Regarding awareness about aspects related to the vertical transmission of Covid-19 from mothers to babies, some believed that pregnant women are more susceptible to Covid-19 infection. Others believed that the Covid-19 could be transmitted from a pregnant mother to her fetus across the placenta, or to the newborn through breast milk, or through respiratory droplets while breastfeeding (Table 2).

In relation to smoking, the majority believed that smokers are more susceptible to infection with Covid-19. About one third believed that exposure to passive smoking may transmit SARS-CoV-2. In addition, a high percentage were on the opinion that argilah (hubbly bubbly or hookah) smoking could transmit the virus (Table 3).

The study investigated the frequency of access to information about Covid-19, 66% indicated that they access information often, 18% accessed information sometimes, and 16% rarely accessed information regarding Covid-19. The main sources for information were Facebook 87%, Whatsapp 69%, television 53%, while 21% indicated that they access professional databases or governmental websites.

### TABLE 1 Knowledge and attitude to Covid-19 infection

| Mode of transmission          | %    | No. |
|------------------------------|------|-----|
| Sneezing                     | 77%  | 299 |
| Hand shaking                 | 80%  | 312 |
| Surface touching             | 27%  | 104 |
| Dealing with animals         | 17%  | 65  |
| Preventive measures taken when outside home | | |
| Avoid leaving the home unless necessary | 92% | 356 |
| Wear gloves and masks when leaving home | 92% | 358 |
| Keep a safe distance between people | 83% | 324 |
| Avoid gatherings             | 80%  | 311 |
| Avoid handshaking and talking directly to people | 80% | 311 |
| Procedures taken upon returning home | | |
| Take off shoes outside home  | 87%  | 339 |
| Never touch anything before hand sanitizing | 88% | 343 |
| Disposal of the outer shopping bags | 81% | 315 |
| Wash vegetables and fruits with soap and water | 71% | 276 |
| Wash hands with soap and water for 30 s | 77% | 300 |
| Take off out-door clothes and wash them separately | 80% | 311 |
| Considerations when diagnosing covid-19 | | |
| Connecting with one of the infected | 58% | 226 |
| Travelling to one of the places of the great spread | 75% | 292 |
| The emergence of symptoms of pneumonia | 83% | 324 |
| Having Fever                 | 86%  | 337 |

### TABLE 2 Perception about transmission of Covid-19 between mother and baby

| Questions                                                                 | %    | No. |
|---------------------------------------------------------------------------|------|-----|
| Do you think that a pregnant woman is more susceptible to infection with Covid-19? | | |
| Yes                                                                       | 65%  | 253 |
| No                                                                        | 16%  | 62  |
| Do not know                                                               | 19%  | 74  |
| Do you think that the Covid-19 virus is transmitted from the pregnant mother to her fetus through the blood? | | |
| Yes                                                                       | 29%  | 113 |
| No                                                                        | 43%  | 167 |
| Do not know                                                               | 28%  | 109 |
| Do you think that the Covid-19 virus is transmitted from the mother to her child through breastfeeding? | | |
| Yes                                                                       | 33%  | 128 |
| No                                                                        | 28%  | 109 |
| Do not know                                                               | 39%  | 152 |
| Do you think that the infected mother can transmit the Covid-19 virus through respiratory drops while breastfeeding? | | |
| Yes                                                                       | 60%  | 234 |
| No                                                                        | 23%  | 90  |
| Do not know                                                               | 17%  | 65  |

### 4 DISCUSSION

The first human cases of COVID-19, the disease caused by the novel coronavirus named SARS-CoV-2 were first reported by officials in
Wuhan City, China in December 2019. Since then, it started spreading worldwide. Jordan, from an early stage, started with the evacuation of hundreds of Jordanians from China to Jordan through emergency flights. The Governorate of Irbid witnessed the first outbreak in the country, emanating from a local wedding celebration.2

Since the start of the outbreak, there have been extensive attempts to better understand the disease. However, as with all new diseases, key knowledge gaps remain, including the source of infection, transmissibility, disease progression, surveillance, diagnostics, clinical management, and the effectiveness of prevention and control measures.11

In concordance with the Report of the WHO-China Joint Mission on Covid-19, the results of this study revealed that more than two-thirds of the refugee mothers have been able to identify that Covid-19 could be transmitted by sneezing, and a high proportion believed that shaking hands could be a cause. Around one-quarter indicated that touching surfaces could transmit infection, and so when dealing with animals. Furthermore, most mothers could identify some indications for being tested for Covid-19, including contact with infected individuals, travel to areas of infection, development of respiratory symptoms, and pyrexia. These findings are reassuring to an extent, albeit need further reinforcement.12

