

*Master of Science Thesis*

**THE RELATIONSHIP BETWEEN COMPASSION FATIGUE AND  
ANXIETY LEVELS OF NURSES WORKING IN COVID-19 ISOLATION  
WARDS IN KIRKUK, IRAQ**

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ANXIETY LEVELS OF NURSES WORKING IN COVID-19  
ISOLATION WARDS IN KIRKUK, IRAQ**

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## ACCEPTANCE AND APPROVAL

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## **ETHICS STATEMENT**

The thesis entitled “The Relationship Between Compassion Fatigue and Anxiety Levels of Nurses Working in COVID-19 Isolation Wards in Kirkuk, Iraq” was prepared and presented as a thesis, written by myself and under the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and me. The research pertaining to the thesis was conducted by myself; therefore, all of the sentences and interpretations within the work belong to me.

I declare the issues mentioned above to be correct.

**Signature**

**12.10.2023**

**Sahar Jasim Mohammed MOHAMMED**

## ABSTRACT

# THE RELATIONSHIP BETWEEN COMPASSION FATIGUE AND ANXIETY LEVELS OF NURSES WORKING IN COVID-19 ISOLATION WARDS IN KIRKUK, IRAQ

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The COVID-19 pandemic has triggered many psychological concerns and effects on nurses, such as anxiety and compassion fatigue. Working with the pandemic has created a lot of anxiety, stress, and fear for nurses about getting infected and transmitting the infection to their families. This study aimed to examine the relationship between compassion fatigue and anxiety levels of nurses working in COVID-19 isolation wards in Kirkuk, Iraq. Descriptive correlational design was used in this study. In this study, the nurses working in the COVID-19 isolation wards were selected by purposive sampling (n=170) between 10-17 September 2022. Sociodemographic Information Form, Compassion Fatigue Scale and State Anxiety Inventory were used in data collection through face-to-face interviews with nurses. Descriptive statistics, Levene test, Kruskal-Wallis test, Independent sample t-test, One-way ANOVA, and Pearson correlation analyses were used to analyze data. The mean score of the Compassion Fatigue Scale for nurses working in the COVID-19 isolation wards was  $39.53 \pm 8.76$ . The mean score of the State Anxiety Inventory for nurses working in the COVID-19 isolation wards was  $50.97 \pm 7.45$ . This study determined that nurses working in the COVID-19 isolation wards had moderate compassion fatigue and state anxiety levels. The results also showed a statistical significance between compassion fatigue and gender, age, and nursing experience, while state anxiety levels showed a statistically significant relationship with educational level ( $p < 0.05$ ). There was no statistically significant relationship between compassion fatigue and state anxiety of nurses working in the COVID-19 isolation wards ( $p > 0.05$ ). Consultation liaison psychiatric nurses have important roles in reducing compassion fatigue and anxiety levels of nurses working in COVID-

19 isolation wards. For this reason, consultation liaison psychiatric nurses need to take an active role in developing strategies that will reduce the compassion fatigue and anxiety of nurses working in COVID-19 isolation wards and support their strengthening, and in conducting studies with a high level of evidence.

**2023, 59 pages**

**Keywords:** Compassion fatigue, anxiety, nursing, COVID-19



## ÖZET

### IRAK KERKÜK'TE COVID-19 İZOLASYON KOŞULLARINDA ÇALIŞAN HEMŞİRELERİN MERHAMET YORGUNLUKLARI VE KAYGI DÜZEYLERİ ARASINDAKİ İLİŞKİ

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COVID-19 salgını hemşireler üzerinde kaygı, merhamet yorgunluğu gibi birçok psikolojik kaygıyı ve etkiyi tetiklemiştir. Pandemi ile çalışmak hemşireler için enfeksiyona yakalanma ve enfeksiyonu ailelerine bulaştırma konusunda çok fazla endişe, stres ve korku yaratmıştır. Bu çalışmanın amacı Irak'ın Kerkük kentindeki COVID-19 izolasyon servislerinde çalışan hemşirelerin merhamet yorgunluğu ile kaygı düzeyleri arasındaki ilişkiyi incelemektir. Bu araştırmada tanımlayıcı ilişkisel tasarım kullanıldı. Bu çalışmada, 10-17 Eylül 2022 tarihleri arasında, COVID-19 izolasyon servislerinde çalışan hemşireler amaçlı örnekleme (n=170) yöntemiyle seçilmiştir. Verilerin toplanmasında hemşirelerle yüz yüze görüşülerek Sosyodemografik Bilgi Formu, Merhamet Yorgunluğu Ölçeği ve Durumluk Kaygı Envanteri kullanıldı. Verilerin analizinde tanımlayıcı istatistikler, Levene testi, Kruskal-Wallis testi, Bağımsız örneklem t testi, Tek yönlü ANOVA, Pearson korelasyon analizleri kullanılmıştır. COVID-19 izolasyon servislerinde çalışan hemşirelerin Merhamet Yorgunluğu Ölçeği puan ortalaması  $39.53 \pm 8.76$  olarak belirlendi. COVID-19 izolasyon servislerinde çalışan hemşirelerin Durumluk Kaygı Envanteri puan ortalaması  $50.97 \pm 7.45$  olarak belirlendi. Bu çalışmada, COVID-19 izolasyon servislerinde çalışan hemşirelerin orta düzeyde merhamet yorgunluğu ve durumluk kaygıya sahip oldukları belirlendi. Sonuçlar ayrıca Merhamet yorgunluğu ile cinsiyet, yaş ve hemşirelik deneyimi arasında istatistiksel olarak anlamlı bir fark olduğunu, durumluk kaygı düzeylerinin ise eğitim düzeyiyle istatistiksel olarak anlamlı bir ilişki olduğunu gösterdi. COVID-19 izolasyon servislerinde çalışan hemşirelerin merhamet yorgunluğu ile durumluk kaygıları arasında istatistiksel olarak anlamlı bir ilişki bulunamadı.

Konsültasyon liyazon psikiyatri hemşireleri COVID-19 izolasyon servislerinde çalışan hemşirelerin merhamet yorgunluğu ve kaygı düzeylerini azaltmada önemli rollere sahiptir. Bu nedenle Konsültasyon liyazon psikiyatri hemşireleri, COVID-19 izolasyon servislerinde çalışan hemşirelerin merhamet yorgunluklarını ve kaygılarını azaltacak ve güçlenmelerine destek olacak stratejiler geliştirmede, kanıt düzeyi yüksek çalışmalar yapmada aktif rol almaları gerekmektedir.

**2023, 59 sayfa**

**Anahtar Kelimeler:** Merhamet yorgunluğu, kaygı, hemşirelik, COVID-19



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## INDEX OF SYMBOLS

%	Percentage
df	Degree of freedom
F	One Way ANOVA F value
H	Kruskal wallis test H value
n	Number of samples
N	Number of population
p	Probability
r	Correlation coefficient
sd	Standard deviation
t	t-test in Independent Groups t value
$\bar{x}$	Mean

## LIST OF ABBREVIATIONS

ANOVA	One-way analysis of variance
CFS	Compassion fatigue scale
COVID-19	Corona virus disease-2019
DSM-5	The diagnostic and statistical manual of mental disorders
ICN	The international council of nursing
NIOSH	National institute for occupational safety and health
ProQOL	The professional quality of life
SAI	State anxiety inventory
SARS-cov-2	Severe acute respiratory syndrome
SPSS	Statistical package for social sciences
STAI	State-trait anxiety inventory
WHO	World health organization
CLP	Consultation liaison psychiatry

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# 1. INTRODUCTION

## 1.1 Importance of the study

Coronavirus or severe acute respiratory syndrome (SARS-cov-2) called COVID-19 was first detected in Wuhan, China, in December 2019 (Okereke *et al.* 2021). COVID-19 was declared a pandemic and a public health emergency by the World Health Organization (WHO) on March 11 (Xiang *et al.* 2020). On December 25, 2019, (81,846) cases of COVID-19 were announced in China only. It is an epidemic disease believed to have been transmitted to humans through animals (Shrestha 2020). The COVID-19 pandemic has triggered many psychological concerns and effects on nurses, such as anxiety, compassion fatigue, burnout, secondary trauma, depression, stress, and depersonalization (Hadi & Mohammed, 2022; Giusti *et al.* 2020). The nurses in Iraq had to deal with the aggressive behavior of some patients and their families inside the hospital, not to mention the nurses feeling excluded and stigmatized because of their work with the virus and people fearing that the nurses could infect them. Working with the pandemic has created a lot of anxiety, stress, and fear for nurses about getting infected and transmitting the infection to their families (Abdalla *et al.* 2021). The COVID-19 pandemic impacted nurses working with the patients. Most nurses have been forced to change their workplace and care for COVID-19 patients, usually with limited training that did not exceed a week (Henssler *et al.* 2021). In a study conducted by the Indian Association, it was shown that mental illnesses have increased by 20% since the start of COVID-19 (Kumar & Nayar, 2021). Iraq announced the first infection with the COVID-19 in the city of Najaf on February 24, 2020, for an Iranian student studying in Iraq (Hadi & Mohammed 2022), and the first death case was on March 4, 2020 (Hadi & Mohammed 2022). Hence, the Iraqi authorities took emergency measures to impose a curfew in Iraq on March 13, and on March 17, the country was wholly closed (Al-Dahhan *et al.* 2020). WHO decelerated the total number of infections as of December 6, 2023, reached approximately 77,437,327 confirmed cases, including 6,956,900 deaths. As for Iraq, the number of infections since the first was recorded on September 6, 2023, reached 2,465,545 confirmed infections and 25,375 deaths (WHO, 2023).

