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## The experience of coronaphobia among health professionals and their family members during COVID-19 pandemic: A qualitative study

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### ABSTRACT

**Background:** Coronaphobia is an excessive fear of becoming infected by the COVID-19 virus. Situations of coronaphobia against health professionals have been identified. Therefore, there is a need to develop studies to understand family impact and experience of COVID-19 pandemic and coronaphobia.

**Aim:** To describe the coronaphobia experience of health professionals and of one of their family members during the first wave of the COVID-19 pandemic.

**Methods:** Exploratory qualitative study using narrative inquiry was used. This study was guided by the concept of coronaphobia and Family Systems Nursing as conceptual frameworks. Face-to-face and telephone interviews were conducted from September to November 2020 with 14 health professionals, including nurses and physicians and one of their family members (n = 14).

**Findings:** Three descriptive themes were identified which highlight professional-family dyads' experience of coronaphobia as a reciprocal and relational process. Coronaphobia was demonstrated by unknown or close people, in a disguised or explicit way, and generated suffering in the dyads and in the family unit. Consequently, individual and/or family strategies were developed to allow for the protection of the family system and the maintenance of its functioning.

**Discussion:** This study describes how the dyads of health professionals and their family members identify the experiences of coronaphobia. In addition, it was possible to analyze the repercussions of coronaphobia on the dyad and the strategies they used to deal with it.

**Conclusions:** This study extends understanding about the relationships between the experience of coronaphobia among health professionals and one of their family members and the experience of physical, cognitive and emotional suffering during the COVID-19 pandemic.

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### Summary of relevance

#### Problem or issue

No studies have investigated the experience of coronaphobia among health professional-family dyads during COVID-19 pandemic.

#### What is already known

Coronaphobia, a new concept developed in 2020, is caused by an excessive fear of becoming infected by the COVID-19 virus. Situations of coronaphobia against health professionals have been identified leading to the professionals suffering from harassment and stigmatisation.

#### What this paper adds

This study contributes to new knowledge by showing that coronaphobia is not just “an individual response” but can be a reciprocal and relational process that impacts the family members of health professionals.

## 1. Introduction

Since the beginning of the COVID-19 pandemic, in December 2019, multiple electronic publications, as well as televised and radio news, have addressed topics related to the pandemic situation, constantly providing coverage of the frighteningly large numbers of cases and deaths. The World Health Organisation characterised this excess of information, which is not always true, as infomedia (Pan American Health Organization, 2020). Clearly, this fact has direct implications for people’s mental health (Amin, 2020). This is because during the COVID-19 pandemic, as in other pandemics, fear, anxiety, and depression were the most commonly observed psycho-emotional consequences, resulting from the uncertainties that the disease would have on personal, family, and global health, as well as on the impacts on the economy, security, education, and politics worldwide (Roy et al., 2020). The terms COVID-19 associated with fear, death rates, unemployment, and protection strategies were the most searched topics in Google’s® search history (Sullivan, 2020).

Worldwide, basic strategies to restrain the rapid spread of the virus were used, such as social distancing, lockdown, and quarantine – for the general population – and the isolation of positive cases. Unconditionally, in this context, people started to modify their routines and acquire new habits, characterised as the “new normal”. These habits are especially related to hygiene, such as the use of masks for respiratory protection, frequent hand washing, and use of alcohol gel and social distancing (Paixão, Silva, Carneiro, & Lisboa, 2020).

For many people, the uncertainty surrounding the coronavirus is intimidating and difficult to deal with. For example, not knowing exactly how the disease will affect one’s personal life in clinical, economic, social, and psychological terms, triggers the fear of becoming infected. Consequently, there is a distortion of psychological reactions, causing people to behave in an unpredictable and sometimes intolerant way socially, judging others from their actions that violate acceptable behaviours, since the genuine instinct for survival can lead to more rigid moral decision-making (Amin, 2020). Ultimately, there is a risk of experiencing intense fear of being infected by COVID-19, known as coronaphobia (Arora, Jha, Alat, & Das, 2020).

