KNOWLEDGE, ATTITUDES AND PRACTICES RELATED TO PSYCHOLOGICAL IMPACTS IN COPING OF THE COVID-19 PANDEMIC: A SYSTEMATIC REVIEW OF LITERATURE

Mauro Renato Pascotini[1], Michele Bueno de Melo[2], Beatriz Pierini Pepi[2],
Mirian Ueda Yamaguchi[1]

[1]Postgraduate Program in Health Promotion - Cesumar University - UNICESUMAR
[2] Medicine Course, Campus Maringá-PR, Cesumar University - UNICESUMAR

Corresponding author: Mirian Ueda Yamaguchi - mirianueda@gmail.com
Universidade Cesumar -UNICESUMAR, Avenue Guedner, 1610, Maringá,
Paraná 87050-900, Brazil

Disclosure statement: No potential conflict of interest was reported by the authors.

Article type: Original Research

ABSTRACT

The Covid-19 pandemic brought several challenges to the population and scientific community. A large number of studies were carried out on the population's Knowledge, Attitudes and Practices (KAP) regarding COVID-19. This study was developed to understand the psychological impact and KAP during the COVID-19 pandemic, using the PubMed and Web of Science databases, with the descriptors "KAP" and "COVID-19". Articles that addressed the psychological impact and KAP during the COVID-19 pandemic were selected for the review. From the results, a strong relationship was observed between the experience of the COVID-19 pandemic and the development of mental disorders. Common points were found between the results, such as the prevalence of higher scores on the KAP and anxiety scales in females. In the light of these results, the importance of developing awareness strategies about the importance of mental health and encouraging research on the subject is highlighted.

KEYWORDS: Epidemics; Health promotion; Public policy; Public health.

1. INTRODUCTION

Instruments based on the Knowledge, Attitudes and Practices of a population (KAP) are used mainly in the area of health. In Brazil, KAP surveys were first used in the form of a household survey to investigate sexually transmitted infections, starting in 2004 (BRASIL, 2011). The COVID-19 pandemic, a respiratory disease caused by the SARS-Cov-2 virus, identified in 2019 in the city of Wuhan, China, as a highly transmissible variant, spread throughout the world, infecting more than 695 million people and causing the death of more than 6 million (PAHO, 2023).

Some health concepts, such as: outbreak, endemic, epidemic and pandemic, already had similar meanings for the general population, but with the COVID-19 pandemic these concepts began to be better understood. The word pandemic is of Greek origin and was first used by Plato. Pan means "all" and demic means "people"; that is, it is capable of affecting all people.

During the vivid three-year scenario of the COVID-19 pandemic, thousands of scientific studies on symptoms, treatment, diagnosis, vaccine development, economic consequences, among other aspects, were developed. Among these, studies were carried out that addressed the psychological impact caused in different situations during the pandemic and investigated how this impact was revealed in the levels of knowledge, attitudes and practices used by populations during the pandemic period.

Based on this indication, a systematic literature review was carried out, allowing the identification of the psychological impact in different situations during this pandemic period and the behavioral repertoire of affected people, in order to identify gaps for better coping with future pandemics and to provide support for incorporation into other health promotion strategies already existing in health systems.

2. METHODOLOGY

The searches were carried out in the PubMed and Web of Science databases using the health descriptors "KAP and COVID-19" and extended from March 2020 to March 2023. Initially, all studies published between the years were selected. Review articles, letters to the editors and editorial categories were excluded. To select the articles, two researchers independently selected the studies by reading the titles and abstracts, which were later compared. All selected studies were tabulated in a spreadsheet using Excel Software and in divergent selections, a third author was consulted to define whether or not to include the study. In the PubMed database, 252 studies were selected and in the Web of Science database, 258 studies were selected, totaling 510 articles, which were then classified in alphabetical order in a third table. One hundred and sixty-nine studies that were repeated in the databases were excluded, leaving 83 articles from PubMed and 252 articles from Web of Science, totaling 335 studies. After selection, these tabulated articles were divided into columns containing information about the article title, author name, year of publication, periodical, country of the first author, country of research, research topic and target audience.

