بسم الله الرحمن الرحيم

كلية نبتة
NAPATA COLLEGE

كلية نبتة
NAPATA COLLEGE

Faculty of Medicine

Assessment of Depression among Medical Students in NAPATA College due to COVID-19 pandemic،2021.

A Dissertation Submitted in Partial Fulfillment for the Requirement of BCs Degree in Medicine

By

Alaa bannaga alataya ahmed

Enas jaffer yousif

Shahad motwkel ahmed

Sohila khider ahmed

Supervisor

Dr. Bahja hamid mhammed

2021

قال تعالى


بسم الله الرحمن الرحيم
الله لا إله إلا هو الحي القيوم لا تأخذه سنة
ولا نوم له ما في السموات وما في الأرض من ذا الذي
يشفع عنده إلا بإذنه يعلم ما بين أيديهم وما
خلفهم ولا يحيطون بشيء من علمه إلا بما شاء وسع
كرسيه السموات والأرض ولا يؤوده حفظهما
وهو العلي العظيم

Dedication

We would like to dedicate the following people, without whom we would not have been able to complete this research, and without whom we would not have made it:

To our parents for their love, endless support and encouragement throughout my life, thank you both for giving me strength to reach for stars and chase my dreams

To our family deserve wholehearted thanks as well specially

To our friends for your understanding and encouragement in many moment of crisis, we cannot list all name here but you are always in our mind

Acknowledgments

First we wish to thank Allah for granting us the Confidence and Success to complete this study. We would like to say a special thank you to my supervisor who's guided us and encouraged us to carry on through these years and has contributed to this thesis with a major impact. Thank you as well for guiding us often with big doses of patience, through the subtleties of scientific writing

Dr. Bahja hamid mhammed

We would like to acknowledge and thank our colleagues in Faculty of Medicine – Napata college for provided us with a very stimulating environment in what concerns the extraordinary quality of its academic staff, and that experience will leave marks beyond this thesis.

Finally, we would like to thank our family for supporting us during the compilation of this dissertation

Table of Contents

Content	Page No
The Verse	I
Dedication	II
Acknowledgment	III
List of contents	IV
List of tables	V
List of figures	VII
List of Abbreviations	VI
Abstract (English)	IX
Abstract (Arabic)	X
Chapter One: Introduction, Rationale and Objectives	
Introduction	2
Problem statement	3
Rational	4
Research Objectives	4
General objective	4
Specific objectives	4
Chapter Two : Literature Review	
COVID-19	6
The global and regional epidemiological overview of COVID-19	7
COVID 19 in Sudan	8
Complications	8
Effects of COVID 19 on mental health	9
Depression	10
Types of depression	11
Effect of COVID-19 on Medical student	11

previous studies	12
Chapter three :Materials and Methods	
Study design	17
Study area (setting)	17
Study duration	17
Study population	17
Sampling techniques	17
Sample size	17
Inclusion criteria	18
Exclusion criteria	18
Study variables	18
Data collection	18
Tools and measurements of Depression	18
Ethical clearance	19
Data analysis	19
Chapter Four : Results	
Socio-demographic characteristics & factor related COVID 19 of medical student	21
Psychological Depression measurement among medical student	24
Association between Depression and Socio-demographic characteristics of medical student	25
Chapter Five : Discussion, Conclusion and Recommendations	
Discussion	27
Conclusion	29
Recommendations	29
References	
References	30

List of Tables

Table	Page. No
Table 4.2 Distribution of Socio-demographic characteristics of medical student	22
Table 4.2 Distribution of factor related COVID 19 of medical students	23
Table 4.3 Association between depression and Socio-demographic characteristics of medical student	25
Table 4.4 Association between depression and factor related of COVID 19	26

List of Figures

Figure	Page. No
Figure 4.1 Distribution of study participants according to Gender	21
Figure 4.2 Psychological depression among medical students	24

List of Abbreviations

CAS	coronavirus anxiety scale
CDC	Centers for Disease Control and Prevention
CFR	case fatality ratio
COVID-19	Coronavirus disease 2019
PHEIC	public health emergency of international concern
SARS-CoV-2	severe acute respiratory syndrome coronavirus 2
WHO	World Health Organization

Abstract

Assessment Incidence of Depression due to COVID 19 pandemic among Medical Students in NAPATA College 2021

Background: The COVID-19 pandemic has created a mental health crisis among medical students in Sudan due to lockdown restrictions, overwhelming numbers of COVID-19 cases, financial difficulty, etc. This mental health crisis may led to high degrees of depression among medical students.

Objective: The aim of this study is to investigate incidence of Depression due to COVID 19 pandemic among Medical Students in NAPATA College 2021.

Methods: This cross-sectional institutional-based study was conducted at NAPTA College-Sudan during period September 2020 to September 2021 by using Forms questionnaire. The questionnaire Form included a sociodemographic questionnaire and psychometric Depression scales evaluating the psychological Depression impacts of the COVID-19 pandemic. Thus, both qualitative and quantitative analyses were performed in the study.

Results: A total of One hundred seventy four medical students participated in this study, of whom 66%were females and 36 were males. After assessment of the psychometric Depression scales, it was found that More than half medical students carried in this study were found to have depression due to COVID 19 pandemic with different scales ranging from mild depression 38% of the study participants to sever 5% according to beck test. Among the identified risk factors, having a family member who was infected with COVID-19 was significantly associated with depression, with P values0.04.

Conclusions: This research concludes that there is high incidence depression symptoms rate of COVID-19 among medical students

الخلاصه

تقييم حدوث الاكتئاب بسبب جائحة كورونا بين الأطباء و الطلاب في كليه نبته2021

االمقدمه : تتسبب جائحة كورونا في أزمة صحية عقلية بين طلاب الطب في السودان بسبب قيود الإغلاق ، والأعداد الهائلة من حالات كورونا ، إلخ. قد تؤدي أزمة الصحة العقلية هذه إلى درجات عالية من الاكتئاب بين الأطباء و الطلاب.

الهدف: الهدف من هذه الدراسة هو التحقق في حدوث الاكتئاب بسبب جائحة كورونا بين طلاب الطب في كلية نبته

الطرق: أجريت هذه الدراسة المقطعية في كلية نبته – السودان خلال الفترة من سمتمبر 2020 الي سبتمبر 2021 باستخدام استبيان. تضمنت استمارة الاستبيان أ/ الاستبيان الاجتماعي الديموغرافي ب/ مقاييس الاكتئاب النفسي التي تقيم الحالة النفسية ، أجريت التحليلات النوعية والكمية في الدراسة.

النتائج: شارك في هذه الدراسة مائة وأربعة وسبعون من طلاب الطب ، من بينهم كان 66 ٪ من الإناث و 36 من الذكور. بعد تقييم مقاييس الاكتئاب النفسي وجد أن أكثر من نصف طلاب الطب الذين شملتهم هذه الدراسة وجدوا لديهم الاكتئاب النفسي (PD) بسبب جائحة كورونا بمقاييس مختلفة تتراوح من الاكتئاب الخفيف 38٪ من المشاركين في الدراسة و حتي الحاد 5٪ حسب اختبار بيك. تم تحديد عوامل خطر اخري ، حيث كان وجود أحد أفراد الأسرة مصابًا بـ كورونا يرتبط بشكل كبير بالاكتئاب.

الاستنتاجات: خلص هذا البحث إلى أن هناك نسبة عالية من أعراض الاكتئاب

كوفيد -19 بين طلاب الطب

Chapter One

Introduction, Rationale &Objectives

Chapter One

Introduction, Rationale &Objectives

1. Introduction, Rationale &Objectives

1.1 Introduction

In December 2019, a new strain of Coronavirus affected China and drastically spread around the world in an unprecedented manner, within a very short period. The World Health Organization (WHO) renamed it Coronavirus disease 2019 (COVID-19), which is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and declared a state of pandemic on March 11th, 2020 (World Health Organization, 2020). Since March 2020, the pandemic took hold in Sudan, as on the 13th Sudan reported its first novel coronavirus case in Khartoum. This produced a state of emergency in the country, and in Khartoum specifically. At present, there are approximately 34,889 people who got infected by the novel coronavirus in Sudan (WHO, 2021).