The concept of coronaphobia is recent and was developed in 2020 concurrently with the beginning of the COVID-19 pandemic. According to the definition, the concept of coronaphobia has three essential components: physiological, cognitive, and behavioral, all associated with the process of fear (Arora et al., 2020). The physiological component is a response to fear, which can cause symptoms such as difficulty in breathing and sleeping. The cognitive

component is related to emotional stress and feelings triggered in the context of COVID-19 pandemic. Feelings such as sadness, guilt, anger, and fear of death are the most common, when related to the possibility of being able to contract or transmit the virus to loved ones and people who are close. The behavioural component is related to behaviours adopted to prevent contamination, and could include avoiding touching objects, going to some places, having contact with people who could be potential transmitters, and eating exotic foods that may contain the virus. Other behavioural components of coronaphobia include the adoption of habits, such as handwashing and constant checking for signs and symptoms (Arora et al., 2020).

In several countries, situations of coronaphobia against health professionals have been reported (Bagcchi, 2020; Taylor, Landry, Rachor, Paluszek, & Asmundson, 2020). Health professionals are identified by the population as potential transmitters of the virus, and as those most likely to be infected by COVID-19 (Taylor et al., 2020). Because of this, health professionals suffer harassment, stigmatisation, and physical violence (Bagcchi, 2020). Many people from the community and from the health professionals’ own families avoid contact with them for fear of being contaminated and this context generates mental stress and psychological problems in health professionals (Taylor et al., 2020).

Considering that COVID-19 is a family affair, the pandemic and actions to prevent transmission and contamination by the virus changed the routine and the way to conduct relationships in families globally (Luttik et al., 2020). In families with members who are health professionals, the concern about contamination and transmission of COVID-19 is heightened, since health professionals are more exposed, even if their risk of contamination is reduced due to the use of personal protective equipment (Luttik et al., 2020). According to Family Systems Nursing, the family is considered as a unit (Wright & Leahey, 2019). Individuals are part of a family system, and their interactions affect the behaviour, feelings, and beliefs of the entire family. When something happens to a family member, the whole family is also affected (Wright & Leahey, 2019). Hence, significant events, such as coronaphobia against health professionals can affect family functioning and organisation, although this situation has been poorly explored. Therefore, there is a need to develop studies to understand family impact in relation to the experience of COVID-19 pandemic and coronaphobia. Therefore, this study aimed to describe the coronaphobia experience of health professionals and of one of their family members during the first wave of the COVID-19 pandemic. In this study, dyad is defined as the dyadic relationship between a health professional and one of their family members who was selected by the health professional.

## 2. Methods

### 2.1. Design

An exploratory qualitative study using narrative inquiry (Creswell & Poth, 2017) was conducted. According to Creswell and Poth (2017), narrative inquiry is a form of qualitative research that involves exploring and analysing in-depth accounts of individual experiences. This qualitative approach is also useful to gain insights when a phenomenon has not previously been studied in depth. Considering that coronaphobia is a novel phenomenon that is in a preliminary stage of investigation, conducting a qualitative study using narrative inquiry will provide a rich account of the opinions, perspectives, and attitudes of people in relation to the experience of coronaphobia.

This qualitative study was guided by the concept of coronaphobia and Family Systems Nursing as conceptual frameworks. The consolidated criteria for reporting qualitative research was used as a guide to report this research (Tong, Sainsbury, & Craig, 2007).