Among these studies, 20 articles were selected to address the impacts of the pandemic on mental health and social behavior which made up this systematic literature review (Figure 1; Table 2).
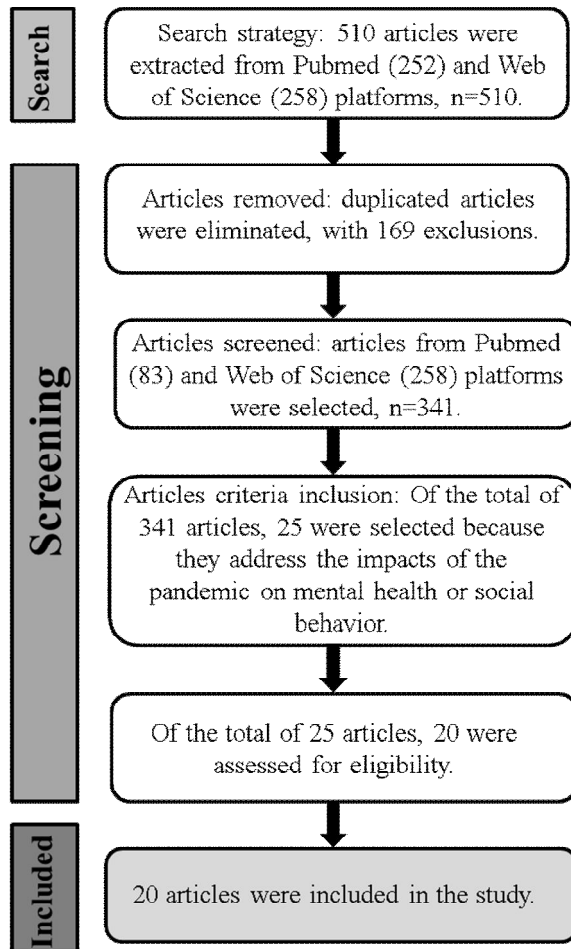
Figure 1. Flow diagram of the searches in PubMed and Web of Science databases.

3.   RESULTS

The studies were evaluated according to the target populations they were intended to investigate. Comparisons were established between these studies according to the KAP and the levels of anxiety found.

3.3 Main results
3.3.1 General Population

When analyzing the knowledge, attitudes and practices (KAP) presented by the general population, according to Puwaneswarry and cols 2020 and Alaloul and cols. 2021, the majority of study participants sought information regarding the infection caused by SARs-COV-2 through social media, such as WhatsApp, Facebook, Twitter, Instagram, Google and YouTube. However, individuals who acquired their information from government websites, local health organizations, such as the Ministry of Health, and international ones, such as the World Health Organization, had superior knowledge (Cao et al., 2022; Alaloul et al., 2021). The studies analyzed the sociodemographic variants that influenced the KAP, such as gender, education, income and employability, with being male, having less education, having low income and being unemployed being associated with a lower KAP level and, conversely, being female, having higher education and greater financial stability were related to a high level of KAP (Alaloul et al., 2021). Contrary to most results, a study carried out in Pakistan showed men as greater producers of knowledge, as in

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that country they have more access to social media, have a greater habit of reading newspapers and listening to news compared to women, and also cultivate habit of meeting in tea houses and mosques where men discuss social issues, including COVID-19 (Rizwan et al., 2021).

To analyze the psychological impacts, one of the most used scales in different studies was the Depression, Anxiety and Stress Scale (DASS-21) (Rias et al., 2020). While the studies showed some different results, they had in common the indications that women have a higher rate of psychological problems, such as depression, anxiety and post-traumatic stress disorder (Rizwan et al., 2021). Financial destabilization, closer contact with COVID-19 patients and more time spent on social media watching news about COVID-19 were also factors associated with higher levels of anxiety and depression (Rizwan et al,. 2021). In most studies it was observed that lower levels of KAP are related to the greater psychological impact of anxiety and depression, with the opposite also being true (Puwanweswarry et al., 2020; Rias et al., 2020). However, in contrast to these results, it was suggested that patients with positive practices may have been more subject to psychological impacts as, when adhering to preventive measures, including social isolation (which was essential in the situation), these individuals were subject to a more stressful and traumatic environment (Cao et al., 2022).