COVID-19 is transmitted chiefly by contact with infectious material (such as respiratory droplets) or with objects or surfaces contaminated by the causative virus, and is characterized especially by fever, may progress to cough, shortness of breath, pneumonia, and respiratory failure.The COVID-19hastriggeredaglobalhealthcrisisandisamajor public health emergency of international concern (PHEIC) all over the world, which not only threatens the lives of people but also affects their mental health (World Health Organization, 2005, 2020; Zhong et al., 2021). During the pandemic, some people have experienced relatively higher emotional irregularities (e.g., panic, excessive anxiety, irritability, and other psychological reactions) while some people suffered from cognitive imbalances; as a result, their attention and memory may be influenced by repeated stimulation of a large amount of information. Some of them may have changed their behaviors considerably while some have expressed somatic reactions, such as insomnia, stomach pain, and diarrhea (Amerio et al., 2020; Chan and Kuan, 2020; Ren et al., 2020; Yedemie, 2020; Zhao et al., 2020; Zhong et al., 2021). Apropos physiological and psychological responses are normal reactions in dealing with public health emergencies, which are conducive to adapting to the environment. However, overreactions can increase the psychological burden and be hazardous to physical and mental health (Rosenbaum, 2010; Fergusson et al, 2014). The continuous spread of novel coronavirus (COVID-19), strict isolation measures, and delays in starting school, colleges and universities across the country is expected to influence the mental

health of university students. Despite its mental health impacts, no detailed study on the psychological impacts of university students facing the epidemic has been conducted. At present, the mental health problems of college students during the COVID-19 pandemic have attracted the attention of relevant researchers. The current research has shown that during the pandemic, the mental health of college students has been affected to some extent, and the number of students with negative emotions and psychological problems has increased (Khan et al., 2020), revealing the possible mental health impact of COVID-19 on them. Hence, we hypothesized that (Hajivalili et al, 2020) COVID-19 would have adverse effects on the mental health of college students (World Health Organization, 2020).

1.2 Problem statement

The novel coronavirus disease has created a huge stir and apprehension across the world since it was first discovered in Wuhan, China. It quickly spread around the world and is now a pandemic of epic proportions. Coupled with this, it has resulted in the deaths of many individuals with millions of persons still laying on hospital beds seeking medical attention due to this viral disease. However, while the major attention has been on finding vaccines or drugs for its cure, a lot of other underlying issues are left grossly unaddressed. Among these, are the mental health conditions that could arise from COVID-19 complications and the compulsory isolation measures that have been put by various governments to limit its spread. The prevalence of mental illness that includes depression is about 10% in the adult population, and about 20% of all patients who were observed by primary health care physicians have one or more mental health problems. Many studies revealed that prevalence of depression and other mental distress was higher among Medical students than most people. Medical students as future health professionals are also being directly and indirectly affected by the COVID-19 pandemic. The anticipation of a painful future in terms of work-related conditions, hardened in

part by the pandemic, as well as the adaptation to university programs to the pandemic itself, could be potential causes of depression and other mental health problems among medical students.

1.3 Justification

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an emerging infection causing a widely spread pandemic of Coronavirus disease 2019 (COVID-19). The current COVID-2019 pandemic is prompting fear of falling sick, dying, helplessness and stigma so urgent and timely understanding of mental health status is needed to help the community. Medical students are increasingly recognized as a vulnerable population, suffering from higher levels of anxiety, depression, substance abuse, and disordered eating compared to the general population. Therefore, when the nature of their educational experience radically changes—such as sheltering in place during the COVID-19 pandemic—the burden on the mental health of this vulnerable population is amplified, so aim of our study is to assess the depression impact of COVID19 pandemic on medical students in Sudan.

.

1.4 Objectives

1.4.1 General Objective :

- To assess Depression due to COVID 19 pandemic among Medical Students in NAPATA College 2021.

1.4.2 Specific Objectives:

- To measure depression rate using beck test (scale for depression).

- To describe general characteristic of participants such as socio-demographic factors (age, gender and year of study) .
- To identify relevant factor such as Participants who have history of COVID 19, Participants who have Family/friends with history COVID 19, Participants who have history of mental illness, Participants who have Family with history of mental illness and others .
- To assess possible association between depression and other factor like (age, gender and year of study).

Chapter Two

Literature Review

2. Literature Review

2.1 COVID-19

Severe acute respiratory infection (SARS) is a group of respiratory tract infections caused by a beta coronavirus (SARS-COV2) (Skowronski et Al, 2005), (Wu et al, 2020). Corona Virus Disease-2019 ("COVID-19") is a family of SARS caused by Novel Coronavirus and was first detected in December 2019 in Wuhan, China. Since it has been declared a global pandemic by the World Health Organization (WHO), it has made the rapid spread across the world and causes high mortality and morbidity (Zumla et al, 2015). Globally, there is an estimated number of 5.8 million cases and nearly half a million (362, 705) deaths at the end of May 2020 (World Health Organization, 2020). In Sudan, the Ministry of Health confirmed 7 cases from different age groups, 2 of which were fatal. There were also more than 99 suspected cases that are in isolation centres. The first case was announced on 13 March 2020. All confirmed cases are male travelers coming from outside Sudan. These cases arrived from different countries prior to the closure of Khartoum airport on 16 March 2020. Both deaths were patients aged over 55 years old. No cases of infection have been recorded in children. The clinical presentation of the confirmed and suspected cases presented with symptoms of respiratory infection with symptom severity ranging from a mild common cold-like illness, to a severe viral pneumonia leading to acute respiratory distress syndrome that is potentially fatal. Symptoms included fever, cough, and shortness of breath. Other symptoms, such as malaise and respiratory distress, have also been described. In addition, some of those who tested positive for COVID-19 were asymptomatic, whereby symptoms may develop from 2 days to 2 weeks following exposure to the virus (Centers for Disease Control and Prevention CDC, 2020), (Hui et al, 2020). Transmission of COVID-19 is believed to occur via respiratory droplets from coughing and sneezing, as with other respiratory pathogens, including influenza and rhinovirus. WHO officials project that the outbreak is containable if that pattern holds. No vaccine is currently available for SARS-CoV-2. Avoidance is the principal method of deterrence. General measures for prevention of viral respiratory infections include washing hands with water, use of a hand sanitizer, and avoiding touching the mouth, nose and eyes, especially if hands are unwashed.

Also, avoidance of close contact with infected people, isolation for those who are infected, coughing and sneezing on a disposable tissue, and regular cleaning and disinfecting of surfaces that could be frequently touched is important for disease prevention (Cennimo, 2020).

2.2 The global and regional epidemiological overview of COVID-19

The Coronavirus disease 2019 (COVID-19) outbreak which was declared a Public Health Emergency of International Concern (PHEIC) on 30th January 2020 and characterized as a pandemic on 11th March 2020, has continued to spread around the world with major health and socio-economic impacts. The number of new COVID-19 cases and deaths continues to decrease, with over 3.5 million new cases and 78 000 new deaths reported globally (World Health Organization, 2020). Although the number of global cases and deaths continued to decrease for a fifth and fourth consecutive week respectively, case and death incidences remain at high levels and significant increases have been reported in many countries in all regions (Wang et al, 2020). The European and South-East Asia Regions reported the largest decline in new cases and deaths in the past week, while case incidence increased in the African and Western Pacific regions. The numbers of cases reported by the Americas and Eastern Mediterranean Regions were similar to those reported in the previous week. An increase in death incidence was reported in the African Region, whereas the Europe and the Eastern Mediterranean Regions reported decreases, and the reported death incidence in the Western Pacific and the Americas Regions was similar to the death incidence in the previous week (Singhal et al, 2020). Although the number of global cases and deaths continued to decrease for a fifth and fourth consecutive week respectively, case and death incidences remain at high levels and significant increases have been reported in many countries in all regions (Meo et al, 2020).