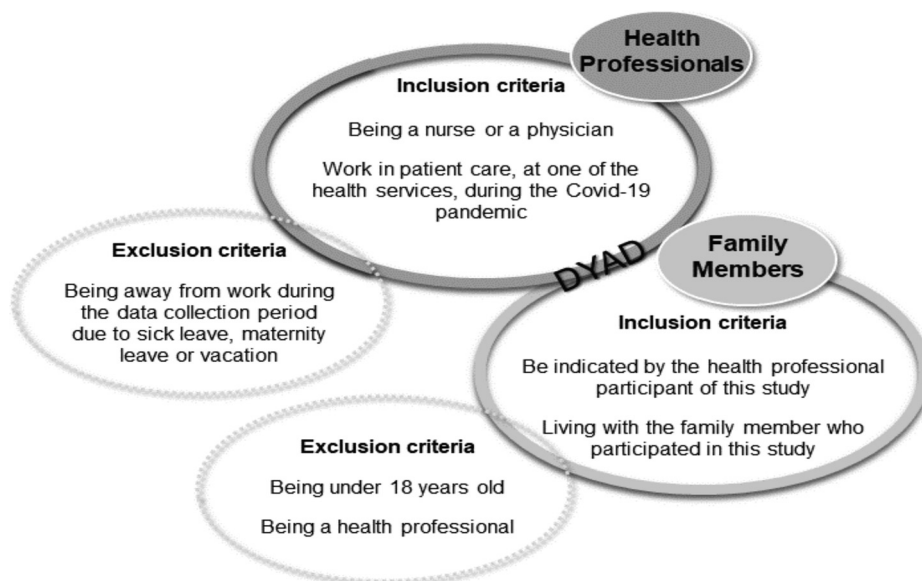


Fig. 1. Inclusion and exclusion criteria used in the study.

## 2.2. Participants

This study included a convenience sample of 14 dyads (28 individuals) composed of health professionals and one of their family members who was selected by the health professional (see Fig. 1 for the selection criteria used in this study). The selection of families participating in the research was based on the assumption that “the family is who they say they are”, regardless of biological, legal, or affective criteria (Wright & Leahey, 2019). Health professionals were recruited from two emergency care units, located in South region of Brazil. These health services are the only public units in the cities for cases of clinical and traumatic emergencies, including patients with respiratory symptoms during the COVID-19 pandemic. The health services have similar characteristics, such as physical structure, healthcare professionals, teamwork processes, and patient care profile. In these health services, 20 physicians and 16 nurses worked during the first wave of the pandemic, in which the average number of coronavirus-19 cases treated in these units was 20 per day.

## 2.3. Ethical considerations

Ethical approval was obtained for this research (Number: 4.087.225/2020). All participants gave their consent to participate in the research.

## 2.4. Data collection

Data were collected between September and November 2020, with health professionals and one of their family members. Physicians and nurses from different work shifts (day and night) were personally invited to participate in the study. All those approached consented to be part of the study. Face-to-face audio-recorded interviews with health professionals were conducted by two female undergraduate nursing students who were also licensed nursing technicians who worked in the health service where data were collected (Fig. 2). They were trained and supervised by a PhD male nurse professor, experienced in qualitative data collection. All procedures required to preserve physical distance and safety were adopted.

By the end of each interview, health professionals indicated a family member to participate in the research and shared their

name and phone number. Two days after the interview with the health professionals, family members were contacted by the researchers via telephone and invited to participate. The contact after two days allowed health professionals to inform their family members about the research. To protect family members from a possible COVID-19 infection, interviews were conducted by telephone at the convenience of each participant. No family members refused to be interviewed. Each health professional interview lasted approximately 30 minutes and each family member interview last approximately 20 minutes. The detailed data collection process – including examples of the semistructured interviews questions – is illustrated in Fig. 2.

## 2.5. Data analysis

The audios of the interviews were transcribed by the interviewers and the transcripts were checked by the main researcher for consistency. Then, the interviews were analysed according to the six steps of the inductive thematic analysis (Braun & Clarke, 2019). In the first step, constant readings of the transcribed interviews were performed. In the second step, initial codes were inductively identified from the interviews of the dyads. In the third step, the similarities and differences between the initial codes were identified. The analysis of the 116 initial codes was developed considering the similarities and differences between the family members of a dyad, and subsequently between all dyads. These steps were performed with QDA Miner Lite®, qualitative data analysis software. In the fourth step, the themes were developed according to the conceptual frameworks used: the concept of coronaphobia (including its physiological, cognitive, and behavioural components) and the Family Systems Nursing framework (including family communication, relationship, and family functioning components), respectively (Arora et al., 2020; Wright & Leahey, 2019). In the fifth step, the themes were named and refined. Finally, in the sixth step, the results section was developed.