To protect against anxiety and depression Rias and cols. (2020) and Alalou and cols. (2020) point out that people with greater spiritual faith and optimism in facing the pandemic had lower levels of anxiety compared to people who, less endowed with these characteristics, experienced greater fears in regarding the pandemic. Interestingly, the most optimistic individuals sometimes protected themselves less and were the ones who were most exposed to the risk of infection.

3.3.2 Students

Evaluated students were from primary education to university level. In these groups, as well as in the general population, the majority of interviewees acquired knowledge about the COVID-19 pandemic through social media (Patwary et al., 2022; Xue et al., 2021) and, although most students had an adequate level of knowledge, the same did not happen with attitudes and practices. It is inferred that this was the result of a lack of adequate information on social media, or due to the uncertainty of the effectiveness of these attitudes in the face of COVID-19 (Xue et al., 2021). KAP were higher among females than among males and among students in more advanced grades, compared to younger ones, due to cognitive differences according to educational level (Patwary et al., 2022; Xue et al., 2021). Other factors that interfered with KAP were family relationships, the family's economic stability, physical activity, excessive internet use and social isolation (Jia et al. 2021; Mckune et al., 2021).

The rates of anxiety and depression among students were higher among females (Jia et al., 2021) and these rates increased due to: the fear of transmission between family members (Patwary et al., 2022), the excessive use of social media, especially due to fake news about the infection (Xue et al., 2021); social isolation and the loss of contact with friends (Patwary et al., 2022), and uncertainty regarding school activities and the loss of family income (Mckune et al., 2021). Additionally, families who followed stricter protective practices were more likely to have a child at higher risk of depressive symptoms (Mckune et al., 2021).

Title	Author and Journal	Year	Research country	Theme	Target population
COVID-19 Pandemic: Public knowledge, attitude, and practice towards social distancing and its impact on the population and the healthcare system in Saudi Arabia	Aljuhni, A. et al. Journal of Pharmaceutical Research International	2021	Saudi Arabia	Impact of distancing on the population's mental health during the pandemic.	General population
Development of knowledge, attitudes, and practices (KAP) towards COVID-19 pandemic in Malaysia	Puwaneswarry, M. et al. Medicine and Health	2020	Malaysia	Impact of disseminating information related to the pandemic on the mental health of the population.	General population
Effects of spirituality, knowledge, attitudes, and practices toward anxiety regarding COVID-19 among the general population in INDONESIA: A cross-sectional study	Rias, Y. A. et al. Journal of Clinical Medicine	2020	Indonesia	Prevalence of anxiety and positively and negatively associated factors contributing to anxiety in Indonesia during the COVID-19 pandemic.	General population
Evaluation of phobia, knowledge, attitude, and practice about SARS-CoV-2 infection, a study on healthcare workers and their 1(st) degree relatives	Hosseinzadeh R. et al. Annali di Igiene	2022	Iran	Assessment of the phobia development in healthcare workers.	Health professionals
Knowledge, attitude and practices (KAP) regarding COVID-19 and Coronavirus anxiety levels in the Turkish population	Bicer, I. et al. Annals of Clinical and Analytical Medicine	2021	Turkey	Assessment of the population's anxiety levels regarding the pandemic.	General population

Knowledge, attitude, and practice related to COVID-19: A comparison between patients with mental illness and the general population in Qatar	Ghuloum, S. et al. Frontiers in Psychiatric	2022	Qatar	Comparison of KAP during the pandemic period between mental illness individuals and the general public.	Outpatients
Knowledge, attitude, perception, and psychological status of healthcare workers during COVID-19 outbreak in Libya: A cross sectional study	Lagaa, M. B. A. et al. Journal of Pure and Applied Microbiology	2022	Libya	Assessment of the psychological status of public sector healthcare professionals during the pandemic.	Health professionals
Knowledge, attitudes and practices of patients with chronic illnesses during the COVID-19 pandemic: A cross-sectional survey from Pakistan	Mahmood, M. M. et al.	2022	Pakistan	Impact of the COVID-19 pandemic on the physical and mental health of patients with chronic diseases and their behavioral responses.	Outpatients
Knowledge, attitudes, and practices towards COVID-19 among primary school students in Hubei Province, China	Xue, Q. et al. Children and youth services	2021	China	Psychological impact during COVID-19 and its influence on the KAP index.	Students
Knowledge, attitudes, and practices toward Coronavirus and associated anxiety symptoms among university students: A cross-sectional study during the early stages of the COVID-19 pandemic in Bangladesh	Patwary, M. M. et al. Frontiers in Psychiatric	2022	Bangladeshi	Assessment of the relationship between levels of knowledge anxiety about the pandemic among university students.	Students