The world, especially health care workers such as nurses, has been affected due to their direct contact with patients and their critical role in limiting the spread of infection (Nemati & Nemati 2020). The increased demand for COVID-19 services has created pressure on hospitals and healthcare, especially nurses, due to restrictions on providers, their workplaces, and their services. These restrictions have caused concerns about the impact of the pandemic on services, their work, their private lives, and their future in the short or long term (Chen *et al.* 2021). Studies have shown that nurses working directly with COVID-19 patients are more likely to experience psychological problems than other nurses (Alshekaili *et al.* 2020; Arpacioğlu *et al.* 2021). Several studies have indicated increased levels of mental health problems among nurses during COVID-19 (Foye *et al.* 2021; Keogh *et al.* 2020). Through previous studies, it was found that the most common psychological disorders caused by direct work with COVID-19 were anxiety, compassion fatigue, post-traumatic disorder, dissatisfaction, and tension (Barello *et al.* 2020; Murat *et al.* 2021; Varghese *et al.* 2021; Luo *et al.* 2020). The rapid spread of the COVID-19 pandemic has caused mental health problems and created many pressures that negatively impact nurses and put them in the face of various challenges (Froessler & Abdeen, 2021). Due to COVID-19 exacerbated the pressure on nurses and thus led to increased psychological and adverse effects that affect behavior and the body, such as anxiety and fatigue (Franza *et al.* 2020). Abdalla *et al.* (2021) found that exposure to stress at a high rate during COVID-19 is associated with an increased risk of developing anxiety.

Nurses working on the front lines are 1.5 times more likely to worry than others, and the rates of stress and insomnia were higher than those who did not work in the lines (Alshkaili 2020). The increased workload resulted in feelings of anxiety in nurses (Sun *et al.* 2020). Nurses were expected to experience crises, exposure to indirect trauma and risk of anxiety compared to other professions (Labrague & De Los Santose 2020; Waris *et al.* 2020). Their long exposure to the suffering of others in high-stress environments leads to emotional distress and exhaustion, which develops into compassion fatigue (Alharbi *et al.* 2020). Such factors as the direct work with COVID-19 patients, the lack of ventilators, the small number of beds compared to the number of patients, and the lack of protective equipment exacerbated the anxiety and compassion fatigue among

nurses (Froessler & Abdeen 2021). They also experienced fear and anxiety about transmitting infection to their family members (Abdalla *et al.* 2021). A study conducted to assess compassion fatigue among healthcare providers during COVID-19 found that nurses had the highest level of compassion fatigue and were increasingly exposed to empathic pressure due to their drive to alleviate patients' suffering (Ruiz *et al.* 2020). Nurses working on the front lines suffered from increased stress during the pandemic due to working in a new environment that was unusual and different from the nature of their work before COVID-19, which caused fatigue, stress, depression, and long-term anxiety (Foster *et al.* 2023), these symptoms were linked to the lack of protective materials, fear of infection, working for long continuous hours, witnessing the suffering of others and the loss of their loved ones. Several previous studies have shown a positive relationship between anxiety and compassion fatigue. Foster *et al.*'s (2023) results showed that COVID-19 causes anxiety in the long term, while Craigie's (2016) results showed a statistically significant relationship between anxiety and compassion fatigue indirectly. Jo *et al.* (2020) found that there is a relationship between anxiety and resilience, and the mediator between them was compassion fatigue, while Arimon (2019) found that constant requests of patients arouse nurses' emotions and thus cause anxiety that generates negative emotions, the most important of which is compassion fatigue. Although many studies that have examined compassion fatigue and its relationship to anxiety among nurses have shown a positive relationship between anxiety and compassion fatigue (Arimon *et al.* 2019; Hegney *et al.* 2014),

Identifying the level of compassion fatigue among nurses working in COVID-19 isolation wards is a priority. This study is important to understand the compassion fatigue and anxiety-related variables during COVID-19 and to develop preventive and interventional programs. It is also important to identify the risk factors associated with compassion fatigue and anxiety and how to protect from it (Trumello *et al.* 2020). Studies on the relationship between anxiety and compassion fatigue among nurses during COVID-19 are limited. No study has been conducted in Iraq that studies the relationship between anxiety and compassion fatigue among nurses, whether before or during the epidemic. In this regard, considering the spread of the COVID-19 pandemic, this study is important in terms of contributing to psychiatric nurses' planning of

Consultation Liaison Psychiatry (CLP) services for their colleagues in the context of their duties and responsibilities in this area.

## **1.2 Purpose of study**

This study aims to examine the relationship between compassion fatigue and anxiety levels of nurses working in COVID-19 isolation wards in Kirkuk, Iraq.

## **1.3 Research question**

What is the relationship between compassion fatigue and anxiety levels of nurses working in COVID-19 isolation wards in Kirkuk, Iraq?

## **1.4 Limitations of the study**

The results of the current research cannot be generalized because the data were taken from nurses working in isolation wards for COVID-19 patients in one hospital in Kirkuk, Iraq, where the results represent the current sample only.

## **2. GENERAL INFORMATION**

### **2.1 Covid-19 and nursing**

A review of the literature related to the impact of COVID-19 on nurses confirms that their work negatively affects their psychological, physical, social, and economic health (Al Thobaity & Alshamari 2020; Akkuş *et al.* 2022). During the pandemic, many nurses had to change their workplaces and work in a new, high-risk environment under many conditions, including lack of protective materials, working long hours, increased workload, seeing patients die, and lack of ventilators, fear of infection or transmitting it to a family member, and lack of available information about the COVID-19 pandemic (Falatah 2021; Galains *et al.* 2021; Pfefferbaum's & North 2020). Exposure to these factors led to nurses suffering from many problems, including anxiety, fear, fatigue, stress, stigma, insomnia, boredom, compassion fatigue, and the desire to commit suicide (Murat *et al.* 2021; Lai *et al.* 2020; Bohlken *et al.* 2020; Ricci *et al.* 2020; Arpacioğlu 2020). These psychological problems can affect the quality of nurses' professional lives, subsequently affecting patient care (Foodani *et al.* 2023). By reviewing the literature, the factors that increase the risk of nurses developing psychological problems during the COVID-19 epidemic can also be summarized as follows: working on the front lines, being female, married, having fewer years of experience, suffering from chronic diseases, caring for an older person and work longer hours (Alenazi *et al.* 2020; Lluch-Sanz *et al.* 2020). In a study conducted by Vitale and Casolaro (2021) in Italy, the study included all nurses working on the front lines, the results showed that the COVID-19 experience was very emotional for nurses, and they showed higher levels of fatigue than anxiety and depression, with emotional exhaustion being present in some nurses.

## **2.2 Anxiety**

### **2.2.1 Definition of anxiety**

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (2013), anxiety is "anticipation of future threat" (p. 189). According to Spielberger (1972), "Anxiety is an emotion based on the appraisal of threat, an appraisal which entails symbolic, anticipatory, and uncertain elements" (p. 246-247). Spielberger explained that anxiety can be divided into two main concepts: trait anxiety and state anxiety. He considered that Trait anxiety refers to "individual differences in anxiety-proneness" and depends on the individual's response to the situations to which he is exposed. This response varies according to personal inclinations, while state anxiety is a temporary emotion characterized by fear, tension, and dread. (Spielberger *et al.* 1983 p. 5). Anxiety problems are considered the most common mental health problems, with a prevalence of 18.1% within one year and a prevalence of 28.8% during life (Rhoads 2021 p. 169). According to the DSM-5, women are more likely than men at a ratio of 1:2 (Spielberger, 2013 p. 189).

### **2.2.2 Level of anxiety**

Anxiety is divided into four main levels:

- Mild anxiety: is the feeling that something is different than usual; at this stage, sensory stimulation increases to help the person focus, learn, solve problems, and think about how to act and protect oneself.
- Moderate anxiety: in this stage, the person is sure that there is a problem, and the person becomes nervous. The person at this stage can still solve the problem and learn from the surrounding people and may have difficulty concentrating.