The first and second steps were developed by three researchers [MSB; ACABL; CGV] who were involved in data collection; and subsequent steps were discussed and validated by the entire research team, which is composed of researchers experienced in qualitative data analysis and who met regularly online. Field notes related to the context of the interview supported the construction of the data analysis. Due to the context of the COVID-19 pandemic, the tran-

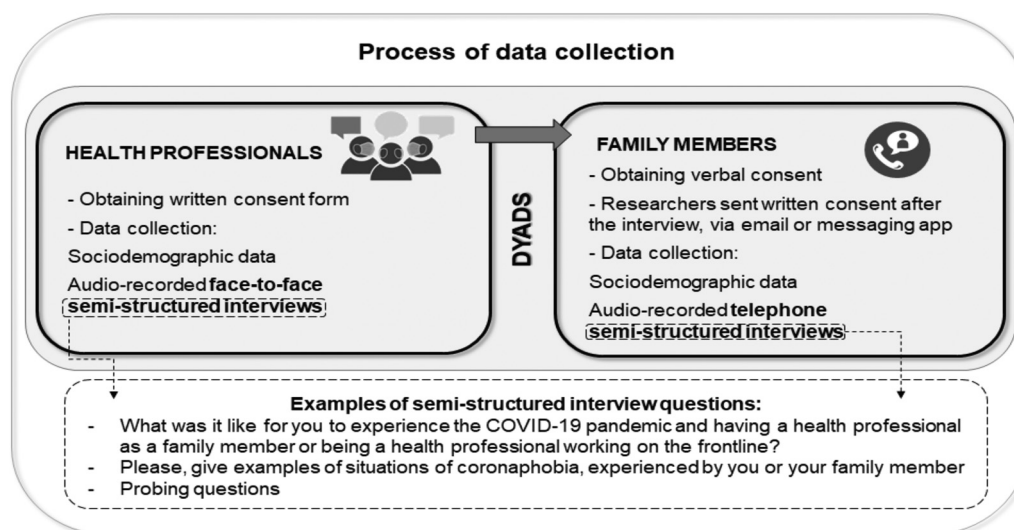


Fig. 2. Description of the process of data collection, following the consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007).

scriptions and analysis of the data were not shared with the participants. However, at the end of the interviews, the researchers asked the participants to validate their statements. All participants agreed to the analysis of the full interviews.

Recruitment of participants was interrupted when saturation of the data was reached (Saunders et al., 2018). This was possible because the data were analysed during data collection. In order to respect the anonymity of the interviewees, the statements were identified by codenames: For health professionals, by the category – physician or nurse – and, for family members, by the degree of relationship – mother, wife, son, among others. In both cases, the identification was followed by the insertion of a number that corresponded to the order of inclusion in the research (e.g., Physician 01; Son 01).

## 2.6. Rigour

The rigour of this study was ensured through (Doyle, McCabe, Keogh, Brady, & McCann, 2020; Rodgers & Cowles, 1993): (i) Credibility and trustworthiness - Rigorous analysis of the data and audit trail, with the registering of all the steps taken, such as data collection, data analysis, and methodological decisions; (ii) Transferability - detailed description of the participants' sociodemographic characteristics and the context of data collection; (iii) Reliability - detailed reporting of the method using consolidated criteria for reporting qualitative research as a guide; (iv) Confirmability - development of the audit trail; presentation of limitations and strengths in the discussion section; and reflexivity of the authors.

## 3. Findings

The participants of this study consisted of 14 health professionals, among them were 7 nurses and 7 physicians, and 14 family members, seven of whom were spouses, two sons/daughters, two mothers, two sisters, and an aunt. The age of these professionals ranged from 24 to 48 years, eight were self-declared as Caucasian and six were female. The age of the family members ranged between 20 and 61 years and six were female. Of the 28 respondents, 18 reported having experienced some situation of coronaphobia (10 professionals and 8 family members).

From the data analysis, it was possible to identify three descriptive themes: (i) *Identifying experiences of coronaphobia*; (ii) *Repercussions of coronaphobia among family dyads*; and (iii) *Family dyad strategies to deal with coronaphobia experiences*.

The family dyads, as a result of the context of professional activity during the first wave of the pandemic, experienced different situations of coronaphobia, which were demonstrated/practised by strangers or emerged within the social and family life, in a disguised or explicit way. These situations were perceived and signified (meaning making), as well as being responsible for broadly triggering repercussions in the dyads and in the family system. Such repercussions were mainly marked by the experience of suffering for the entire family system, since the suffering resulting from coronaphobia was perceived and experienced reciprocally by different family members. Consequently, individual and/or family strategies were developed in order to allow for the protection of the family system and the maintenance of its functioning (Fig. 3).