Knowledge, attitudes, behavioural practices, and psychological impact relating to COVID-19 among people living with spinal cord injury during in-patient rehabilitation in Bangladesh	Hossain, M. A. et al. Frontiers in Neurology	2022	Bangladesh	KAP analysis and psychological impact on patients with spinal cord injury.	Outpatients
Knowledge, attitudes, practices, and influencing factors of anxiety among pregnant women in Wuhan during the outbreak of COVID-19: a cross-sectional study	Ding, W. et al. BMC Pregnancy & Childbirth	2021	China	Assessment of anxiety and KAP index in pregnant women undergoing prenatal care during COVID-19.	Pregnant women
Knowledge-attitude-practice and psychological status of college students during the early stage of COVID-19 outbreak in China: a cross-sectional study	Jia, Y. et al. BMJ Journals	2021	China	KAP assessment and psychological impact on college students during COVID-19.	Students
Psychosocial health of school-aged children during the initial COVID-19 safer-at-home school mandates in Florida: a cross-sectional study.	Mckune, S. L. et al. BMC Public Health	2021	EUA	Psychological impact and KAP on children in social isolation during the COVID-19 pandemic.	Students
Public knowledge, attitude, practices, and level of anxiety toward the COVID-19 pandemic among people living in Oman	Alaloul, F. et al. Nursing Forum	2021	Oman	Influence of sociodemographic variants on the psychological impact and KAP during the pandemic.	General population

Repercussions of the COVID-19 response in pregnant women in Western Uganda: knowledge, behavior, and emotional state after the first lockdown in 2020	Theuring, S. et al. International Journal of Environmental Research and Public Health	2021	Africa	Emotional state, KAP and behaviors in the early stage of the pandemic.	Pregnant women
Social media use, psychological distress and knowledge, attitude, and practices regarding the COVID-19 among a sample of the population of Pakistan	Rizwan, M. et al. Frontiers in Medicine	2021	Pakistan	Social media use, psychological impact and its relationship to KAP.	General population
The novel Coronavirus disease (COVID-19) pandemic: Knowledge, attitude, practice, and perceived stress among health care workers in Karachi, Pakistan.	Jawed, F. et al. Medical Journal of the Islamic Republic of Iran	2020	Pakistan	KAP and the perception of stress among healthcare workers.	Health professionals
Using knowledge of attitude toward, and daily preventive practices for COVID-19 to predict the level of post-traumatic stress and vaccine acceptance among adults in Hong Kong	Cao, Y. et al.	2022	China	COVID-19 as a cause of a new type of post-traumatic stress and vaccine acceptance.	General population
Exploring the knowledge, attitudes, practices and lived experiences of frontline health workers in the times of COVID-19: a qualitative study from Bangladesh	Tune, S. N. B. K. et al.	2022	Bangladesh	Assessment of KAP in frontline professionals in the fight against COVID-19. Emotional, personal, and professional impacts.	Health professionals

Table 2 – Studies related to KAP and psychological impact.

3.3.4 Pregnant women

To analyze the KAP related to anxiety rates during pregnancy, different information was collected, such as age, marital status, previous children, trimester of pregnancy and educational level in studies by Ding and cols. (2021) and Theuring and cols. (2021). According to the results found by Theuring and cols. (2021), women aged < 21 years had a lower level of anxiety compared to women aged between 21 and 40 years. Single and divorced women had a lower level of knowledge compared to married women, but they also presented less psycho-emotional stress when compared to women with a spouse (Theuring et al., 2021). Having other children and being in the second trimester of pregnancy were conditions related to higher levels of anxiety (Ding et al., 2021). Postponing prenatal consultations was a protective factor against anxiety in the women who did not attend (Ding et al, 2021).