- Severe anxiety: At this stage, the person's cognitive skills decrease, and he suffers from severe anxiety and difficulty concentrating and thinking with an increase in vital signs, and the person becomes irritable and angry.
- Panic stage: A very high rise in vital signs is observed at this stage. The response at this stage is either confrontation and fight or flight. This stage can continue for 5 to 35 minutes. Panic anxiety can be defined as a sudden attack of fear leading to intense physical reactions without a clear, real cause. The results of panic attacks can be very frightening, possibly leading to a heart attack or death (Videbeck 2010 p. 228-229; Gorman & Anwar 2014 p. 160).

### **2.2.3 Causes of anxiety**

The causes of anxiety can be divided into two main branches: biological, psychodynamic, and interpersonal theories. Biological theories include genetic theories that anxiety can be genetically transmitted and that the prevalence of anxiety among relatives with a first degree of consanguinity is greater than that of non-relatives (Videbeck 2010 p. 238) and neurochemical theories. Psychodynamic theories include psychoanalytic theories; according to psychoanalytic theory, anxiety occurs when there are problems between the identity and the higher self (Gorman & Anwar 2014 p. 161). Interpersonal theories, like stressful daily events such as problems and pressures of work and family life, problems with co-workers or the boss, and the surrounding environment (Bystritsky *et al.* 2014). There are other reasons, such as Other physical health problems such as an overactive thyroid gland or lung and heart disorders (Bystritsky *et al.* 2014), other mental health disorders such as obsessive-compulsive disorder, depression, panic disorder and post-traumatic stress disorder (Gorman & Anwar 2014 p. 161).

### **2.2.4 Symptoms of anxiety**

Anxiety falls under the heading of anxiety disorders in the DSM-5. The following main points can summarize symptoms of anxiety.

Physical symptoms: rapid heart rate and pain in the left side of the chest, chest tightness and rapid breathing, muscle spasm, nausea, vomiting, diarrhea, constipation, indigestion, loss of appetite, flatulence, irritable bowel disorder, dry mouth.

Mood symptoms: feeling angry or nervous quickly for reasons that are not clear, fear and tension for no apparent reason.

Cognitive symptoms: difficulty in mental focus and lack of control over negative thoughts, exciting sense of danger, feeling helpless, doubt, instability, aggressiveness, guilt, and loss of control (DSM-5 p. 189; Gorman & Anwar 2014 p. 162; Perrotta 2019 p. 3)

### **2.2.5 Risk factors for anxiety**

There are many risk factors for anxiety, and they can be summarized as follows. Women are more prone to anxiety than men (Perry *et al.* 2015; Ardekani *et al.* 2018). People older than 40 are more prone to anxiety (Phillips *et al.* 2009). Divorced and widowed people are more likely to be anxious than married people (Lam *et al.* 2015). Poor sleep, lack of exercise, and alcohol use are prone to anxiety (Diaz-Godiño *et al.* 2019). Annoyance with colleagues, lack of job satisfaction, violence in the work environment, exposure to stressful daily events, nurses with experience of less than 10 years are more likely to worry, lack of time for leisure and rest are also prone to anxiety (Cheung & Yip 2015; Maharaj *et al.* 2019). Work in isolation wards and epidemic diseases are also considered risk factors for anxiety (Zheng *et al.* 2021).

### **2.2.6 Theories that explain anxiety**

Four main theories explain anxiety, which can be described in detail below:

Psychoanalytic Theory: Freud is considered one of the pioneers of this school and one of its first scholars, and he is one of the first to speak about anxiety in psychology.

Freud explained anxiety in two stages. In the first stage, Freud interpreted anxiety as occurring when the sexual desire is prevented from satiation, and the psychological energy of the sexual drive, "libido", turns into anxiety. In the second stage, Freud retracted his first opinion and emphasized that pathological fears are based on unacceptable sexual desire and the individual's fear of punishment. He saw that anxiety occurs first, which causes repression, and that anxiety does not arise from libido (Freud 1989 p. 18-19; Spielberger 2019)

Behavioral theory: Scientists of the behavioral school say that anxiety is a learned behavior from the environment surrounding the presence of positive and negative factors. Scientists of the behavioral school disagree with the opinion of the scholars of the school of psychoanalysis. They do not believe in the idea of unconscious motives, but despite the difference, they agree that anxiety is related to the human past. It agrees that anxiety and fear are both same types, that they are emotional responses, and that the difference between them is that fear has a known source that the individual is aware of, but anxiety is an unknown source that the individual does not perceive and does not know what are the stimuli that cause him. Scholars of this school, such as the scientist Dollard and Miller (1950), consider that anxiety and fear are learned and that the child can acquire them from one of the parents, meaning that anxiety from the school's behavioral view is a behavioral response to a mysterious danger or a reaction to a painful stimulus (Angell 2013; Turner 2012).

Cognitive theory: This theory is characterized by the fact that people's emotions are caused by their way of thinking. Cognitive theory contradicts the analytical school and rejects the idea that the unconscious is the source of psychological disturbances. It also differs from the theory of the behavioral school, where Beck (1974) sees that psychological disorders result from the imbalance between the internal cognitive system and the external stimuli, as the external stimuli are analyzed and interpreted through the cognitive system, which sometimes results in a lack of agreement between the internal system and external variables, causing psychological disorders. The cognitive theory of anxiety focuses on the cognitive effects of the individual. The way of thinking and how a person evaluates situations affects the intensity of reactions. The presence of distorted

thoughts and wrong assessments resulting from the individual's perceptions and relationships leads to wrong behaviors that cause the emergence of anxiety. This theory focuses on hypersensitivity and hyper-reaction to threats in an exaggerated manner, which exacerbates anxiety and develops symptoms. (Eysenck 2013 p. 6,8,12; Clark & Beck 2010).

Humanistic theory: This theory was developed by two scientists, Abraham Maslow and Carl Roger and later developed by Carl Roger (cited). This theory states the importance of self-identification and experience, where the self represents the image that the individual forms of himself/herself or oneself and the experience is the result of dealing with others, so if these two aspects agree, the person appears in balance. The humanistic school is an extension of existential thought, where scholars of this school see that fear about the future is the main cause for concern. Carl Roger believed that anxiety occurs when there is a contradiction between the reality in which the individual lives and the self-concept. Maslow believes that man works on growth rather than avoiding disappointments and maintaining balance, and from this belief, he developed his famous theory about the hierarchy of needs and that the failure to meet these needs causes anxiety (Rowan 2006 p. 108-109; Hansen 2000).

### **2.2.7 Anxiety and nurses**

The nursing profession is characterized by its demanding and heavy nature (Maharaj *et al.* 2019). The interaction between the nurse and the patient is considered the basis of the quality of health care provided (Haugan *et al.* 2013). The nature of nursing work is considered one of the most important factors contributing to the development of mental disorders (Tsaras *et al.* 2018). The demands of the nursing profession make nurses stressful and thus put them at risk of anxiety (Maharaj *et al.* 2019). People who suffer from anxiety show an increase in disability and a decrease in the quality of life, thus affecting job performance (Alharthey *et al.* 2007). A study by Poursadeghiyan (2016) showed a relationship between the stress resulting from the nature of the nursing profession and anxiety, as 13% showed moderate to severe anxiety. According to the classification of the American National Institute for Occupational Safety and Health

(NIOSH), nursing is considered the 12th most stressful profession and the most stressful among the health care professions (NIOSH 2021) because it requires dealing and communicating with others, psychological stress, physical injuries, constant empathy, working under high pressure, exposure to diseases and infections, providing solutions to problems, and making decisions. Anxiety can cause great psychological burdens, often associated with fear, tension, and discomfort, thus leading to a weak immune system (Şahin *et al.* 2021; Belash *et al.* 2021). Anxiety also causes multiple problems for nurses, affecting their well-being and mental health, affecting the quality of care provided and impeding the nursing process (Maharaj *et al.* 2019). In a study in southern Iraq, nurses showed moderate anxiety (Hadi & Mohammed 2022), and in another study, Australian nurses showed 41.2% anxiety, and in a study conducted on Chinese nurses, they showed 43.3% anxiety (Gao *et al.* 2012). Another study conducted on Jordanian nurses showed 38.5% anxiety (Almaqbal *et al.* 2021)

## **2.3 Compassion fatigue**

### **2.3.1 Definition of compassion fatigue**

The term compassion fatigue was first coined in 1992 by Nurse Joenson, who used the term to describe the fatigue experienced by nurses working in the emergency department. Compassion fatigue unique form of burnout linked to caregiving professionals, which can be emotionally devastating and causes loss of ability to cope, anger, apathy, depression, and ineffectiveness" (Joinson 1992). Figley (1995) then developed the concept of "the natural consequent behaviors and emotions resulting from knowing about a traumatizing event experienced by a significant other and the stress resulting from helping or wanting to help a traumatized or suffering person" or "a state of exhaustion and dysfunction-biologically, physically, and socially-as a result of prolonged exposure to compassion stress and all that it evokes". Figley (1995) also points out that excessive exposure to caring for others and providing emotional attention to them has a negative impact on emotional health and is the primary cause of compassion fatigue. When nurses experience compassion fatigue, they tend to exhibit the same symptoms as their patients, and it causes changes in their interactions with

their environment, family, friends, and even themselves. Therefore, the nurses need support and assistance to eliminate the trauma; who? Experienced (Figley 2013).