As of 31st May 2021, the global cumulative confirmed cases reported to World Health Organization (WHO) had reached over 169.8 million and over 3.53 million deaths with case fatality ratio (CFR) of 2.1%1. Since the first imported case of COVID-19 was reported in the WHO African Region in February 2020, the pandemic has affected, to varying magnitudes, all the 47 countries of the Region, with significant socioeconomic impact (World Health

Organization, 2020). As of 31st May 2021, a cumulative total of over 3.46 million confirmed cases had been reported from the 47 countries in the Region with more than 86,800 deaths (CFR 2.7%). The evolution of COVID-19 in the region involved an initial slow rise in the number of cases which peaked in July 2020 between epidemiological weeks 29 and 30 followed by a declining trend. However, from mid-October 2020 resurgence was observed in several countries across the continent peaking towards the end of December 2020 and early January 2021. Ten countries accounted for over 88% of new cases while others recorded declining or stable trends (World Health Organization, 2021).

2.3 COVID 19 in Sudan

Since first case of COVID-19 reported in Sudan on 13 March 2020 and by 11 November 2020, there are 14,401 confirmed cases with 1,116 deaths and 9,535 recovered cases. The highest number of confirmed cases were reported in Khartoum State 10,393 (72.2%); followed by Gezira state 1,214 (8.4%). Regarding the total number of the death per the state; Khartoum state has contributed the most in the country total deaths related to COVID-19 with 415 cases of death (37.18%); followed by Gezira state and North Darfur and the least one was Blue Nile state (0.08%). However, this is mainly because of the proportionally high number of cases reported from Khartoum state to other areas of the country. This is further confirmed by the fact that Khartoum state has reported one of the lowest case fatality rates in Sudan 4%, while other states reported extremely high case fatality rate up to 50% and 60% like South and North Darfur states. High case fatality rate in remote states of Sudan highlights the relatively better case management in the capital city, Khartoum, and further underscores the centralization of healthcare system in the country (Omar et al, 2020). In Sudan, as elsewhere in Africa, the COVID-19 crisis has unfolded relatively slowly. This is due to the country's comparative isolation from world travel and the fact that most Sudanese live in rural areas where social distancing is an established practice. But, as the virus now appears to be sweeping through Sudan. Sudan is currently struggling with many obstacles as a result of the ensuing pandemic and measures that adopted urgently to control the spread including statewide lockdown, dealing with a collapsing health system and suspension of tuition in schools and universities so stopping the educational process (Omar et al, 2020).

2.4 Complications

Age and sex have been shown to affect the severity of com- plications of COVID-19. The rates of hospitalization and death are less than 0.1% in children but increase to 10% or more in older patients. Men are more likely to develop severe compli- cations compared to women as a consequence of SARS-CoV-2 infection (Promislow et al, 2020). Patients with cancer and solid organ transplant recipients are at increased risk of severe COVID-19 complications because of their immunosuppressed status. The main complications reported in patients with SARS- CoV-2 may include: i) Coagulopathy, mainly disseminated intravascular coagulation, venous thromboembolism, elevated D-dimer and prolonged prothrombin time. ii) Laryngeal edema and laryngitis in critically ill patients with COVID-19. iii) Necrotizing pneumonia due to super infection caused by Panton-Valentine leukocidin–secreting Staphylococcus aureus infection. This super infection is usually fatal (Duployez et al, 2020). iv) Cardiovascular complications, including acute pericarditis, left ventricular dysfunction, acute myocardial injury (associated with increased serum troponin), new or worsening arrhythmias and new or worsening heart failure. v) Acute respiratory failure. Approximately 5% of COVID-19 patients require admittance to an intensive care unit because they develop severe disease complicated by acute respiratory distress syndrome (Kluge et al, 2020). vi) Sepsis, septic shock and multiple organ failure. vii) Higher risk of death, particularly in male patients with severe disease, presence of heart injury and cardiac complications, hyperglycemia and patients receiving high doses of corticosteroids (Li et al, 2020). viii) Ventilation-associated pneumonia in up to 30% of patients requiring intensive mechanical ventilation. ix) Massive pulmonary embolism complicated by acute right-sided heart failure (Ullah et al, 2020).

2.5 Effects of COVID 19 on mental health

Coronavirus disease 2019 (Covid-19) has caused numerous problems worldwide since 2020. From the psychiatric perspective, the Covid-19 epidemic has not only induced anxiety and fear of infection but also depressive mood and loss of control in all populations. The COVID-19 pandemic has a negative impact not only on physical health but also on psychological well-being, particularly when the outbreak lasts longer and is still developing. The psychological

consequences of COVID-19 have been reported to include depressed mood, anxiety, poor sleep, and increased stress level (Huang et al, 2020). The COVID-19 pandemic, with its rapid spread and high mortality, constitutes a unique case of an acute, largescale, and uncontrollable stressor. It is well-established that stress can have a significant effect on individuals' psychological wellbeing, particularly when the individual cannot cope with the stress (Fu et al, 2020). Enough knowledge and concrete information about COVID-19 would help to better cope with it. People in lockdown also are struggling different situations but more importantly, they struggle to cope psychosocially with the circumstances created by the COVID-19 pandemic. Fear, worry and stress are normal responses to perceived or real threats and sometimes once we are faced with uncertainty or the unknown. So it is normal and understandable that people are experiencing fear in the context of the COVID-19 pandemic. So, this pandemic not only a life-threatening but it impose a huge psychosocial trauma. Mental health is fundamental to our collective and individual ability as humans to think, express emotions, interact, earn a living and enjoy life. On this basis, the promotion, protection and restoration of psychological state are often considered an important concern of people , communities and societies throughout the planet. Mindfulness was widely recognized as an effective treatment for psychological and somatic symptoms (Galante et al, 2021). Coping has been defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus et al, 1984), which is one of the determinants in how individuals would react to major stressors such as the pandemic of COVID-19. Previous literature has found that mindful coping is a protective factor when dealing with stressful events. Accumulating evidence has suggested that mindful coping effectively reduces stress and anxiety in college students (Skinner et al, 2016).

2.6 Depression

Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration (Fava et al, 2008). These problems can become chronic or recurrent and lead to substantial impairments in a Corresponding individual's ability to take care of his or her everyday responsibilities. At its worst, depression can lead to suicide, a tragic fatality associated

with the loss of about 850 000 lives every year. Depression is the leading cause of disability as measured by YLDs and the 4th leading contributor to the global burden of disease (DALYs) in 2000. By the year 2020, depression is projected to reach 2nd place of the ranking of DALYs calculated for all ages, both sexes. Today, depression is already the 2nd cause of DALYs in the age category 15-44 years for both sexes combined. Everyone feels sad or low sometimes, but these feelings usually pass with a little time (American Psychiatric Association, 2010). Depression (also called major depressive disorder or clinical depression) is different. It can cause severe symptoms that affect how you feel, think, and handle daily activities, such as sleeping, eating, or working. It is an illness that can affect anyone— regardless of age, race, income, culture, or education(Fava et al, 2008).. Research suggests that genetic, biological, environmental, and psychological factors play a role in depression. Depression may occur with other mental disorders and other illnesses, such as diabetes, cancer, heart disease, and chronic pain. Depression can make these conditions worse, and vice versa. Sometimes medications taken for these illnesses cause side effects that contribute to depression symptoms (Murray et al, 1990).