### 3.1. Theme 1. Identifying and meaning making of coronaphobia experiences

The family dyads recognised that there was currently a widespread fear among people of being exposed to the COVID-19 virus and becoming infected. This fear – a cognitive aspect of coronaphobia – led to a natural response to avoid, flee or move away from those who could be considered as possible sources of contamination, such as health professionals and their families – a behavioural aspect of coronaphobia. Participants experienced these situations, in which they identified that people demonstrated coronaphobia towards them and based on this perception, they reflected on what had happened, seeking to find meaning in people's actions. This can be seen in the comments of a nurse:

*One time I was arriving home, the neighbors saw that I had come from work and hurried to go up in the elevator alone [...] they had this attitude, I felt socially excluded. But we need to know how to deal with these issues, so that we don't take it personally, everyone is afraid of contamination.* (Nurse 01)

Situations of coronaphobia occurred in different scenarios of the dyads' daily life, such as in the family environment, in the neighborhood, in commerce and on public transport. It was practised by unknown people who recognised their professional identity. This recognition was due to the fact that they wore white clothes (which in the context where the study took place is the standard color of the health professionals' uniform) or clothes with a logo and writing that identified the profession. In addition, the identification also occurred due to the location of the encounter with the health professional, such as the use of public transport near



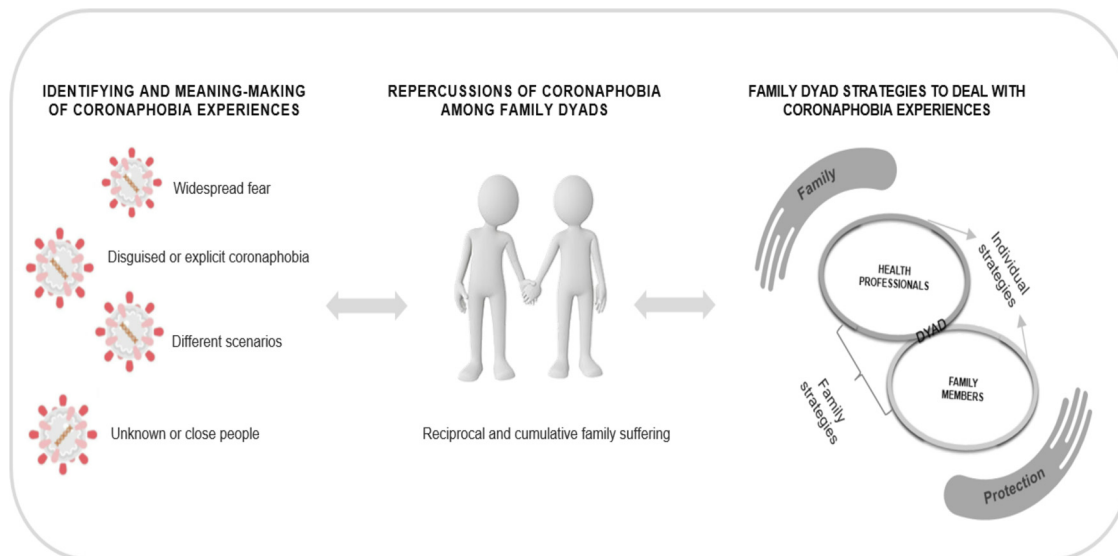


Fig. 3. Graphic representation of the relationship between the identified themes.

the health unit. All these factors helped the population to identify health professionals, and exposed them to possible situations of coronaphobia, as indicated by a nurse:

*Recognition? Professional appreciation? Year of Nursing? Heroes? What I felt in my bones was a lot of contempt and prejudice. One day I was wearing a T-shirt with the words “nursing”, I sat on a seat next to a man, he got up and walked down the bus aisle.* (Nurse 05)

Family dyads also experienced situations of coronaphobia within their social support network, such as extended family, friends and neighbours. The behavioral aspect involving coronaphobia caused it to be perceived by the dyads in an explicit or disguised way, through gestures, attitudes, actions, and non-actions, such as “different looks”, “sneaky looks”, “inappropriate jokes”, “excessive hygiene wherever the professional goes” and “social distancing”.