### **2.3.2 Causes of compassion fatigue**

According to Figley's model, the nurse must be motivated to respond to the suffering of others and unable to detach from situations accompanied by anxiety and dissatisfaction to develop compassion fatigue due to exposure to long-term suffering with traumatic memories. Figley (2001) developed a model containing ten causes of compassion fatigue:

1. Exposure to suffering is direct exposure to the patient's emotions and suffering, and their consequences may be exorbitant.
2. Emotional concern: Emotional attention is the desire to help others. Without emotional attention, emotional capacity will be because capacity alone is insufficient. Without a willingness to help, empathetic caregivers use their knowledge, education, and talent with interest to provide high-quality care.
3. Empathic ability: is the point between the desire to help others and emotional weakness; when controlling emotions, emotional stress will decrease and thus not be subjected to compassion fatigue, but in return, the response will be to patients who suffer less or no.
4. Empathic response: is to help the patient by an emotional understanding of the patient's pain, which is to see the thoughts and behaviors of the patient from his perspective. The results of the emotional response can be seen immediately through the patient's response, and the effect of the response on himself/herself is often neglected.
5. Detachment: is another factor that helps reduce or prevent the occurrence of compassion stress, which is the ability of the caregiver to separate

his/her feelings and personal life from the patient's pain and work environment while assisting.

6. Sense of satisfaction: A sense of accomplishment helps reduce or prevent compassion pressures and stimulates a sense of satisfaction from helping the patient and seeing the positive achievements made by the nurse to patients.
7. Residual compassion stress: It is any emotions left in the nurse from the emotional response, which is an important requirement for the continuation of work to reduce any residual stress and suffering in the patient and have negative effects on the nurse's quality of life and his immune system and can lead to compassion fatigue if stress is not controlled in the light of auxiliary conditions such as disintegration.
8. Prolonged exposure to suffering: Prolonged exposure to psychological trauma is an important factor in increasing the risk of exposure to compassion fatigue. Taking a break during work is important to relieve the feeling of surrender and constant responsibility.
9. Traumatic memories: These are negative memories from past experiences of helping patients related to post-traumatic stress and related symptoms such as anxiety and depression. When these memories are recalled, they cause a compassionate fatigue response.
10. Other life demands: They are sudden, unexpected changes in the personal life of caregivers, such as exposure to illness, social problems, and additional responsibilities at the professional and personal level. These unexpected sudden changes require additional effort. These changes generate disturbances, and other auxiliary factors from the previously mentioned can lead to compassion fatigue (Figley 2002; Al-Razaq *et al.* 2018).

### **2.3.3 Contributing factors to compassion fatigue**

Many factors contribute to compassion fatigue and can be summarized as follows. The presence of negative events or previous traumas accumulated in the lives of nurses and leaving them without intervention or treatment (Lai *et al.* 2020; Mazzotta 2015) demographic factors such as female, younger, and insufficient work experience nurses are more susceptible to compassion fatigue (Hunsaker *et al.* 2015; Poore 2016). Factors related to the nature of the work include the number of patients the nurse cares for, long working hours, working in high-risk areas, and exposure to trauma patients. Also, nurses who work in professions of a compassionate nature and have direct contact with patients and their families are more vulnerable to compassion fatigue (Figley 2013; Poore 2016).

### **2.3.4 Symptoms of compassion fatigue**

Symptoms of compassion fatigue can be divided into three main branches: physical, mood, and cognitive. Mood symptoms include social withdrawal and isolation, desire to withdraw and isolate even from the family, sleep disorders, seeing nightmares and disturbing dreams about patients' experiences, getting irritated or irritated quickly, fear, lack of self-confidence, feeling hopeless, feeling anxious, depressed, disappointed, and resentful (Shawaltar 2010; Lluch *et al.* 2022; Figley & Roop 2006). Physical symptoms include upset stomach, constipation, diarrhea, muscle cramps insomnia, fatigue, insomnia, palpitations, chest pain, tachycardia, increased exposure to physical diseases, and weak immunity (Lombardo & Eyre 2020; Hiçdurmaz & Figen 2015). Cognitive symptoms include recalling patients' experiences, trauma, and negative thoughts due to working with difficult, traumatic situations, remembering frightening experiences suddenly and involuntarily, memory problems and retrieval of memories (Lombardo & Eyre 2020).

### 2.3.5 Factors that help reduce compassion fatigue

The factors contributing to reducing compassion fatigue can be summarized in the following points.

1. Increasing awareness of compassion stress and its causes, symptoms, signs, and prevention strategies (Perry *et al.* 2011 p. 95-96).
2. self-care such as spending quiet time after a stressful workday, meditating, reading books, doing sports, or engaging in mood-enhancing hobbies such as drawing or singing, maintaining a healthy diet, and taking a break to think and identify negative feelings and the reason for feeling them (Whitebird *et al.* 2013).
3. Separating personal feelings from professional life, the nurse must learn to set emotional boundaries between him and the patient to avoid transferring his negative feelings and pain to him. Creating a balance between providing compassionate care, deepening the patient's relationship, balancing personal and work life, and not mixing them. (Khamisa et al 2016; Perry *et al.* 2011 p. 95-96).
4. Learn ways to adapt to the situation and think about the positive aspects of work and the difference the disease has made in the patient's life (Perry *et al.* 2011, p. 95-96).
5. Providing support by the institution and management, providing advice and the necessary resources, organizing, and providing an appropriate and comfortable work environment to reduce exposure to compassion fatigue as much as possible, and providing training on theoretical and scientific information to help nurses avoid stress in the work environment.
6. Enhancing job satisfaction, as studies have shown an inverse relationship between job satisfaction and a feeling of stress and mercy (Sung *et al.* 2012).

### 2.3.6 Compassion fatigue and nurses

Empathy between the nurse and the patient is the basis for providing care in the nursing profession (Lombardo & Eyre 2020). Nurses often must share their emotions with their patients suffering from trauma to facilitate the healing process; through this sharing, the nurses are placed in the face of the traumatic events of their patients (Bride *et al.* 2007). An empathetic nurse can fall victim to the constant pressure of meeting patients' needs and experiencing the same feelings as their patients, so the cost of this care can be the nurse's health (Figley 2002; Figley 2017; Lombardo & Eyre 2020). Compassion fatigue results from the desire to help other traumatized people (Figley 2002). Nurses are indirectly exposed to patients' trauma and face secondary effects resulting from their pain, and nurses are also exposed to compassion fatigue when feeling despair resulting from a feeling of inability to change the patient's health status. Nurses are at risk of compassion fatigue because of providing compassionate care to patients (Sacco *et al.* 2015). Compassion fatigue affects the health and well-being of nurses and leads to their feelings of despair, frustration, boredom, and sadness. Compassion fatigue also causes nurses to fear their workplace and unwillingness to communicate with some patients, which leads to a shortage of nurses or to provide substandard care (Showalter, 2010). The literature indicates that nurses in palliative care, pediatric departments, emergency departments and oncology nurses (Cross 2019; Maytum *et al.* 2004; O'Callaghan *et al.* 2020; Kim & Na 2017). Are more likely to experience compassion fatigue. We notice a moderate prevalence of compassion fatigue among oncology nurses, with a low level of job satisfaction, with a positive relationship between compassion fatigue and the number of patients the nurse cares for (Mazzotta 2015). We also note moderate levels of compassion fatigue among emergency nurses (O'Callaghan *et al.* 2020). In another study, nurses working in elderly care showed moderate compassion fatigue (Sarabia-cobo *et al.* 2021). While dialysis nurses showed high levels of compassion fatigue, which was one of the strongest factors influencing the intention to change work (Cao & Chen 2021).

## **2.4 The relationship between Covid-19, compassion fatigue and anxiety**

On December 31, 2019, the first case of the COVID-19 epidemic was announced, and as a result, the WHO declared an international emergency. During the COVID-19 pandemic, nurses constituted the largest percentage of healthcare providers on the front lines. Nurses remained in these difficult circumstances, and with the increase in the number of infected people, continuing to meet the increasing needs of patients and spending continuous hours and days providing care to them (Mandos *et al.* 2021). According to a report issued by the (WHO) in December 2020, the number of infections among health care providers reached 10% globally (WHO 2020 B), and according to another report issued by the International Council of Nursing (ICN) in April 2021, the number of deaths reached more than 3,000 nurses in 60 different countries (ICN 2021).