Common symptoms of depression include: Persistent sad, anxious, or “empty” mood. Feelings of hopelessness or pessimism. Feelings of irritability, frustration, or restlessness. Feelings of guilt, worthlessness, or helplessness. Loss of interest or pleasure in hobbies or activities. Decreased energy, fatigue, or being “slowed down”. Difficulty concentrating, remembering, or making decisions. Difficulty sleeping, early morning awakening, or oversleeping. Changes in appetite or unplanned weight changes. Aches or pains, headaches, cramps, or digestive problems without a clear physical cause and that do not ease even with treatment (Little, 2009). Depression can affect people differently, depending on their age. Children with depression may be anxious, cranky, pretend to be sick, refuse to go to school, cling to a parent, or worry that a parent may die. Older children and teens with depression may get into trouble at school, sulk, be easily frustrated, feel restless, or have low self-esteem (Little, 2009). They also may have other disorders, such as anxiety and eating disorders, attention-deficit hyperactivity disorder, or substance use disorder. Older children and teens are more likely to experience excessive sleepiness (called hypersomnia) and increased appetite (called

hyperphagia). In adolescence, females begin to experience depression more often than males, likely due to the biological, life cycle, and hormonal factors unique to women. Younger adults with depression are more likely to be irritable, complain of weight gain and hypersomnia, and have a negative view of life and the future. They often have other disorders, such as generalized anxiety disorder, social phobia, panic disorder, and substance use disorders(Fava et al, 2008). Middle-aged adults with depression may have more depressive episodes, decreased libido, middle-of-the-night insomnia, or early morning awakening. They also may more frequently report having gastrointestinal symptoms such as diarrhea or constipation. Older adults with depression commonly experience sadness or grief or may have other less obvious symptoms. They may report a lack of emotions rather than a depressed mood. Older adults also are more likely to have other medical conditions or pain that may cause or contribute to depression. In severe cases, memory and thinking problems (called pseudodementia) may be prominent (American Psychiatric Association, 2010).

2.7 Types of depression

Two common forms of depression are: i) Major depression, which includes symptoms of depression most of the time for at least 2 weeks that typically interfere with one's ability to work, sleep, study, and eat. ii) Persistent depressive disorder (dysthymia), which often includes less severe symptoms of depression that last much longer, typically for at least 2 years (Fava et al, 2008). Other forms of depression include: iii) Perinatal depression, which occurs when a woman experiences major depression during pregnancy or after delivery (postpartum depression). iv)Seasonal affective disorder, which comes and goes with the seasons, typically starting in late fall and early winter and going away during spring and summer. V)Depression with symptoms of psychosis, which is a severe form of depression where a person experiences psychosis symptoms, such as delusions (disturbing, false fixed beliefs) or hallucinations (hearing or seeing things that others do not see or hear). Individuals diagnosed with bipolar disorder (formerly called manic depression or manic-depressive illness) also experience depression (Little, 2009).

2.8 Effect of COVID-19 on Medical student

High stress and anxiety risk prevalence were observed in students prior to the pandemic (Robotham et al, 2006). Students are also at greater risk of depression than the general population (Ibrahim et al, 2013), or other types of occupational status, e.g., employed or retired (Olagoke et al, 2020) including academic staff (Odriozola-González et al, 2020). The coronavirus pandemic has affected students' lives in many aspects, i.e., distance learning, labor market, career opportunities or hygiene-related behavior, and daily routines. Considering that mental health issues at a young age can lead to low employment rates, poor academic outcomes, and substantial loss of total earnings over the lifetime, there should be a strong focus on research concerning students' mental health during the ongoing pandemic. Not only has COVID-19 impacted day-to-day learning in both the academic and clinical settings for medical students, it has also had a significant impact on specialties they are thinking of going into, as well as their confidence in themselves as a future physician. A survey of 337 allopathic medical students found that 20.2% respondents thought the pandemic would affect their choice of specialty, with the most common reason being the inability to explore specialties they were interested in ($p < 0.0001$). As high as 17.4% MS3 said that they were more likely to take a gap year during medical school because of the pandemic. In particular, medical students have faced additional stresses regarding disruptions in their medical education leading to symptoms of anxiety and depression. Medical student anxiety has increased after the onset of the COVID-19 epidemic (Byrnes et al, 2020). The COVID-19 pandemic is a global challenge in higher education, especially in medical education. Studies compared with peers in the general population and with non-medical college students before the COVID-19 pandemic showed the prevalence of mental distress in medical students was higher than in others (Dahlin et al, 2007) (Bacchi et al, 2015). Due to the sudden outbreak of COVID-19, most universities across the United States were forced to send their students home early for the 2019–2020 academic year to prevent spread and protect students as well as surrounding communities. The sudden change in students' learning environment, the quality of their education, and other circumstances caused students to face unique challenges, adversely impacting their mental health. The loss of internships, on-campus jobs, and other opportunities also contributed to the

stress and declining mental health of students. According to a study done on a cohort of students attending Dartmouth College, there were noticeable differences in behavioral and mental health over the course of the pandemic thus far, with a higher number of self-reported cases of depression and anxiety around final exams (Huckins et al, 2020).

2.9 previous studies

In an attempt to assess the rate of perceived mental health care, anxiety and other parameters resulting from COVID-19 among Indians, Roy et al. (2020) conducted an online survey that involved 662 participants. It was established that the participants were preoccupied with thoughts of COVID-19 as reflected by the persistent use of sanitizers and adherence to other preventative measures. The result showed heightened levels of anxiety among those that took part in this research with cases of paranoia and sleeping disorders being reported, even as distress arising from the increased use of social media persisted. The finding from this survey indicated that more than three-quarter of the participants needs mental health care. The study also highlighted the stigmatization and fear that may come with the re-integration of an individual who has recovered from the coronavirus disease into the society. (Gao et al, 2020) evaluated that correlation between social media exposure and mental health problems in the era of the COVID19 pandemic. The study, which was conducted online, had participants from the age of 18 years and above who lived in the Wuhan Province. The result showed that symptoms of anxiety, depression and a combination of both were prevalent as over 80% of the sample size admitted to using social media on a frequent basis. The findings in this study is supported by the WHO's submission that rumour and misinformation spread through social networks have the propensity to stimulate bouts of anxiety, fear and stigma thus bring about mental health concerns (WHO, 2020c). The perceived COVID19-related mental health problems are not only about adults as children are not left out. Several children with pre-existing mental health conditions are reported to suffer worsening fate and those having special education needs have shown traces of psychological distress (Lee, 2020a). In a related development, Sprang and Silman (2013) while studying the impact of quarantine, discovered that children that were placed under quarantine had post-traumatic stress test scores that were four times higher than those who did not undergo quarantine. Generally, due to the home

confinement and the things their minds are fed with during this period, children may become more susceptible to worry, anxiety, sleeping disorder, fear, loss of appetite and depression (Jacob et al., 2020). Lee (2020b) designed a coronavirus anxiety scale (CAS) with five items to evaluate loss of appetite, sleep disturbance, abdominal distress, dizziness and tonic immobility caused by COVID19. Upon testing, it was seen that Asians had a relatively higher CAS score than other races. The instrument score was highly positively associated with extreme hopelessness, negative coping strategies, passive suicidal thought process and functional impairment. Diagnosis of coronavirus disease also return higher CAS scores. (Rossi et al, 2020) carried out a study to examine the psychological effects of quarantine on the Italian populace 3 - 4 weeks after the measure was engaged in the country. Besides quarantine, other underlying factors such as disrupted working routine, emotional and social problems, as well as the loss of loved one(s) due to COVID-19-related complications were critical to the mental state of health of the participants. Mental health issues such as post-traumatic stress symptoms, anxiety, insomnia, depression and adjustment disorder symptoms were prevalent among the population. Though the authors reported that women were more prone to these conditions, the fact that over 70% of the respondents were women made this debatable. Nevertheless, a similar research piloted by (Qiu et al, 2020) have revealed that women and young adults are more susceptible to mental health problems amounting from COVID-19-induced quarantine.