Knowledge, acquired almost entirely through social media, was controversial in relation to anxiety as, according to Ding and cols. (2021), having a higher level of knowledge decreased anxiety levels, while Theuring and cols. (2021) indicated that a lower level of knowledge decreased levels of anxiety, with women with higher education having a higher risk of psycho-emotional stress.

3.3.5 Outpatients

Different outpatients from different specialties were analyzed, such as psychiatric patients (Ghuloum et al., 2022), patients with chronic diseases (Mahmood et al., 2022) and patients with spinal cord injury (Hossain et al., 2022). The KAP results, according to sociodemographic variables, were similar to those of the groups above, in that being young, single and having a lower level of education was associated with lower levels of KAP (Ghuloum et al., 2022), with the majority of these population, like other groups, acquiring knowledge through social media (Mahmood et al., 2022). Women had greater knowledge than men and the age group from 19 to 40 years also had higher KAP (Hossain et al., 2022). Regarding attitudes, outpatients had more positive attitudes than the general population; they were more optimistic in relation to facing the pandemic, believing that it was possible to fight it, which can be explained by having greater contact with health teams that transmit this optimism to patients (Hossain et al., 2022). However, even with positive attitudes, there was no change in practices compared to the general population (Hossain et al., 2022; Ghuloum et al., 2022).

The levels of anxiety, depression and stress assessed resulted in women having a higher depression score, as well as elderly people over 60 years of age, urban populations (compared to rural or semi-urban populations) and literate (compared to illiterate) people (Hossain et al., 2022). A sedentary lifestyle and stress due to the accumulation of news about COVID-19 have also been shown to worsen patients' symptoms of anxiety and depression, in addition to a lack of confidence in the effectiveness of preventive measures (Mahmood et al., 2022).

3.3.6 Health professionals

The health professionals covered in the selected articles included doctors, nurses, nursing technicians, physiotherapists, nutritionists, pharmacists and assistants who worked in hospital centers during the COVID-19 pandemic (2020 – 2021) (Hosseinzadeh et al., 2022; Lagaa et al., 2022; Jawed et al., 2020; Tune et al., 2022). These studies evaluated the KAP and anxiety levels of healthcare professionals using DSM-5 questionnaires, the Generalized Anxiety Disorder Scale (GAD-7), the Patient Health Questionnaire (PHQ 9), the Severity Index of Insomnia (ISI) and a specific questionnaire entitled "perceived stress section" (Hosseinzadeh et al., 2022; Lagaa et al., 2022; Jawed et al., 2020; Tune et al., 2022). The data were interpreted taking into account the front-

line position of the workers and their respective responsibilities in a crisis context, which included all health care for affected patients, support for families and preventive guidance for the community. The studies also explored the possibility of professionals being sources of infection within the home environment and their relationship with mental disorders. The results found indicated high levels of KAP regarding COVID 19 in the majority of professionals evaluated, with the average score being higher among doctors compared to other professionals (Lagaa et al., 2022; Tune et al., 2022) and higher among female professionals (Hosseinzadeh et al., 2022). No significant relationship was observed between knowledge and anxiety indices among health professionals. In relation to mental disorders, women and professionals with previous psychiatric conditions had a higher anxiety and fear score, including fear specific to COVID-19 (Hosseinzadeh et al., 2022). The highest rates of symptoms of anxiety, depression and insomnia were discovered in nurses (Lagaa et al., 2022). Most of the professionals analyzed presented high levels of stress and fear of contracting the disease or infecting their family members, the latter reason being more frequently related to anxiety disorders (Hosseinzadeh et al., 2022; Lagaa et al., 2022; Jawed et al., 2020).