Previous studies reveal a coherent relationship between the work of nurses and the negative impact on their psychological, physical, and social aspects of health. The literature indicates that the workload resulting from the rapid spread of the COVID-19 epidemic, and increase in the number of infected people, working long hours in light of the absence of drug treatment, lack of personal protective equipment, uncertainty of infection, and fear of unintentionally transmitting the infection, with the presence of huge news about the number of infections and deaths around the world, causes many psychological problems, (Gordon *et al.* 2021; Liu *et al.* 2020). Nurses' exposure to the suffering and constant patient requests during COVID-19 generates sympathy for nurses, which in turn causes anxiety and fatigue. These negative feelings cause compassion fatigue (Gustafsson & Hemberg, 2022; Arimon *et al.* 2019). One of the reasons compassion fatigues occurs is the shortage of nurses, who are forced to work long hours and sometimes overtime because there are not enough numbers to care for patients (Pfefferbaum & North, 2020).

It is known that compassion fatigue leads to multiple adverse effects (Sung & Kim 2012). These negative effects are anxiety, depression, stress, and sleep disturbances (Whitebird 2013). People with compassion fatigue show higher levels of anxiety (Kim & Na 2017). It also makes it difficult for nurses to provide emotional care and thus

leads to patient mistreatment, neglect, and work-related errors (Cross 2019). There could be a positive relationship between anxiety and compassion fatigue. Anxiety is considered a risk factor for compassion fatigue, as people with high anxiety levels have a higher risk for compassion fatigue (Jungbluth *et al.* 2011; Gustafsson & Hemberg 2022). Craigie *et al.* (2016) showed a significant relationship between anxiety, compassion fatigue and satisfaction, with an indirect effect of compassion fatigue on anxiety. The results of Abendroth (2006) showed that anxiety is a risk factor for compassion fatigue, as anxiety was one of the main factors causing compassion fatigue (Gustafsson & Hemberg, 2022). The study's results (Jo *et al.* 2020) showed the existence of a correlated relationship between anxiety and resilience, and the mediator between them was compassion fatigue, which has an indirect role in anxiety. The results showed that 52% of nurses suffered mild anxiety, and 48% suffered moderate anxiety at the epidemic's beginning of the epidemic. It was found that anxiety and preventive measures increase with the epidemic's severity. Previous studies (Li *et al.* 2022; Ma *et al.* 2022). The results of Douedari *et al.* (2020) indicate that the prevalence of moderate to severe anxiety was 92% among nurses working with COVID-19, and women were at a higher risk of anxiety. In another study, the prevalence of anxiety during COVID-19 was 37%, including 39.112 nurses working in different places (Almaqbal *et al.* 2021).

## **2.5 The role of the consultation-liaison psychiatric nurse in reducing compassion fatigue and anxiety in nurses working in Covid-19 isolation wards**

It was shown that mental illnesses have increased by 20% since the start of COVID-19 (Kumar & Nayar, 2021). The COVID-19 pandemic has triggered many psychological concerns and effects on nurses, such as anxiety, compassion fatigue, burnout, secondary trauma, depression, stress, and depersonalization (Hadi & Mohammed, 2022). The world, especially health care workers such as nurses, has been affected due to their direct contact with patients and their critical role in limiting the spread of infection (Nemati & Nemati 2020). The increased demand for COVID-19 services has pressured hospitals and healthcare, especially nurses, due to restrictions on providers, their workplaces, and their services. These restrictions have caused concerns about the impact of the pandemic on services, their work, their private lives, and their future in the

short or long term (Chen *et al.* 2021). During the spread of the COVID-19 epidemic, nurses not only suffered from an increased workload, but they also suffered from many psychological problems, including multiple fears like making difficult crucial decisions regarding patients and the fear of contracting the infection or transmitting it to their families (Huang *et al.* 2020; Lai & ark 2020). According to a report issued by the (WHO) during the period (June-August 2020), the results showed 93% of 130 countries witnessed a delay in providing mental health services and education about crisis management at times when these services were most needed (WHO 2020 B). The demand for psychological services is increasing due to the continuing pandemic. Therefore, preserving and supporting nurses' mental health is essential to maintaining the continuity of the nursing process and providing high-quality health care (Chen 2021). Psychological care interventions can prevent the emergence of various and multiple psychological effects. From here, the important role of psychiatric nurses during the spread of the epidemic and their influential role in supporting the mental health of nurses working in direct contact with COVID-19 and reducing stress and psychological symptoms can be noted (Walton *et al.* 2020). Enhancing a sense of job satisfaction, as studies have shown an inverse relationship between job satisfaction and a feeling of stress and mercy (Sung *et al.* 2012).

The Consultation Liaison Psychiatric (CLP) nurse aims to provide a safe and comfortable environment for nurses by helping them adapt to the new environmental conditions considering the circumstances of COVID-19, providing encouragement and education regarding mental health, providing advice and guidance, and holding group and individual. However, CLP nurses face many obstacles, including their unwillingness to receive psychological help and counseling despite their discomfort, irritation, anxiety, and denial that they suffer from psychological problems (Kuzman *et al.* 2020). CLP nursing has an essential role in developing the following strategies among nurses working in direct contact with patients infected with COVID-19 to reduce the harms of anxiety and compassion fatigue.

Develop strategies for self-care such as spending quiet time after a stressful workday, meditating, reading books, doing sports, or engaging in mood-enhancing hobbies such

as drawing or singing, maintaining a healthy diet, and taking a break to think and identify negative feelings and the reason for feeling them (Whitebird *et al.* 2013; Khamisa *et al.* 2016). The nurse must learn to set emotional boundaries between him/her and the patient to avoid transferring the patient's negative feelings and pain to him/her, creating a balance of personal and work life, and not mixing them. (Khamisa *et al.* 2016; Perry *et al.* 2011 p. 95-96). Learn ways to adapt to the situation and think about the positive aspects of work and the difference nurses have made in the patient's life (Perry *et al.* 2011 p. 95-96). Providing support by the institution and management, providing advice on the necessary resources, organizing, and providing an appropriate and comfortable work environment to reduce exposure to compassion fatigue as much as possible, and providing training on theoretical and scientific information to help nurses avoid stress in the work environment.

### **3. MATERIAL METHODS**

The aim of this study is to examine the relationship between compassion fatigue and anxiety levels of nurses working in COVID-19 isolation wards in Kirkuk, Iraq.

#### **3.1 Study design**

Descriptive correlational design was used in this research.

#### **3.2 Setting**

The study was conducted in the isolation department at Azadi Teaching Hospital in Kirkuk, Iraq, the largest hospital in Kirkuk in terms of patient area and capacity. The hospital had six floors, excluding separate departments such as the psychiatric and burns departments. During the COVID-19 epidemic, the hospital was forced to convert the psychiatric care department into isolation for patients infected with the COVID-19 epidemic. The department initially contains 45 beds, and the number of beds has been increased to accommodate the largest possible number of infected people, reaching 85.

The hospital administration was forced to randomly provide the department with nurses from the rest of the hospital departments without any specific conditions or qualifications for the nurse. At the beginning of the epidemic, nurses had to work with the unknown, without any definite information about the epidemic and how to prevent it, and the absence of drug treatment or any vaccines, in addition to the presence of media hype about infections and deaths in the rest of the world. Nurses were forced to work continuously under physical and psychological pressure for several days. Nurses were also forced to see the suffering and death of patients infected with the epidemic because of the lack of artificial respiratory.

The nurses, N=295, working in the isolation ward are divided as follows: 22 nurses work part-time from 8.00 a.m. to 3.00 p.m., five days a week, and the rest of the nurses'

work in a shift system one-day a, 24 hours a week, one day for every six days. The shift of nurses working in the isolation ward begins from 8.00 a.m. until 8.00 a.m. the next day. Thirty-nine nurses work daily, meaning that each nurse takes care of two patients, depending on the available beds. The duration of each nurse's work in the isolation ward was different and was constantly changing depending on the momentum of patients and according to need.

### 3.3 Sample of the study

The current study population is nurses in the COVID-19 isolation wards at Azadi Teaching Hospital in Kirkuk, Iraq. The sample calculation formula with known universe was used to determine the sample size in the current research (Alpar, 2016). The total number of nurses working in the isolation wards is (N=295), with an error rate of 0.05. The minimum number of nurses to be included in the sample was determined as 168 nurses using the sample calculation formula with a known population. In this study, 170 nurses were reached (n=170). Data for the current study were collected from September 10 to 17, 2022. Criteria for including nurses in the current study included willingness to participate, ability to speak and understand Arabic, working as a nurse in the related hospital COVID-19 ward and being present during the study. The criteria for excluding nurses in the current study undergoing other psychological treatments were also excluded.

N= Number of individuals in the universe

n= Number of individuals to be sampled

p= Frequency (probability) of occurrence of the event to be investigated

q= Frequency of occurrence of the event to be investigated (1-p)

t= The theoretical value in table t at a given degree of freedom and at the determined level of error.

d= It is symbolized as  $\pm$  deviation that is desired to be made according to the frequency of the event.

$$N = \frac{N t^2 p q}{d^2(N - 1) + t^2 p q}$$

### **3.4 Data collection tools**

The following instruments were used to collect study data. This data collection form consisted of three parts (APPENDIX 1).