Chapter Three

Materials & Methods

Materials & Methods

3.1 Study design

Observational, Descriptive cross sectional institutional-based study

3.2 Study area (setting)

This study was conducted among medical students at NAPATA College, in Khartoum- Sudan.

3.3 Study duration

The data was collected from September 2020 to September 2021.

3.4 Study population

The study population were medical students at NAPATA College, Khartoum- Sudan from first to fifth year the total population is 174 student.

3.5 Sampling techniques

It was conducted by simple random sampling methods. Simple random sampling was conducted during a period of one year.

3.6 Sample size

By using the equation the sample size (n) was calculated:

$$\mathbf{N = (Z^2 \times (p \times q))/e^2}$$

- n: sample size required by the study
- Z: the determined area under the normal curve by the desired confidence interval (CI: 95%)
- P: the proportion of the main attribute of the study (the expected prevalence of depression due to Covid 19 pandemic among medical students in Sudan (13%).

Then, P = 0.593

q=1-p = 1 – 0.13= 0.87

- e=the desired precision (e=0.05)

$$\mathbf{n = \frac{(1.96)\times(1.96)\times(0.87)\times(0.13)}{(0.05)\times(0.05)} = 173.8 \text{ or } 174 \text{ study participants}} \text{ (Glynn, 2010)}$$

3.7 Inclusion criteria

- All Student at faculty of medicine of Napata college with age is 18 and above and both gender were included in this study.

3.8 Exclusion criteria

- Student at faculty of medicine of napata college who are under 18years old , Students who refuse to participate were excluded from this study.

3.9 Study variables

- Dependent variables:
  Depression on cov19.
- Independent variables: sociodemographic data such as: age, gender, education level (number of year in college). Presence of family history of mental illness (mental status) and Loneliness and feeling isolated during the lockdown.

3.10 Data collection

Data related to socio-demographic factors and other related factors was collected using self-administrated paper form questionnaire. The questionnaire was initially prepared in English and translate into the local language, Arabic. Questionnaire was divided into two sections: 1. sociodemographic characterization of participants and factor related COVID-19. 2. Assessment of depression Scale.

3.11 Tools and measurements of Depression

We measured score of Depression by using self-report measure designed Questionnaire according Beck test for initial diagnosis, it contains nine questions to assess the level of depression after ruling out normal bereavement, a history of a manic episode (Bipolar disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms, scoring: score of 0 to 7 = normal, 8- 17 mild depression, 18 to 22= moderate depression, 23-60 severe depression 37 and above = very severe depression

3.12 Ethical clearance

The research was conducted after obtaining ethical clearance from research committee in community medicine department, NAPTA College

3.13 Data analysis

- Descriptive statistics: Descriptive analysis was used to describe the demographic data and the COVID-19 exposure and perception and included the mean and standard deviation (SD) and Depression among students by proportion,
- Analytical statistics: Test of significance was conducted using qui square test at 95% confidence level. Statistical package for social Sciences (SPSS) version 25 was used for analysis.

Chapter Four

Results

4. Results

4.1 Socio-demographic characteristics & factor related COVID 19 of medical student

One hundred seventy four medical students were approached to participate in the study, with response rate of 100 % the questionnaire was answered exhaustively. The majority of study population were females (66%) and males (36%) presented in **Fig 4.1**, the females outnumbered males because of the high admission rates in the faculty.

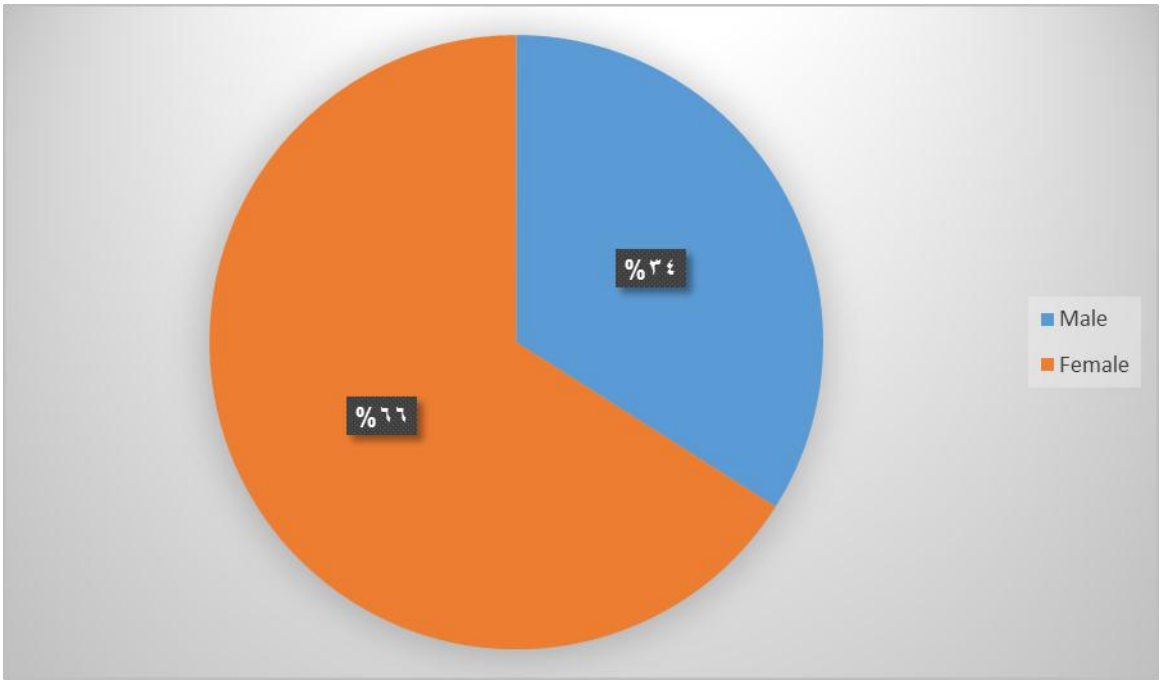

Figure 4.1 Distribution of study participants according to Gender

The age of the participants categorized in three groups as follows: 18-21years, 22-25 years, and 26 years and above. Majority of participants in age group 18-21 years 57 %. Most of the participants were residing with their families 59%. About 71% of the participants had stable monthly income either from their families or by themselves **Table 4.1**

Table 4.2 Distribution **of** Socio-demographic characteristics of medical student

Categories		Frequency (percentage)
Gender	Male	59 (34%)
	Female	115 (66%)
Age (years)	18-21	99(57%)
	22-25	74(42.5%)
	26 and above	1(0.6%)
Study year	1st	47(27%)
	2nd	23(13%)
	3rd	34(20%)
	4^{th}	40(23%)
	Final	29 (17%)
Residence	With family	102(59%)
	Dorms	72 (41%)
Family income	Steady	123 (71%)
	Non Steady	51(29%)

According to factor related to COVID 19, more than half 53% of participants have infected with COVID 19 before and high percentage 83% of participants have member from her family or friends infected with COVID 19 before while not ratio small 41% of Participants have Family member/members working in the medical field. Regarding the sources of COVID-19 updates, social media was the most used source with more 55% using it presented in **Table 4.2**

Table 4.2 Distribution of factor related COVID 19 of medical students

Categories		Frequency (percentage)
Participants who have history of COVID 19	No	80 (47%)
	Yes	94 (53%)
Participants who have Family/friends with history COVID 19	No	30 (17%)
	Yes	144 (83%)
Participants who have history of mental illness	No	166 (96%)
	Yes	8 (4%)
Participants who have Family with history of mental illness	No	153(88%)
	Yes	21 (12%)
Participants who have Family member/members working in the medical field	No	103 (59%)
	Yes	71 (41%)
Participants who have Family member/friend contacted with COVID 19 cases	No	108 (62%)
	Yes	66 (38%)
Source of COVID updates	Social media	95 (55%)
	News media	9 (5%)
	Both (Social and News media)	64 (37%)
	Not follow updates	6 (3%)

4.2 Depression measurement among medical student

More than half medical students carried in this study were found to have depression due to COVID 19 pandemic with different scales ranging from mild depression 38% of the study participants to sever 5% according to beck test as illustrated in **fig 4.2** while 44% of the study participants were normal.