3.3.7 Nationality

The studies evaluated here were carried out in different countries. In the Americas, only one study was found (Mackune et al., 2021), as well as in Europe (Theuring et al., 2021). The vast majority of studies came from Asian countries, with China being the country with the highest number of articles (25%); Bangladesh, Malaysia and Pakistan had the second highest prevalence of selected articles (10% each). Considering the studies that addressed the general population of each country, high scores for KAP were obtained in all populations investigated (Aljuhni et al., 2021; Puwaneswarry et al., 2020; Rias et al., 2020; Bicer et al., 2021; Alaloul et al., 2021; Ritzwan et al., 2021; Cao et al., 2022). In the study carried out in Indonesia, an association was noted between greater spirituality and low levels of anxiety during the pandemic (Rias et al., 2020). In the Turkish population, high rates of adherence to COVID-19 preventive practices were observed, associated with low levels of anxiety, especially in groups where monthly income was higher (Bicer et al., 2021). An important finding was the fact that the majority of respondents completely relied on social media platforms to receive news updates related to COVID-19, and in countries where social media was used more frequently as an information source, such as China and Pakistan, higher levels of knowledge were observed (Ritzwan et al., 2021; Cao et al., 2022). On the other hand, higher levels of anxiety and stress were found in these countries, possibly related to the ambiguity of information during the initial stages of the disease and a greater perception of risk of contamination.

4. DISCUSSION
4.1 Sociodemographic variants

Women had a higher rate of anxiety during the pandemic period compared to men, both in the general population and in the specific populations investigated (students, outpatients and healthcare professionals). According to Kinrys & Wygant (2005), women have a greater risk of developing anxiety disorders compared to men; however, the explanation for this is still unknown, even though several studies attribute it to genetic and hormonal factors (Howell et al., 2001; Martel et al., 2009). Excess stress, which can occur under the influence of COVID-19, increases the levels of pro-inflammatory cytokines, such as IL-6 and NLR, and increases cortisol, a hormone present during stress, can influence the increase in risk factors for psychological problems such as anxiety and depression (Rias et al., 2020). Furthermore, neuroimaging studies suggest that the anterior

cortex of the cingulate gyrus may be larger and more active in women compared to men, presenting high responses to fear and therefore a higher level of anxiety (Howell et al., 2001).

In addition to hormonal factors, according to Patwary and cols. (2022), women also presented greater emotional stress during the pandemic due to their social expectations, as during isolation women stayed at home, acquired more domestic responsibilities and an excessive work load, leading to extreme tiredness. They also showed greater concern for their family and friends, all of this triggering greater psychological suffering (Patwary et al., 2022).

Another sociodemographic variant that was related to KAP and the psychological impact of COVID-19 infection on populations was age. Among students, older children, adolescents and those in more advanced grades had higher KAP indices than younger children (Patwary et al., 2022; Xue et al, 2021). Cloutier & Drapeau (2012) explain that during childhood and adolescence, brain connections are not yet fully formed. During this period, a process of neural plasticity occurs that culminates in the full maturation of this complex network of neurons, which only ends at approximately 25 years of age (Cloutier & Drapeau, 2012). The immaturity of the prefrontal cortex justifies the possibility of impulsive behavior among younger people, giving them greater difficulties in inhibitory control, planning and decision-making, which may have had a negative influence on attitudes and practices during COVID-19 (Cloutier & Drapeau, 2012).

Social distancing and isolation during the pandemic also affected interactions with the environment during childhood and worsened feelings of loneliness and long-term health. In this sense, Mckune and cols. (2021) present an important reflection, that health authorities found themselves at an impasse between the attitude of maximizing protective practices and limiting the spread of the disease, with the risk of compromising the psychosocial sphere and the assumed risk of overloading the health system with the increase in infection. In the results presented by Marzzoni and cols. (2021), socioeconomic status and loss of income were associated with the risk of mental health impairment during the pandemic. The fear of losing a job, a reduction in income and not being able to fulfill one's financial obligations, thereby impacting financial well-being that is related to other aspects of life, such as happiness, social relationships and quality of life, impacted the increase in rates of anxiety and depression seeing during the COVID-19 pandemic (Marzonni et al., 2022).

The increase in anxiety rates in different sociodemographic circumstances during the pandemic influenced the search for knowledge, since, according to Cheniaux and coworkers (2011), attention is needed to acquire knowledge, and in cases of depression and/or anxiety, hypoprexia occurs: a global decrease in anxiety and ability to pay attention, requiring greater effort and more intense stimuli to mobilize attention.