*One day I went to my aunt’s house. Her son was there with his baby, who is two years old, when they saw me, they held the boy so he wouldn’t come near me. They tried to cover up the situation, but I noticed.* (Nurse 03)

*People have moved away from us, they look at us differently, they avoid us, it happens both to him and to me too. We noticed these things after the pandemic.* (Wife 02)

### 3.2. Theme 2. Repercussions of coronaphobia among family dyads

Experiencing coronaphobia triggered multiple feelings such as stress, social discomfort, and inferiority. All these feelings generated in the dyad an experience permeated by “suffering”.

*It has happened that people look at me differently, you realise that you are bothering them with your “dirty” or “contaminated” presence.* (Physician 03)

In view of the globality of the family system, the suffering resulting from coronaphobia is perceived and experienced reciprocally by different family members, as shown next:

*My daughter is very stressed and very upset about what they are going through, she is mentally ill [...] And I, as a mother, should be like what? Stressed like her, irritated with these clueless people who don’t think about what the nurses, physicians and all the professionals are going through.* (Mother 08)

*This situation [coronaphobia] ends up influencing the whole family. My wife and my children know when I am not well because of what happens as a result of my work.* (Physician 03)

In the case of coronaphobia being experienced continuously, the perceived suffering increased, as a cumulative effect, and the suffering intensified. This evidenced that being a health professional and being exposed to possible contamination and transmission of the COVID-19 virus, enhances the suffering of the dyads because the experiences of coronaphobia can occur frequently.

*There are several small situations [of coronaphobia] that happen in everyday life, which hurt, and no one notices, but those who go through this hold it in, it accumulates and expands.* (Nurse 03)

### 3.3. Theme 3. Family dyad strategies to deal with coronaphobia experiences

Experiencing coronaphobia and its repercussions triggered in the dyads the need to plan and apply different strategies to deal with the situation of suffering. Some strategies were individual, and others involved the family system.

One of the individual strategies was to make changes in the personal routine, in order to prevent the professional identity from being recognised and avoid contact with people who demonstrated coronaphobia, as shown next:

*There were some changes that I proposed to make myself, for example, I needed to adapt, change my routine, I don’t ride the bus anymore, I don’t go out to work in white, I don’t want to be recognised as a nurse, I need to avoid people who have already let me down, who have hurt me.* (Nurse 05)

Another strategy used by the family dyads was the search for psychological support, starting therapy, or discussing with their therapist the experiences of coronaphobia in the personal and family sphere.

*I was already undergoing psychological counselling, this thing about prejudice with my husband and me was one of the subjects of the last sessions, it helps us to better understand what is happening.* (Wife 02)

Among the strategies to deal with coronaphobia that involved the family system was the removal, on the part of the family, from situations, spaces and people who demonstrated coronaphobia, including the extended family itself.

*We don’t go out because of the quarantine anymore, but after this situation of exclusion within our own family, we decided to isolate ourselves even more. Family reunions, even small ones, we don’t go to anymore.* (Sister 13)

The strengthening of alliances between dyads and subsystems by offering mutual support (as an element of the reciprocity/relational process) was another strategy employed by the participants. Some respondents reported that after the pandemic they looked, for mechanisms in their daily lives, such as “watching a movie or making some different food” to move away from issues related to the pandemic. This enabled them to become closer and practise different activities together.

Changes in the communication process were also identified as an important strategy in families. In some cases, it was possible to identify “partial communication” between the dyads and of “dissimulation” (say one thing, despite feeling another).

*My sister said that she understands his side [brother-in-law who demonstrated coronaphobia], but you can see that she was quite hurt, because she felt inferior, excluded by her own family. I think she does it [disguising] to feel better. (Sister 13)*

For some health professionals talking about coronaphobia to other colleagues who were experiencing a similar situation relieved and calmed them down:

*I've been trying to get it off my chest with my colleagues, I see that I'm not alone in this fight. I talk to my friends at work about prejudice and they also share their experiences. This relieves me and calms me down a little. (Physician 08)*

Finally, mutual support (as an element of the reciprocity and relational process of the coronaphobia) within the family system was found important to protect members and enable them to maintain the homeostasis of the family functioning.

*We are together, learning how to deal with all of this, one supports the other. (Son 11)*

*For our own good, now we avoid having personal contact with the rest of the family, we decided that here at home. (Wife 04)*

The strategies that families developed built their resilience (as individuals and as a family) and strengthened their bonds as a family to adjust to their needs and protect them and their family.