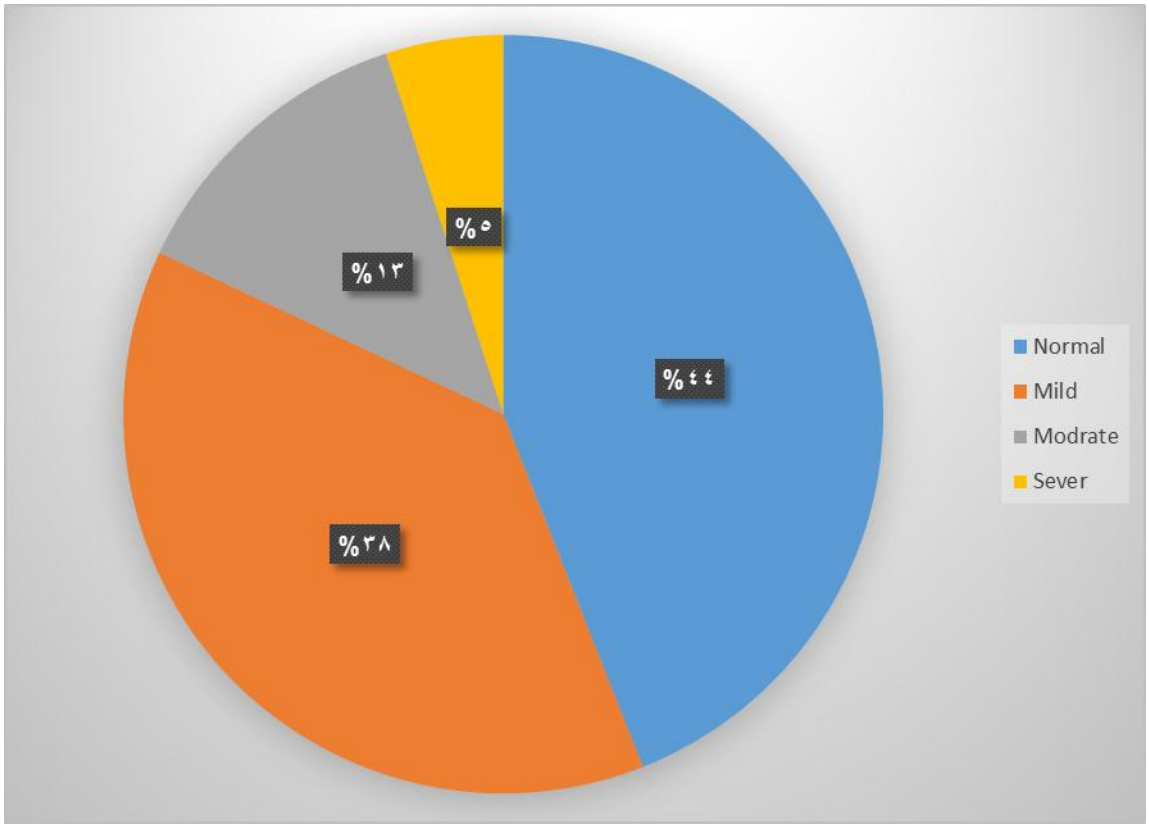

Figure 4.2 Psychological depression among medical students

4.3 Association between Depression and Socio-demographic characteristics of medical student

When comparing depression subscales between demographics characteristics groups, the potential relationship between depression and demographics characteristics was evaluated using the Pearson's Chi-square test. The result of the test showed Depression was significantly associated with Study year (p value 0.04), and insignificantly associated with Gender, Age, Residence and Family income (p value 0.94, 0.61, 0.73 and 0.84 respectively) presented in **Table 4.3**

Table 4.3 Association between depression and Socio-demographic characteristics of medical student

Categories		Normal	Mild depression	Moderate depression	Sever depression	P value
Gender	Male	25	15	12	7	0.94
	Female	57	51	5	2	
Age (years)	18-21	37	42	15	5	0.61
	22-25	44	24	2	4	
	26 and above	1	0	0	0	
Study year	1st	23	24	0	0	0.04
	2nd	13	10	0	0	
	3rd	21	11	2	1	
	4th	17	12	9	2	
	final	9	9	5	6	
Residence	With family	56	43	0	3	0.73
	Dorms	26	23	17	6	
Family income	Steady	64	51	4	4	0.84
	Non Steady	18	15	13	5	

When comparing depression subscales between factor related of COVID 19, Depression was significantly associated with Participants who have Family/friends with history COVID 19 (p value 0.02) and Source of COVID updates (p value 0.04) we found social media effect negatively on medical students and insignificantly associated with other factor that it included presented in **Table 4.4**

Table 4.4 Association between depression and factor related of COVID 19

Categories		Normal	Mild depression	Moderate depression	Sever depression	P value
Participants who have history of COVID 19	No	43	15	15	7	0.39
	Yes	39	51	2	2	
Participants who have Family/friends with history COVID 19	No	8	4	13	5	0.02
	Yes	74	62	4	4	
Participants who have history of mental illness	No	82	65	15	4	0.32
	Yes	0	1	2	5	
Participants who have Family with history of mental illness	No	73	60	14	6	0.79
	Yes	9	6	3	3	
Participants who have Family member/members working in the medical field	No	71	29	1	2	0.1
	Yes	11	37	16	7	
Participants who have Family member/friend contacted with COVID 19 cases	No	72	29	4	3	0.81
	Yes	10	37	13	6	
Source of COVID updates	Social media	34	43	13	5	0.04
	TV and radio	7	0	0	2	
	Both (Social media and TV and radio)	38	21	3	2	
	Not follow updates	3	2	1	0	

Chapter Five

Discussion, conclusion & Recommendations

5. Discussion, conclusion & Recommendations

5.1 Discussion

Medical students are particularly vulnerable to mental health concerns as a result of burden of their academic life and their job description requirements which increase their vulnerability to depression so this study carried out to investigate the impact of covid-19 pandemic on depression among medical students in NAPATA college, and to examine the relationship between participants characteristics (mainly gender, age, residency and level of academic year) and depression.

One hundred seventy four medical students were approached to participate in these study and we found more than half medical students carried in this study were found to have depression due to COVID 19 pandemic with different scales ranging from mild depression 38% of the study participants to sever 5%. Our finding was similar to recent study done conducted by (Shah et al, 2021) among the global population to understand the impact of the COVID-19 pandemic on mental health found that 47% of students had depression due to the COVID-19 pandemic. A survey conducted by (Aftab et al, 2021) among undergraduate and postgraduate students studying medicine worldwide found a prevalence of depression of 41.5% in these students, which is lower than that found this study. In contrast to our result study done to assess the psychological impact of COVID-19 pandemic on the general population of Saudi Arabia where 59.1% had normal scores on the depression subscale (Alkhamees et al, 2020).