Anxiety is a physiological sensation that, although unpleasant, is very useful in keeping us alert in potentially dangerous situations (Cheniaux et al., 2011). During the COVID-19 pandemic, individuals who focused their attention on stimuli of fear and insecurity consequently generated processes of excessive anxiety, classified as pathological. In pathological anxiety, the individual may present impaired cognitive and attentional capacity, with effects on memory, decreased response to language and concentration, and learning difficulties. Anxiety, an increase in mental disorders, social isolation, mourning for losses, socioeconomic collapse, suffering and lack of social support during and after the pandemic, even increased the risk of suicide around the world (Gunnell et al., 2020).

4.2 Cultural and governmental differences

The COVID 19 pandemic reached practically the entire globe, impacting countries on each continent in different ways. The health behaviors adopted and government health care measures

during this period were decisive in the type of coping that each country developed during the crisis, in addition to habits and practices related to the particular culture of the different affected nations. In this review it was observed that one of the factors that influenced the KAP results in different countries was the use of social media as a source of information about COVID-19. In countries where social media became primary sources of information, there were higher scores in the area of knowledge, which did not necessarily correlate with levels of appropriate attitudes and practices, in addition to higher levels of anxiety in the population (Theuring et al., 2021; Jawed et al, 2020). Official departments in many countries have made efforts to publicize prevention and intervention strategies, providing daily updates on surveillance and numbers of active cases on websites and social media, which could justify the high score in the knowledge area of the KAP questionnaire, but on the other hand, may have generated an overload of daily information, contributing to the already installed state of fear and insecurity (Bao et al., 2020). A Chinese study, for example, showed that 94 and 96% of men and women, respectively, were using social media to obtain information about the COVID-19 pandemic, which coincided with a high prevalence of anxiety, stress and depression (Ali et al, 2021). This association has been studied, highlighting that fake news frequently disseminated during the pandemic generated a wave of misinformation and fueled unfounded fears in the population, which negatively influenced the mental health of individuals (Ravenelle et al., 2021). Individual government preventive measures established during the crisis had repercussions on mental health.

A study carried out in Turkey by Bicer and coworkers (2021) showed high scores in both knowledge and practice, associated with low levels of anxiety. According to these authors this was due to: a strong healthcare system, and restrictive measures taken, based on scientific evidence, by the government and health authorities since the beginning of the outbreak, and the daily and transparent sharing of information. Another determining factor predicting a lower level of anxiety was having a positive attitude during the pandemic. Spirituality emerges in this scenario as a useful tool for stressful situations and has already been used as a complementary treatment in healthcare, being a key factor in reducing psychological outcomes, especially anxiety (Rias et al., 2020). As demonstrated in the study by Rias and cols (2020), in this review, anxiety rates in the general Indonesian population were low during the pandemic at the same time that spiritual practices are quite common in the country, even with a diversity of spiritual practices in its culture (Rochmawati et al., 2018).

4.3 Health professionals in the pandemic context

The highly contagious nature, speed of dissemination and lethality of the SARS-COV-19 virus were responsible for creating, an environment of uncertainty and insecurity throughout the world. As a result of this scenario, psychological, psychiatric and emotional disorders have emerged in recent years as consequences of the feelings and experiences suffered during the pandemic period (Souza, et al., 2020). In this context, health professionals made up one of the most mentally affected population groups, since the doubts and fears that haunted the general population also afflicted health professionals, contributing to an important panorama of fragility and vulnerabilities (Spoorthy et al., 2020). Stress resulting from work overload, the lack of well-established clinical protocols for the management of infected patients, as well as overcrowding in hospitals, made healthcare teams particularly susceptible to the development of mental disorders such as anxiety, depression and panic syndrome (Shigemura et al., 2020). A study carried out in Portugal, for example, showed that approximately 44.6% of health professionals who worked on the front line during the pandemic reported damage to their mental health (Outeirinho et al., 2022). As observed in the articles selected for this study, the presence of anxiety and/or depression was more frequently

noticed in female professionals (Hosseinzadeh et al., 2022; Bashir et al., 2022; Jawed et al., 2020; Tune et al., 2022). According to Lai and cols. (2020), being a woman was considered a risk factor for the development of post-pandemic psychological disorders, along with other factors such as low socioeconomic status, social isolation and high risk of contamination. The emotional stress could result from excessive work demands associated with the responsibility for multitasking and taking care of the home contributed to the physical and mental illness of female professionals (Al Maqbali et al., 2021). Another possible explanation for this discrepancy between genders, according to Niño and cols (2021), could be the fact that expressing anguish and other emotions is more common among women, while men tend to repress them out of the desire to appear strong; therefore, in surveys, more women reported feeling anxious.