Regarding in- and out-door attitudes and practices, refugee mothers demonstrated a high level of awareness. The majority indicated that they would avoid leaving the home unless necessary, and would wear gloves and masks when out-doors. A high proportion would maintain social distancing and avoid handshaking and large gatherings. Mothers confirmed a high degree of awareness regarding measures upon returning home, including takeoff shoes, not touching objects before hand washing, disposal of shopping bags, vegetables and fruit washing, and taking-off outdoor clothes for washing. These findings are in agreement with the early WHO general recommendations.7,8

There is limited evidence on vertical transmission, prevalence, and characteristics of Covid-19 during pregnancy, childbirth, and the postpartum period. Concerns have been raised whether mothers with COVID-19 can transmit the SARS-CoV-2 virus to their infant or young child through breastfeeding.13

In this study, refugee mothers showed a lack of knowledge about transmission of Covid-19 between mother and child, perhaps because of limited available information. Almost two-thirds of the mothers believed that a pregnant woman is more susceptible to infection with Covid-19, and less than one-third of the mothers believed that the virus can be transmitted from pregnant mother to her fetus across the placental-blood barrier. A high percentage of mothers believed that the Covid-19 virus could be transmitted from mother to child through breast milk, or through respiratory drops while breastfeeding.

The WHO recommendations on mother-infant contact and breastfeeding are based not only on the potential risks of COVID-19 infection of the infant, but also on the disadvantages of not breastfeeding and the inappropriate use of infant formula milks. Furthermore, the WHO recommends that mothers with suspected or confirmed COVID-19 should be encouraged to initiate or continue to breastfeed, as the benefits of breastfeeding substantially outweigh the potential risks for transmission.7

Mother and infant should be enabled to remain together while rooming-in throughout the day and night and to practice skin-to-skin contact, including kangaroo mother care, especially immediately after birth and during establishment of breastfeeding, whether they or their infants have suspected or confirmed COVID-19.7

Smoking is most likely associated with the negative progression of Covid-19. Tobacco smoking is a potential means of transmission of the virus for both active and passive smokers.14-19 In this study, a high percentage of mothers believed that smokers are more susceptible to infection with Covid-19. Less than one third mothers believed that exposure to passive smoking and hubbly bubbly smoking could transmit the virus. Recent advice from the WHO and other reports is that there is a need to regulate such smoking to reduce the chance of such transmission.14-19

In agreement with other reports, mothers from the Governorate of Irbid, where the first and the largest outbreak of Covid-19 in Jordan, took place, appeared knowledgeable about most common concepts associated with Covid-19, such as transmission, prevention or diagnoses.20

For a large part, this could be because of the wide coverage through all types of media.

In contrast, mothers were not as knowledgeable about risks related to the interaction between mother and the child, or the impact of smoking on the Covid-19 risk of transmission. This could be explained by the fact that most information related to these areas were neither known, nor confirmed by professional evidence at the time.

The results of this research confirm the great impact of the social media, such as Facebook and WhatsApp, on knowledge and attitudes. This is further evidence that the use of social media has become very important in disseminating health information, especially at the time of pandemics to enhance knowledge, and to dispel myths and misinformation.21,22

### Table 3: Perception about the transmission of SARS-CoV-2 and smoking

| Questions | %   | No. |
|-----------|-----|-----|
| Do you think that smokers are more susceptible to infection with SARS-CoV-2? | | |
| Yes       | 60% | 233 |
| No        | 20% | 78  |
| Do not know | 20% | 78  |
| Do you think that exposing to passive smoking is transmitted to the SARS-CoV-2 virus? | | |
| Yes       | 31% | 121 |
| No        | 40% | 156 |
| Do not know | 29% | 112 |
| Do you think that Argilah (hubbly bubbly) smoking could transmit SARS-CoV-2 virus? | | |
| Yes       | 28% | 109 |
| No        | 53% | 206 |
| Do not know | 19% | 74  |
4.1 | Strength and limitation

This study is the first attempt to survey the knowledge and attitudes toward Covid-19 in Governorate of Irbid, that has a large proportion of vulnerable refugee families that witnessed the beginning of the Civid-19 pandemic in Jordan. One of the limitations of this study was not to explore the use of face masks when going outside, having in mind that some cultures are ambivalent about face masks. 23 In addition, because of time and budget restrictions, the study was unable to investigate if any change in the knowledge and attitudes to Covid-19 did change once the survey was completed.

5 | CONCLUSIONS

In general, mothers appear well knowledgeable about Covid-19 the transition ways and prevention measures, and aspects that should be considered when diagnosing Covid-19 cases. However, they appeared to have a lack of knowledge about the aspects that should be considered for the transition of Covid-19 between the mother and the child, and the aspects associated with smoking risks. Providing health education regarding Covid-19 to mothers in Irbid would be helpful in access to more professional recourse for Covid-19 and reduce sharing myths, or wrong information.

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