Majority of participants in the current study showed lower level of depression (mild 38%) may be due to good awareness about COVID-19 that may prevent the depression. In another study done in China, 16.5% reported moderate to severe depressive symptoms (Wang et al, 2020). The mean (SD) age of our study participants was 21.7 with and female were twice male similar to Saudi study where the majority of the participants were females (63.9%) (Alkhamees et al, 2020). In our study, the gender was not influencing the depression subscales because the perception of the event was not differ by gender difference since they were medical students, in contrary to Saudi study which is done in general public where the female gender was

associated with higher scores in all three sub-scales of the depression [11]. Also in China, female gender was significantly associated with a greater psychological impact and higher levels of stress, anxiety, and depression ($p<0.05$) (Wang et al, 2020). Our result identified risk factors, infection of a family member with COVID-19 had a insignificant impact on depression among students. These findings are consistent with studies conducted in India to assess fear of COVID-19, anxiety, and depression levels, as the same guidelines were implemented for the COVID-19 pandemic across the country (Doshi et al, 2020) (Rehman et al, 2021). Compared with international students, the findings of this study were consistent with the results of (Islam et al, 2020), who conducted a study among university students in Bangladesh and reported no impact of age or gender on depression levels; however, a study conducted among university students in France (Wathelet et al, 2020) reported an effect of gender on anxiety and depression. The multinational study conducted by (Pramukti et al, 2020) among university students to understand the impact of the COVID-19 pandemic on depression found a significant impact of gender on symptoms of depression with a P value <.001; this is not consistent with the findings of this study. However, a study conducted among university students in Malaysia (Aftab et al, 2021) found no impact of age or gender on depression symptoms, which is similar to the findings of this study. The review of these studies reveals that the effects of sociodemographic factors on a depression differ according to the country and region.

These studies reveal a higher degree of depression among college students during the COVID-19 outbreak, and social media is an important cause of increased anxiety and depression (Aftab et al, 2021)

5.2 Conclusion

This study concluded the following:

- High percentage of depression due to COVID 19 pandemic among medical students with different scales ranging from mild depression to sever according to beck test.
- Significant association of depression due to COVID 19 pandemic with Study year (p value 0.04) among medical students and insignificant association with other Socio-demographic characteristics of medical student (p value >0.05 at all).
- Significant association of depression due to COVID 19 pandemic with Participants who have Family/friends with history COVID 19 (p value 0.02) and Source of COVID updates (p value 0.04) among medical students and insignificant association with factor related of COVID 19 (p value >0.05 at all).

5.3 Recommendations

From our result:

- To reduce depression caused by the COVID-19 pandemic, medical students encouraged to pursue healthier lifestyles during the pandemic.
- We also recommend developing and implementing various policies at the government level to reduce the effects of the COVID-19 pandemic on mental health.
- To raise awareness about depression importance of mental health during COVID-19 pandemic.

References

6.1 References

Aftab M, Abadi AM, Nahar S, Ahmed RA, Mahmood SE, Madaan M, et al (2021). COVID-19 pandemic affects the medical students' learning process and assaults their psychological wellbeing. Int J Environ Res Public Health. 28;18(11):5792

Alkhamees AA, Alrashed SA, Alzunaydi AA, Almohimeed AS, Aljohani MS (2020). The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia. Compr Psychiatry. 102:152192

American Psychiatric Association (2010). Practice guidelines for the treatment of patients with major depressive disorder. 2nd ed.

Amerio, A., Brambilla, A., Morganti, A., Aguglia, A., Bianchi, D., Santi, F., et al. (2020). COVID-19 lockdown: housing built environment's effects on mental health. Int. J. Environ. Res. Public Health 17:5973. doi: 10.3390/ijerph1716 5973

Bacchi S, Licinio J (2015). Qualitative literature review of the prevalence of depression in medical students compared to students in non-medical degrees. Acad Psychiatry.39:293–9.

Byrnes YM, Civantos AM, Go BC, et al (2020). Effect of the COVID-19 pandemic on medical student career perceptions: a national survey study. Med Educ Online.25(1):1798088.

Chan, L. G., and Kuan, B. (2020). Mental health and holistic care of migrant workers in Singapore during the COVID-19 pandemic. J. Global Health 10:020332.

Centers for Disease Control and Prevention (CDC) (2020). Symptoms of coronavirus disease 2019 (COVID-19) | Atlanta: CDC (https://www.cdc.gov/coronavirus/2019-ncov/about/symptoms.html).

Cennimo DJ (2020). Coronavirus disease 2019 (COVID-19) treatment & management: approach considerations, medical care, prevention. Medscape online, (https://emedicine.medscape.com/article/2500114-treatment#d8).

Dahlin ME, Runeson B (2007). Burnout and psychiatric morbidity among medical students entering clinical training: a three year prospective questionnaire and interview-based study. BMC Med Educ. 7:6.

Doshi D, Karunakar P, Sukhabogi JR, Prasanna JS, Mahajan SV (2020). Assessing coronavirus fear in Indian population using the Fear of COVID-19 Scale. Int J Ment Health Addict. 28:1-9

Duployez Claire, Le Guern Rémi, Tinez Claire, Lejeune Anne-Laure, Robriquet Laurent, Six Sophie, et al (2020). Panton-valentine leukocidin- secreting staphylococcus aureus pneumonia complicating COVID-19. Emerg Infect Dis.;26(8):1939–41. https://doi.org/10.3201/

eid2608.201413. Epub 2020 Apr 16.

Galante J, Friedrich C, Dawson AF, Modrego-Alarcón M, Gebbing P , Delgado-Suárez I, et al (2021). Mindfulness-based programmes for mental health promotion in adults in nonclinical settings: a systematic review and metaanalysis of randomised controlled trials. PLoS Med.18:e1003481.

Glynn Israel. (2010) determining sample size, University of Florida, 2-3

Gao J, Zheng P, Jia Y, Chen H, Mao Y, Chen S, et al. (2020) Mental health problems and social media exposure during COVID-19 outbreak. PLoS ONE 15(4): e0231924.

Fawaz M, Samaha A (2021). E-learning: Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine. Nurs Forum 56(1):52-57.

Fava M, Cassano P (2008). Mood disorders: Major depressive disorder and dysthymic disorder. In: Stern TA, Rosenbaum JF, Fava M, Biederman J, Rauch SL, eds. Massachusette General Hospital Comprehensive Clinical Psychiatry. 1st ed. Philadelphia, Pa: Mosby Elsevier: chap 29.

Fu W, Wang C, Zou L, Guo Y, Lu Z, Yan S, et al (2020). Psychological health, sleep quality, and coping styles to stress facing the COVID-19 in Wuhan, China. Transl Psychiatry.10:225.

Fergusson, D. M., John, H. L., Boden, J. M., and Mulder, R. T. (2014). Impact of a major disaster on the mental health of a well-studied cohort. JAMA Psychiatry 71,1025–1031. doi:10.1001/jamapsychiatry.2014.652

Hajivalili, M., Hosseini, M., and Haji-Fatahaliha, M. (2020). Gaining insights on immune responses to the novel coronavirus, COVID-19 and therapeutic challenges.LifeSci.257:118058.

Huang Y, Zhao N (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a webbased cross-sectional survey. Psychiatry Res. 288:112954.

Hui DS, I Azhar E, Madani TA, Ntoumi F, Kock R, Dar O, et al (2020). The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health — The latest 2019 novel coronavirus outbreak in Wuhan, China. Vol. 91, Int J Infect Dis. 91:264–6.

Huckins JF, DaSilva AW, Wang W, Hedlund E, Rogers C, Nepal SK, Wu J, Obuchi M, Murphy EI, Meyer ML, Wagner DD, Holtzheimer PE, Campbell AT (2020). Mental Health and behavior of college students during the early phases of the COVID-19 pandemic: longitudinal smartphone and ecological momentary assessment study. J Med Internet Res.22:6.