Another population group that showed a high prevalence of symptoms of anxiety, depression and insomnia were nurses (Lagaa et al., 2022). Close and frequent contact with patients, in addition to work overload, meant that front-line nurses who treated patients with COVID-19 were more exposed to the virus, increasing the risk of infection (Maben & Bridges, 2020). One study suggested that in the early stage of the pandemic, nurses may have been less likely to be alerted about exposure or receive adequate protective clothing, which contributed to a state of constant fear among these professionals and, consequently, later development of anxiety and panic attacks (Shorey & Chan, 2020).

Along the same lines, another study demonstrated that nurses in emergency departments were more likely to develop symptoms of mental exhaustion, anguish and panic attacks (Nadeem et al., 2021). Finally, it was observed that a common trigger of mental exhaustion among healthcare professionals was the possibility of being sources of infection outside the hospital environment. Maleki and cols (2020) associated professionals' fear of transmission with the insufficient supply of infection control equipment and congested emergency rooms, factors identified as impediments to infection management practices that increased the chances of virus transmissibility. It is necessary to consider the possibility of psychological illness in the short and long term in health professionals (Zhang et al, 2020).

4.4 Pregnancy

There was concern about the increased rates of prenatal anxiety during the pandemic, as it could lead to maternal-fetal implications associated with premature birth, fetal growth restriction, obstetric complications and other side effects during the child's growth and development (Ding et al., 2021; Theuring et al., 2021). According to Kanherkar and cols (2014), maternal stress experienced during pregnancy, as in the case of pregnant women during the pandemic, can cause epigenetic and physiological changes in the fetus, affecting molecular development and neural plasticity. Such losses can even affect the expression of cortisol receptors and increase predisposition to the effects of stress, such as increased vulnerability to the development of psychiatric illnesses during adolescence. It is still unclear exactly how the maternal endocrine response to stress programs the epigenome of their offspring, but it is known that excessive levels of glucocorticoids can cross the placental barrier and reach the fetal brain (Kanherkan et al., 2014).

Maternal care and the social environment can also act on the child's neural development, as epigenetic mechanisms are also related to the affective interaction between mother and child, while the scarcity of this relationship can epigenetically alter DNA methylation, increase cortisol production and stress (Kanherkan et al., 2014).

4.5 Outpatients

The studies with outpatients portrayed here mostly dealt with individuals with chronic diseases, including mental disorders. Patients with mental disorders presented by Ghuloum and cols (2022) had greater difficulty in becoming aware about COVID-19, and this required a more sensitive approach to these patients through non-verbal education, for example, through the use of image presentations and videos, in order to contribute to adequate awareness according to their cognitive capabilities.

Studies by Mahmood and cols (2022) and Hossain and cols (2022) described that, in the face of the pandemic, the monitoring of chronic diseases was affected by greater difficulty in contacting doctors, among other reasons, and by social isolation. Furthermore, in several health systems, funds previously allocated to chronic disease services began to be directed to infectious diseases, compromising the treatment of previously well-assisted patients.

5. FINAL CONSIDERATIONS

Based on the present study, it is concluded that, until the beginning of 2023, there were few published articles that used the KAP strategy to assess mental health during the COVID-19 pandemic, especially in America and Europe, with the majority coming from Asian countries. Through the studies analyzed, it can be inferred that the impact of the pandemic on mental health was a global phenomenon, which brought different consequences depending on factors that included: age, gender, education, nationality and culture. It was possible to identify that, in all populations investigated, women obtained higher scores on anxiety scales. Health professionals were one of the groups most affected mentally, with nurses being the professionals most frequently affected. Considering the importance of emotional stability and strength, especially in stressful situations, it is relevant to discuss the topic and identify factors that can be aggressive or protective for mental health. In this context, the experience of the COVID-19 pandemic can be used as a source of analysis to detect behaviors, risk factors and protective measures in relation to the development of mental disorders.

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