#### 4. Discussion

This study describes how the dyads of health professionals and their family members identify the experiences of coronaphobia. In addition, it was possible to analyse the repercussions of coronaphobia on the dyad and the strategies they used to deal with it. Furthermore, it was possible to identify that the experience of coronaphobia caused suffering for the dyad. In this regard, the experience of coronaphobia for family dyads is a reciprocal and relational process in the family system, which involves the identification and construction of meaning for the experience and the employment of strategies to protect the family system. The literature evidences that health professionals on the frontlines of pandemic care experience stress, fear, and anxiety (Asmundson & Taylor, 2020; Dubey et al., 2020; Taylor, 2021). This is due to the lack of knowledge about the virus and its consequences, the fear of being infected and of these professionals being able to transmit it to the family (Dubey et al., 2020; Labrague & De Los Santos, 2021).

Associated with this, health professionals suffer physically and emotionally when they experienced coronaphobia (Mora-Magaña et al., 2020). In Mexico, physicians and nurses started to use bicycles, because they suffered physical aggression in public transport. Likewise, in Malawi, health workers were banned from using public transport, suffered insults in the street and were evicted from rented apartments. In India health professionals that cared for patients with COVID-19 faced substantial social ostracism, being displaced and assaulted (Bagcchi, 2020). In Colombia, perceived discrimination was related to depressive symptoms and suicide risk among nurses and physicians (Campo-Arias, Jiménez-Villamizar, & Caballero-Domínguez, 2021). These results support

the findings of this research, in which health professionals experienced coronaphobia in contexts of daily life, such as in supermarkets and on public transport. Coronaphobia was exhibited by people that health professionals knew (neighbours, friends, and family) as well as strangers, based on the identification of the person as a health professional, and this also applied to their family.

Historically, clothing is a symbol for the health profession, and it contributes to the construction of the institutional, social, and professional identity (Almeida, 2018). However, these symbols seem to be responsible for triggering coronaphobia. Therefore, the professionals participating in this study sought to hide symbols that associated them with health professions, in an attempt to protect themselves and reduce the occurrence of coronaphobia.

The general population has also been impacted by the pandemic, and many experience stress, crises of anxiety due to uncertainty about the future and fear of death, restrictions due to social isolation, job loss, and changes in daily routines (Dubey et al., 2020; Taylor, 2021). Similarly, families have been affected by the pandemic as changes in habits and routines have occurred within the families to avoid contamination or transmission of the virus and to build and develop their individual and family resilience to cope with the coronaphobia (Luttik et al., 2020). The dyads of this study experienced suffering due to coronaphobia, which intensified the challenges they had to deal with during the pandemic context. Therefore, the dyads isolated themselves further or drastically reduced their social life. The fear of contact with professionals has been reported in another study with a sample of 3551 Americans and Canadians adults (Taylor et al., 2020). The study reported that more than a quarter believed that those who worked with patients with COVID-19 should undergo severe restrictions on their freedom and more than a third of respondents reported having avoided health professionals they knew for fear of infection (Taylor et al., 2020). This highlights how coronaphobic thoughts and actions are present in actual society.

Considering that the family is a systemic unit, the family suffering experienced by the dyads of this study was expected in cases of coronaphobia. This fact can be compared with the impact on families when they experience the diagnosis of a chronic disease, such as cancer (Cheung et al., 2020; Moules, Laing, Estefan, Schulte, & Guilcher, 2018). Each family member is affected by the experience differently, in different degrees. Families will constantly seek a balance in their family functioning, in the different phases of the life cycle.

Depending on the situation faced, each family will adapt in their way, and will seek resources to deal with it. In this study, the families used individual and family strategies to deal with the experiences of coronaphobia, such as changes in the routine of health professionals to avoid being recognised as physicians or nurses; seeking psychological support, seeking support from family and health professional peers, educational conversations with the population to instruct about COVID-19, and changing intra-family communication, avoiding the exposure of family members to the suffering experienced from coronaphobia.

Other studies have also reported support as a strategy to deal with the pandemic. Health professionals in the United Kingdom stated that community support for the work performed was important to overcome the limitations imposed by the pandemic (Bagcchi, 2020), and in the United States, professionals recognised in their social circle that the increase in perception of family union is relevant to support their work (Hennein & Lowe, 2020).