#### **3.4.1 Sociodemographic information form**

Sociodemographic variables include questions related to age, gender, marital status, occupation, educational level, and nursing experiences. It also included information about the duration of work in the COVID-19 isolation ward. The researcher developed Sociodemographic Information Form through a literature review (Al-Razaq *et al.* 2018). (APPENDIX 2).

#### **3.4.2 Compassion fatigue scale**

The Compassion fatigue scale (CFS) is a self-reported measure to determine the level of fatigue resulting from empathy and was developed by Adams *et al.* (2008). Al-Razaq *et al.* (2018) adapted the CFS to Arabic and used 10 questions from the original scale, and the remaining questions were not used in the Arabic version because they were not in harmony with the Arab community. They replaced 4 questions from the Professional Quality of Life (ProQOL). The final form of the Arabic version had 14 questions, and there were no sub-dimension or inverse questions. The CFS was rated on a 5-point Likert-type scale “never”=1, “rarely”=2, “sometimes”=3, “most of the time”=4, and “always”=5. The level of compassion fatigue among nurses is determined based on the total scores of the items. The minimum score obtained from the scale is 14, and the maximum is 70. Compassion fatigue increases with the increase in the number of points, so the score is considered as 14-32 “Mild level”, 33-51 “Moderate level”, and 52-70 “Severe level”. The Cronbach Alpha coefficient of the CFS was measured at 0.73 (Al-Razaq *et al.* 2018), and in the present study, it was found to be 0.82.

### **3.4.3 State anxiety inventory**

State-trait anxiety inventory (STAI) consisted of trait and state of anxiety dimensions and was developed by Spielberger *et al.* (1970). This study used only the State anxiety inventory (SAI) dimension of STAI. The scale is a self-report measure used to diagnose individuals with anxiety, and it can be used with patients and the normal population. The SAI measures the state of anxiety and consists of 10 questions formulated in positive questions (1, 2, 5, 8, 10, 11, 15, 16, 19, 20) and 10 questions formulated in negative questions (3, 4, 6, 7, 9, 12, 13, 14, 17, 18). The SAI requires the participants to answer what they feel “at present” and respond to each item without thinking about it. The SAI was adopted into Arabic by Kadiem (2002). The SAI was rated on a 4-point Likert-type scale “never”=1, “sometimes”=2, “most of the time”=3, always”=4. The level of state anxiety among nurses is determined based on the total scores of the items. The minimum score that can be obtained from the scale is 20, and the maximum is 80. State anxiety increases with the increase in the number of points, so the score is considered as 20- 40 Mild level”, 41-60 “Moderate level”, 61-80 “Severe level”. The Cronbach Alpha coefficient of the SAI was measured at 0.79 (Kadiem, 2002), and in the present study, it was found to be 0.76.

### **3.5 Data collection**

Data was collected from nurses in the COVID-19 isolation ward at Azadi Teaching Hospital in Kirkuk, Iraq, between 10-17 September 2022. Data was collected face-to-face, using data collection tools by the researcher, and it took approximately 30 minutes for a nurse to fill out the data collection tools. The nurses participating in the study filled out the questionnaires in sterile nurse rooms after the COVID-19 precautions were taken, preventing the transmission of infection. The researcher only entered the nurses' rooms in the COVID-19 service, not the patient isolation rooms.

### **3.6 Statistical analysis**

Analysis of the data SPSS (Statistical Package for Social Sciences) program version 22 was used. The data were analyzed by an independent statistician outside the research. Descriptive data were analyzed as numbers, percentages, mean, and standard deviation. Cronbach alpha was used for reliability. The homogeneity of variance was tested using Levene's test. The t-test was used to examine differences in CFS and SAI scores for demographic characteristics consisting of two categories, such as gender. The Kruskal-Wallis test was used for the rest of the variables consisting of more than two categories because there was no normality and homogeneity condition. In the presence of three or more categorical variables, pairwise comparison analysis was performed to determine which group the significance originated from. Pearson Correlation test was used to find the relationship between CFS and SAI scores (Polit and Beck 2004). The correlation coefficient (r) is the statistical value that numerically expresses the amount of the relationship. The value of the correlation coefficient is between -1 and +1. Cohen (1998) indicates the r value as small, medium, and large, respectively, as a result of the correlation analysis ( $\geq 0.10$ ;  $\geq 0.30$ ;  $\geq 0.50$ ) (Cohen, 1988). A confidence interval of 0.95 was considered, with a significance level less than 0.05 (Polit & Beck 2004).

### **3.7 Ethical consideration**

Before starting the research, the master's thesis proposal was accepted by Çankırı Karatekin University Health Sciences Institute. Then before starting data collection, ethical approval was obtained from the Scientific Committee of the Institute of Health Sciences at Çankırı Karatekin University (APPENDIX 2, No:25, Date 21.04.2022) and also approved by the Iraq Ministry of Health, from Kirkuk Health Department, Training and Development Department, and Azadi Teaching Hospital in Kirkuk in Iraq (APPENDIX 3, No:558, Date:04.09.2022). Permission to use the scales used in the study was obtained from the relevant authors via e-mail (APPENDIX 4). The confidentiality and confidentiality informed the participants of the research, and the Informed Consent Form was signed, stating that all information will be used only for research purposes and cannot be accessed by anyone other than the researchers. The

questionnaire did not include personal information or names (APPENDIX 5). The research was carried out according to the rules of the Declaration of Helsinki (World Medical Association, 2013).



#### 4. RESULTS

This chapter illustrated the study's main findings and presented a descriptive analysis of the demographic characteristics of study nurses working in the COVID-19 isolation wards. Then, a descriptive analysis of compassion fatigue and state anxiety was presented. Further, inferential analysis was performed to answer the study's research questions.

The distribution of the socio-demographic data of nurses working in the COVID-19 isolation wards is given in Table 4.1. The mean age of the nurses working in the COVID-19 isolation wards was  $31.47 \pm 7.57$  (minimum 21-maximum 48). 48.8% of nurses working in the COVID-19 isolation wards who participated in the study were 20-29 years old, 64.7% were male, 69.4% were married, and 42.9% were bachelor graduates. The mean nursing experience of nurses working in COVID-19 isolation wards was  $8.42 \pm 7.14$  years, and the period of working in the COVID-19 isolation wards was  $1.84 \pm 0.84$  years.

**Table 4.1** The distribution of the socio-demographic data of nurses working in the COVID-19 isolation wards (n=170)

Socio-demographic data		N	%	$\bar{x} \pm sd$
Age	20 -29 years	83	48.8	$31.47 \pm 7.57$ Minimum-Maximum=21-48
	30 -39 years	55	32.4	
	40 -49 years	32	18.8	
Gender	Male	110	64.7	
	Female	60	35.3	
Marital status	Married	118	69.5	
	Single	52	30.5	
Educational level	Master degree	26	15.2	
	Bachelor degree	73	43.0	
	Associate degree	56	33.0	
	High school degree	15	8.8	
Nursing experience	1-5 years	83	48.8	$8.42 \pm 7.14$ Minimum-Maximum=1-25 years
	6-10 years	37	21.8	
	11-15 years	19	11.1	
	16-20 years	16	9.4	
	20-25 years	15	8.9	
Period of working in the COVID-19 isolation wards	1 year	105	61.7	$1.84 \pm 0.84$ Minimum-Maximum=1-3 years
	2 years	32	18.9	
	3 years	33	19.4	

$\bar{x}$ : mean; sd: standard deviation; n: number; %: percentage

The mean scores of nurses working in the COVID-19 isolation wards from CFS and SAI were given in Table 4.2 .The mean score of CFS for nurses working in the COVID-19 isolation wards was  $39.53 \pm 8.76$ . Thus, it was determined that nurses working in the COVID-19 isolation wards had moderate levels of compassion fatigue. The mean score of SAI for nurses working in the COVID-19 isolation wards was  $50.97 \pm 7.45$ . Thus, it was determined that nurses working in the COVID-19 isolation wards had moderate levels of state anxiety.