With regard to family communication, evidence highlights the importance of clear and honest communication to face the challenges experienced during the COVID-19 pandemic (Chen & Bonanno, 2020). However, corroborating with the results of this

study, many families in times of crisis choose to keep secrets from their families, or to keep silent in order to avoid sharing painful or threatening information. This behaviour is related to attempts to keep the beloved one safe from possible suffering (Black & Lobo, 2008).

Keeping away from negative people or people who cause suffering is another resource used by families to remain hopeful and maintain adequate family functioning in times of crisis, such as when experiencing a chronic illness (Almeida et al., 2019). This strategy was also used by the dyads of this study, since by moving away from people who practiced coronaphobia - family members or strangers - helped avoid or minimised suffering. In addition, seeking psychological or health professional peer support was also reported in this study. There is a need to take care of mental health and to search for understanding in the challenges of new pandemics (Taylor, 2019). Despite this, evidence indicates that there is still a lot to be explored about coronaphobia, in order to understand this phenomenon in its entirety (Asmundson & Taylor, 2020; Naguy, Moodliar-Rensburg, & Alamiri, 2020).

#### 4.1. Strengths, limitations, and future directions

This study has strengths and limitations. As strengths we consider: the inclusion of the dyads; and the rigorous method, described in detail, which could serve as a model for researchers who wish to develop future studies with dyads or on the topic of coronaphobia. As a limitation we consider the duration of the interviews. Conducting telephone interviews with family members, which had a reduced duration, probably produced the impossibility of greater interaction between the researcher and the participant. Although health professionals had the desire to participate and share their experiences, the development of the interview in their work environment may have limited a longer duration of the interview, due to their need to return to their work activities.

In this regard, it would be appropriate that future research on this topic consider applying other strategies to collect data (e.g., focus groups) and search for other geographic locations to be investigated, which would certainly provide a broadening of the understanding of the phenomenon of coronaphobia, felt by health professionals on the front line and their family members during the COVID-19 pandemic.

Future research should explore the physiological components of people who feel coronaphobia when they have contact with health professionals and/or their family members. These data were not included in this study, as we only interviewed dyads - health professionals and family - who suffered coronaphobia. This study highlights the importance of studying coronaphobia considering the family unit, and future studies may explore this theme from different family members' perspectives (e.g., children of health professionals, family members living with chronic conditions, etc). This study needs to be interpreted considering the context that it was developed, and it may not represent the reality of other contexts.

## 5. Conclusions

Results of this study contribute with new knowledge in several ways. First, by describing how the dyads of health professionals and their family members identify the experience of coronaphobia and its repercussions, at the individual and dyad-family level, an unexplored concept, especially considering the perspective of dyads. The results of this study also highlight the mutual family suffering due to coronaphobia experiences, and the strategies of the dyads to deal with this. Second, the results of this study may help health professionals to identify and understand coronaphobia situations. Third, health policies and health interventions

related to coronaphobia experiences can be developed and implemented in the community context, considering health professionals and their families in the context of the COVID-19 pandemic. In this regard, since this study was conducted during the first wave of the COVID-19 pandemic, it is suggested that the study is repeated to examine the long-term effect of coronaphobia on health professionals and their family members. Fourth, these results may help in the development of an educational model for the population to inform them how coronaphobia brings suffering to health professionals and their families.

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## Ethical statement

This research was approved by the Ethical Committee of the State University of Maringá (Date: 15 June 2020 and Number: 4.087.225).

## Conflict of interest

None.

## Authorship contribution statement

**Mayckel da Silva Barreto:** Conceptualisation, Methodology, Investigation, Data curation, Writing – original draft, Project administration. **Ana Carolina Andrade Biaggi Leite:** Conceptualisation, Methodology, Investigation, Writing – original draft, Writing – review & editing. **Cristina García-Vivar:** Conceptualisation, Methodology, Investigation, Writing – review & editing, Supervision. **Lucila Castanheira Nascimento:** Conceptualisation, Methodology, Investigation, Writing – review & editing, Supervision. **Sonia Silva Marcon:** Conceptualisation, Methodology, Investigation, Writing – review & editing, Supervision.

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