**Table 4.2** Mean scores of nurses working in the COVID-19 isolation wards from CFS and SAI (n=170)

Scales	$\bar{x} \pm sd$	Median	Min-Max
Total CFS	$39.53 \pm 8.76$	37	17-66
Total SAI	$50.97 \pm 7.45$	52	25-72

$\bar{x}$ : mean; sd: standard deviation

The distribution of CFS scores by socio-demographic characteristics of nurses working in the COVID-19 isolation wards is given in Table 4.3. CFS score of nurses working in the COVID-19 isolation wards according to age was found to be a statistically significant difference ( $H=7.369$ ;  $p<0.05$ ). Pairwise comparison analysis was performed to determine which group the significance originated from. This significance was between all age groups. The analysis showed statistically significant differences between 20-29 years and 40-49 years  $p=0.007$ . CFS score of nurses working in the COVID-19 isolation wards according to gender was found to be a statistically significant difference ( $t=-6.050$ ;  $p<0.05$ ). It was found that female nurses had compassion fatigue more than male nurses. CFS score of nurses working in the COVID-19 isolation wards according to nursing experiences was found to be a statistically significant difference ( $H=14.179$ ;  $p<0.05$ ). Pairwise comparison analysis was performed to determine which group the significance originated from. This significance was between all experience groups. The analysis showed statistically significant differences between 1-5 years and 20-25 years  $p=0.003$ . A statistically significant difference was not found between the CFS scores of nurses working in the COVID-19 isolation wards with marital status, educational level, and period of working in the COVID-19 isolation wards ( $p>0.05$ ).

**Table 4.3** Distribution of CFS scores by socio-demographic characteristics of nurses working in the COVID-19 isolation wards (n=170)

Socio-demographic data		$\bar{x}\pm sd$	Test	<i>p</i>
Age	20-29 years	40.59±8.46	H=7.369	<b>0.025*</b>
	30- 39 years	39.92±9.16		
	40-49 years	36.12±8.24		
Gender	Male	37.00±8.87	t=-6.050	<b>0.001*</b>
	Female	44.16±6.40		
Marital status	Single	42.01±7.25	t=2.725	0.076
	Married	38.44±9.17		
Educational level	High school degree	41.20±8.82	H=3.542	0.315
	Associate degree	40.98±9.72		
	Bachelor degree	38.42±8.57		
	Master degree	38.57±6.74		
Nursing experience	1- 5 years	40.77±8.38	H=14.179	<b>0.007*</b>
	6- 10 years	40.75±9.17		
	11- 15 years	39.57±9.02		
	16- 20 years	35.12±8.97		
	20 - 25 years	34.13±6.43		
Period of working in the COVID-19 isolation wards	1 year	39.40±8.87	F=0.200	0.819
	2 years	41.12±7.44		
	3 years	40.33±8.79		

$\bar{x}$ : mean; sd: standard deviation; H: Kruskal wallis test H value; t: t-test in Independent Groups t value; F: One Way ANOVA F value; *p*<0.05

The distribution of SAI scores by socio-demographic characteristics of nurses working in the COVID-19 isolation wards is given in Table 4.4. SAI score of nurses working in the COVID-19 isolation wards according to educational level was found to be a statistically significant difference (H=15.715; *p*<0.05). Pairwise comparison analysis was performed to determine which group the significance originated from. This significance was between all educational level groups. The analysis showed statistically significant differences between diploma and bachelor degree working in COVID-19 isolation wards (*p*<0.05). Between the SAI scores of nurses working in the COVID-19 isolation wards with age, gender, marital status, nursing experience and period of working in the COVID-19 isolation wards was not found a statistically significant difference (*p*>0.05).

**Table 4.4** Distribution of SAI scores by socio-demographic characteristics of nurses working in the COVID-19 isolation wards (n=170)

Socio-demographic data		$\bar{x}\pm sd$	Test	<i>p</i>
Age	20-29 years	47.90±8.49	H=4.855	0.880
	30- 39 years	50.74±7.19		
	40 -49 years	52.97±6.90		
Gender	Male	50.36±7.61	t=-1.442	0.157
	Female	52.08±7.08		
Marital status	Single	50.84±7.51	t=-0.141	0.887
	Married	51.02±7.46		
Educational level	High school degree	47.86±8.89	H=15.715	<b>0.001*</b>
	Associate degree	49.42±7.47		
	Bachelor degree	52.47±6.89		
	Master degree	51.84±6.82		
Nursing experience	1- 5 years	52.34±7.86	H=6.132	0.188
	6- 10 years	52.01±7.60		
	11- 15 years	51.64±5.32		
	16- 20 years	50.21±7.93		
	20- 25 years	49.75±6.53		
Period of working in the COVID-19 isolation wards	1 year	50.79±8.23	H=0.236	0.781
	2 years	51.81±5.37		
	3 years	50.72±6.65		

$\bar{x}$ : mean; sd: standard deviation; H: Kruskal wallis test H value; t: t-test in Independent Groups t value;  $p < 0.05$

The relationship between CFS scores and SAI scores of nurses working in the COVID-19 isolation wards is given in Table 4.5 As a result of the analysis, there was not a statistically significant between CFS scores and SAI scores of nurses working in the COVID-19 isolation wards ( $p > 0.05$ ).

**Table 4.5** The relationship between CFS scores and SAI scores of nurses working in the COVID-19 isolation wards (n=170)

Scales		CFS	SAI
CFS	R	1	0.079
	<i>P</i>	1	0.304
SAI	R		1
	<i>P</i>		1

r: correlation coefficient; \* $p < 0.001$

## 5. DISCUSSION

In this chapter of this study, where the relationship between compassion fatigue and anxiety levels of nurses working in COVID-19 isolation wards in Kirkuk, Iraq, was examined, the findings of the current study were discussed together with other studies.

This study found that nurses working in the COVID-19 isolation wards had moderate levels of compassion fatigue. Most nurses working in COVID-19 isolation wards showed moderate compassion fatigue (72.35%), 21.18% severe compassion fatigue, and the minority (6.4%) had low compassion fatigue. Also, studies in the literature supported this research finding by stating that nurses working in COVID-19 isolation wards experience moderate levels of compassion fatigue (Sahin *et al.* 2023; Christianson *et al.* 2023). The results of the current study were consistent with the results of (Sahin *et al.* 2023; Christianson *et al.* 2023), as their results showed that most of the sample had moderate compassion fatigue and differed from the results of (Amir & Okalo 2022; Labrague *et al.* 2021). In contrast to these studies, Labrague *et al.* (2021) and Amir & Okalo (2022) studies were inconsistent with this study's results. Labrague *et al.* (2021) assessed compassion fatigue, and the results showed that most of the sample, 61.04%, had low compassion fatigue. Also, Amir & Okalo's (2022) study assessed compassion fatigue among nurses during the second phase of COVID-19. The results showed that nurses had 49.11% suffer from high compassion fatigue. It was likely that the results of the studies differed due to the stage of the epidemic at the time the study was conducted. Studies showed the same results in the third stage of the epidemic, where sufficient information and vaccines were available, with fewer infections and a decrease in pressure on nurses. As for the studies whose results varied, they were conducted in the early stages of the epidemic considering the lack of sufficient information, the unavailability of vaccines, and the continued rise in the number of infections. This comparison indicated that compassion fatigue among nurses was affected by work pressure, the number of infected patients, and working in a safe environment. Additionally, depending on the studies being conducted in different cultures and countries, this could be due to nurses' different working conditions, workloads, and psychological resilience.

This study found that nurses working in the COVID-19 isolation wards had moderate levels of state anxiety. Most nurses working in COVID-19 isolation wards showed moderate state anxiety, 83.53%, and 9.41% mild state anxiety, and the minority (7.06%) had severe state anxiety. The level of anxiety in the current study was consistent with studies conducted by Nadeem *et al.* (2021) and Simonetti *et al.* (2021) conducted in Pakistan and Italy, respectively. A study conducted by Hadi and Mohammed (2022) showed a statistically significant relationship between anxiety and the spread of COVID-19. In a study conducted by Foodani *et al.* (2023) to study nurses' anxiety from COVID-19 and its relationship to the quality of professional life, the results showed that nurses had moderate anxiety, and there was a statistically significant relationship between anxiety and quality of professional life. The current study was inconsistent with a study conducted by the Roberts *et al.* (2021), which included 255 nurses to assess anxiety levels during COVID-19. Its results showed that 50% of nurses had low anxiety. These results were inconsistent with the results of Wong *et al.* (2020), where the prevalence of anxiety among nurses during COVID-19 showed that 52.1% suffered from low to severe anxiety and 48.8% suffered from moderate to severe anxiety. In another study conducted in Iraq, the results showed that 52% of the sample had a minimum level of anxiety (Mohammed & Bakey, 2021). In a systematic review study by Varghese *et al.* (2021), the results showed that the prevalence of anxiety was 32% in 21 of the 25 studies. Another systematic review by Al Maqbali *et al.* (2021) found that anxiety among nurses working in COVID-19 wards was 37%. In a study conducted by Nemati *et al.* (2020) to assess the anxiety of Iranian nurses during the epidemic, the results showed a mean anxiety of  $(6.02 \pm 2.6)$ . The difference in results may be due to the demographic composition of the sample in terms of personal reasons, such as physical activity and diet, or reasons related to the work environment, such as the presence of an outlet and a place to rest between shifts, or behavioral and cognitive reasons for the nurse, such as psychological state, expressing feelings, and maintaining social contacts. The difference in results could also be due to the population density of infections in each study, the time the study was conducted concerning the stage of the epidemic, the extent of the availability of protective equipment, and sufficient information related to the epidemic.

This study found that the level of compassion fatigue decreased as the age of the nurses working in the COVID-19 isolation wards increased. The age group 20-29 were the most vulnerable to compassion fatigue, and those aged 40-49 were the least susceptible. Also, it was found that female nurses had compassion fatigue more than male nurses. Furthermore, it was determined that the level of compassion fatigue decreased as. The results of the current study were consistent with the results of the Labrague *et al.* (2021). Their results showed an inverse relationship between levels of compassion fatigue, years of experience, and the age of nurses. The current study supports the results of Amir and Okalo (2022), who showed a statistically significant relationship between compassion fatigue and years of experience and work in COVID-19 wards. These results were also consistent with the study of Alharbi *et al.* (2019), where it was shown that older nurses were less susceptible to compassion fatigue and higher levels of compassion fatigue were recorded among younger nurses with less experience. Alharbi *et al.* (2019), Showed that educational level was related to compassion fatigue levels. Higher educational qualification had lower compassion fatigue levels, unlike the current study, which did not show any statistically significant relationship between educational qualification and compassion fatigue levels. However, it was consistent with the results of Şahin (2023). Şahin (2023) did not find statistically significant results between the educational qualification and the levels of compassion fatigue, but it differed in terms of the age group. Şahin's study (2023) did not show any differences in the levels of compassion fatigue and age groups. The results of the current study were also consistent with the results of many studies before the epidemic, where age, years of experience, and gender affected levels of compassion fatigue (Xie *et al.* 2021; Sacco *et al.* 2015; Alharbi *et al.* 2020). Perhaps women were more susceptible to compassion fatigue than males due to the female's physiological and emotional makeup, in addition to her other duties and responsibilities such as childcare and other responsibilities and household chores, and perhaps take care of a family member. The results showed a correspondence between age and years of experience, which exhibited an inverse consistency with compassion fatigue. The fewer years of experience and age, the greater the levels of compassion fatigue among nurses. These results were attributed to a lack of experience in the field of work and life, or perhaps not yet adapting to the conditions of work and not having gone through similar experiences before. Additionally, as nurses' experience

increases, they constantly encounter many patients. Accordingly, nurses could have become automatic in their nursing skills, and their awareness and empathy skills towards patients may have decreased.

The current study showed a statistically significant relationship between anxiety and educational level. This significance was between associate degree and bachelor's degree. The associate degree group was the most susceptible to anxiety, and the bachelor's degree group was the least. A statistically significant difference was not found between nurses working in the COVID-19 isolation wards regarding age, gender, marital status, nursing experience, and period of working in the COVID-19 isolation wards. The current study agrees with the results of Hadi & Mohammed (2022) in terms of the effect of the scientific level on levels of anxiety, but it differs in that the current study did not show any relationship with demographic variables. The results of Hadi & Mohammed (2022) showed a relationship between age and years of experience with levels of anxiety. The current study did not agree with the results of Nadeem *et al.* (2021). Their results showed a statistically significant relationship between anxiety, marital status variables, experience, and the workplace. The current study is consistent with Xiong's *et al.* (2020) study. They found no statistically significant differences between the demographic variables: gender, marital status, experience, and anxiety levels. The current study also did not agree with the findings of Roberts *et al.* (2021). The results showed a statistically significant relationship between anxiety, age, and years of experience (Roberts *et al.* 2021). The current study also differs from the results of Çelmeçe & Menekay (2020), whose results showed a relationship between anxiety, age, and marital status, in contrast to the current study, which did not show such results. The fact that bachelor's degree nurses working in the COVID-19 isolation wards experience less anxiety shows the effect of bachelor nursing education in Iraq and that nurses have less anxiety about COVID-19 etc. It may have caused them to experience less anxiety as their level of knowledge about the diseases increased.

As a result of the analysis, there was no statistical significance between compassion fatigue and state anxiety scores of nurses working in the COVID-19 isolation wards. The results of a study by Luch *et al.* (2020) conducted during the first year of the

epidemic showed an increase in the rate of compassion fatigue, and the main risk factor associated with it was anxiety. To the best of our knowledge, no study was conducted to study anxiety and compassion fatigue under the conditions of the spread of COVID-19. Thus, it was difficult to compare the current study with similar studies under the same conditions, but many studies examined the relationship between compassion fatigue and anxiety before the epidemic. A study by Sun and Kim (2017) showed that compassion fatigue had many negative effects. Whitebrid (2013) showed that anxiety was one of the most negative effects of compassion fatigue, while Kim (2017) showed that people who suffer from compassion fatigue are more prone to anxiety. Jungbluth *et al.* (2011) showed that anxiety was a risk factor for compassion fatigue. Hegney *et al.* (2014) showed that compassion fatigue was associated with higher levels of anxiety, while Craigie *et al.* (2016) and Jo *et al.* (2020) showed that compassion fatigue had an indirect effect on anxiety. The current study did not show any relationship between compassion fatigue and anxiety. The reason for this result may be that this study was conducted in the final stages of the epidemic after the effects of the epidemic had decreased and the fact that nurses became familiar with the disease and how to protect themselves. Also, the reasons may be due to other factors that affect the relationship, such as the person's personality, resilience, and level of social support from the institution and family.

## 6. CONCLUSION AND RECOMMENDATIONS

### 6.1 Conclusion

- The mean score of CFS for nurses working in the COVID-19 isolation wards was  $39.53 \pm 8.76$ . Thus, it was determined that nurses working in the COVID-19 isolation wards had moderate levels of compassion fatigue.
- The mean score of SAI for nurses working in the COVID-19 isolation wards was  $50.97 \pm 7.45$ . Thus, it was determined that nurses working in the COVID-19 isolation wards had moderate levels of state anxiety.
- CFS score of nurses working in the COVID-19 isolation wards according to age was found a statistically significant difference ( $p < 0.05$ ). This significance was between 20-29 years and 40-49 years. It was determined that the level of compassion fatigue decreased as the nurses' age in the COVID-19 isolation wards increased.
- CFS score of nurses working in the COVID-19 isolation wards according to gender was found to be a statistically significant difference ( $p < 0.05$ ). It was found that female nurses had compassion fatigue more than male nurses.
- CFS score of nurses working in the COVID-19 isolation wards according to nursing experiences was found to be a statistically significant difference ( $p < 0.05$ ). This significance was between 1-5 years and 20-25 years groups. It was determined that the level of compassion fatigue decreased as the nursing experiences of the nurses working in the COVID-19 isolation wards increased.
- Between the CFS scores of nurses working in the COVID-19 isolation wards with marital status, educational level, and period of working in the COVID-19 isolation wards was not found a statistically significant difference ( $p > 0.05$ ).

- SAI score of nurses working in the COVID-19 isolation wards according to educational level was found to be a statistically significant difference ( $p < 0.05$ ). This significance was between the bachelor's degree and the associated degree.
- Between the SAI scores of nurses working in the COVID-19 isolation wards with age, gender, marital status, nursing experience and period of working in the COVID-19 isolation wards was not found a statistically significant difference ( $p > 0.05$ ).
- As a result of the analysis, there was not a statistically significant between CFS scores and SAI scores of nurses working in the COVID-19 isolation wards ( $p > 0.05$ ).

## **6.2 Recommendations**

Based on the results shown by the current study, the following recommendations for practice and research were presented:

- Considering the existing risk factors regarding compassion fatigue and anxiety experienced by nurses working in the COVID-19 isolation wards in Iraq, necessary precautions must be taken in line with hospital management and ministry of health policies. In this regard, establishing hospital-based psychosocial support units in reducing the compassion fatigue and anxiety experienced by nurses can prevent psychosocial problems that may develop in Iraqi nurses in the long term.
- In addition, nurses working in the COVID-19 isolation wards in Iraq who are at risk of developing compassion fatigue and anxiety should be identified, necessary precautions should be taken, and psychosocial support should be provided to them in times of crisis.
- Finally, the role of CLP nurses is important in increasing the awareness of nurses working in COVID-19 isolation wards, improving their coping skills, supporting their self-care, and providing psychosocial support during the crisis.

For this reason, hospital managements in Iraq should include CLP nurses in the plan and not ignore their role in reducing the compassion fatigue and anxiety experienced by nurses. Thus, CLP nurses need to take an active role in developing strategies that will reduce the compassion fatigue and anxiety of nurses working in COVID-19 isolation wards and support their strengthening, and in conducting studies with a high level of evidence.



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## **APPENDICES**

### **APPENDIX 1. Data collection form**





القسم الثالث : مقياس القلق كحالة



**APPENDIX 2. Ethical approval from Çankırı Karatekin University**



### **APPENDIX 3. Ethical approval from Azadi Teaching Hospital**



**APPENDIX 4. Permission to use scales.**



**APPENDIX 5. Informed consent form**



## **CURRICULUM VITAE**

### **Personal Information**

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