Ibrahim, A. K., Kelly, S. J., Adams, C. E. & Glazebrook, C (2013). A systematic review of studies of depression prevalence in university students. J. Psychiatr. Res. 47, 391–400. https:// doi. org/ 10. 1016/j. jpsyc hires. 2012. 11. 015

Islam MA, Barna SD, Raihan H, Khan MNA, Hossain MT (2020). Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: a web-based cross-sectional survey. PLoS One.15(8):e0238162

Jacob, P., Rajendra K.M., Ghosh, S., and Sagar J.V.K. (2020). COVID-19 Pandemic and Mental Health Issues in Children and Adolescents. Mental Health in the times of COVID-19 Pandemic, Guidance for General Medical and Specialised Mental Health Care Settings Department of Psychiatry, NIMHANS, Bengaluru, India.

Kluge S, Janssens U, Welte T, Weber-Carstens S, Marx G, Karagiannidis C (2020). German recommendations for critically ill patients with COVID-19. Med Klin Intensivmed Notfmed

Lazarus RS, Folkman S (1984). Stress, Appraisal, and Coping. New York, NY: Springer Publishing Company.

Lee, S.A. (2020). Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. Death Studies, DOI: 10.1080/07481187.2020.174848

Little A (2009). Treatment-resistant depression. Am Fam Physician. 80:167-172.

Li Xiaochen, Xu Shuyun, Yu Muqing, Wang Ke, Yu Tao, Zhou Ying, et al (2020). Risk factors for severity and mortality in adult COVID-19 in- patients in Wuhan. J Allergy Clin Immunol. 146(1):110–8.

Meo, S.; Alhowikan, A.; Al-Khlaiwi, T.; Meo, I.; Halepoto, D.; Iqbal, M.; Usmani, A.; Hajjar, W.; Ahmed, N (2020). Novel coronavirus 2019-nCoV: Prevalence, biological and clinical characteristics comparison with SARS-CoV and MERS-CoV. Eur. Rev. Med. Pharm. Sci.24, 2012–2019.

Murray D, Cox JL (1990). Screening for depression during pregnancy with the Edinburgh Depression Scale. J Reproduction Infant Psychol.8:99-107

Odriozola-González, P., Planchuelo-Gómez, Á., Irurtia, M. J. & de Luis-García, R (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. Psychiatry Res. 290, 113108.

Olagoke, A. A., Olagoke, O. O. & Hughes, A. M (2020). Exposure to coronavirus news on mainstream media: The role of risk perceptions and depression. Br. J. Health Psychol. 25, 865–874.

Omar SM, Musa IR, Salah SE, Elnur MM, Al-Wutayd O, Adam I (2020) High Mortality Rate in Adult COVID-19 Inpatients in Eastern Sudan: A Retrospective Study. J Multidiscip Healthc 13: 1887-1893.

Pramukti I, Strong C, Sitthimongkol Y, Setiawan A, Pandin MGR, Yen C, et al (2020). Anxiety and suicidal thoughts during the COVID-19 pandemic: cross-country comparative study among Indonesian, Taiwanese, and Thai university students. J Med Internet Res. 24;22(12):e24487

Promislow DEL (2020). A geroscience perspective on COVID-19 mortality. J Gerontol A Biol Sci Med Sci.

Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., and Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. Gen. Psychiatry 33, 19–21. doi:10.1136/gpsych-2020-100213

Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al (2021). Depression, anxiety and stress among Indians in times of Covid-19 lockdown. Community Ment Health J.57(1):42-48

Ren, Y., Qian, W., Li, Z., Liu, Z., Zhou, Y., Wang, R., et al. (2020). Public mental healthunderthelong-terminfluenceofCOVID-19inChina:geographicaland temporal distribution. J. Affect. Disord. 277, 893–900.

Robotham, D. & Julian, C (2006). Stress and the higher education student: A critical review of the literature. J. Furth. High. Educ. 30, 107–117

Rosenbaum, S. (2010). Mental and behavioral health legal preparedness in major emergencies. Public Health Rep. 125, 759–762.

Rossi, R., Socci, V., Talevi, D., Mensi, S., Niolu, C., Pacitti, F., Di Marco5, A., Rossi, A., Siracusano, A., and Di Lorenzo, G. (2020). COVID-19 pandemic and lockdown measures impact on mental health among the general population in Italy. An N=18147 web-based survey.

Roy, D., Tripathy, S., Kar, S.K., Sharma, N., Verma, S.K., Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian Journal of Psychiatry 51: 102083.

Shah SMA, Mohammad D, Qureshi MFH, Abbas MZ, Aleem S (2021). Prevalence, psychological responses and associated correlates of depression, anxiety and stress in a global population, during the coronavirus disease (COVID-19) pandemic. Community Ment Health J.57(1):101-110.

Skowronski DM, Astell C, Brunham RC, Low DE, et Al (2005). Severe acute respiratory syndrome (SARS): a year in review. Annu Rev Med. 56:357-381.

Skinner E, Beers J (2016). Mindfulness and teachers' coping in the classroom: a developmental model of teacher stress, coping, and everyday resilience. In: Schonert-Reichl K, Roeser R, editors. Handbook of Mindfulness in Education. Mindfulness in Behavioral Health. New York, NY: Springer

Singhal, T (2020). A review of coronavirus disease-2019 (COVID-19). Indian J. Pediatrics. 87, 281–286

Ullah W, Saeed R, Sarwar U, Patel R, Fischman DL (2020). COVID-19 complicated by acute pulmonary embolism and right-sided heart fail- ure. JACC Case Rep.

Wang C, Horby PW, Hayden FG, Gao GF (2020) A novel coronavirus outbreak of global health concern. Lancet 395: 470-473.

Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS et al (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health. 17(5):1729.

Wathelet M, Duhem S, Vaiva G, Baubet T, Habran E, Veerapa E, et al (2020). Factors associated with mental health disorders among university students in France confined during the COVID-19 pandemic. JAMA Netw Open 2020 Oct 01;3(10):e2025591

- World Health Organization (2005). Statement on the Meeting of the International Health Regulations Emergency Committee Regarding the Outbreak of Novel Coronavirus (2019-nCoV):World Health Organization (2020)[cited202020201-23].Geneva:WHO.

World Health Organization (2020). WHO Coronavirus Disease (COVID-19) Dashboard: World Health Organization[2020-10-23].Geneva: WHO

WHO. Coronavirus disease (COVID-19) Situation Report – 131. Available: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports-131.

WHO (2020a). Coronavirus Disease 2019 (COVID-19) Situation Report – 46. URL https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306 -sitrep-46-covid-19.pdf?sfvrsn=96b04adf_2

WHO (2020b). Coronavirus disease 2019 (COVID-19) Situation report - 76. www.who.int/docs/default-source/coronaviruse/situation-reports/20200405-sitrep76-covid-19

WHO (2020c). COVID 2019 PHEIC Global research and innovation forum: towards a research roadmap

WHO. (2021). Weekly operational update on COVID-19. World Health Organization.

WHO. Weekly epidemiological update. Published on 23 March 2021. Available at: https://bit.ly/3v6e0Mi

Wu D, Wu T, Liu Q, Yang Z (2020). The SARS-CoV-2 outbreak: what we know. International Journal of Infectious Diseases.

Yedemie, Y. Y. (2020). Mental health and psychosocial aspects of corona virus disease(COVID-19) outbreak in Ethiopia : psychological intervention for public psychological crisis. Int. J. Psychol. Brain Sci. 5, 56–60. doi: 10.11648/j.ijpbs. 20200504.11

Zhao, Y., An, Y., Tan, X., and Li, X. (2020). Mental health and its influencing factors among self-isolating ordinary citizens during the beginning epidemic of COVID-19. J. Loss Trauma 25, 580–593. doi: 10.1080/15325024.2020.176 1592

Zhong,B.,Huang,Y.,andLiu,Q.(2021). Mental health toll from the coronavirus: social media usage reveals Wuhan residents' depression and secondary trauma in the COVID-19 outbreak. Compute. Hum. Behav. 114:106524. doi: 10.1016/j. chb.2020.106524

Zumla A, Hui DS, Perlman S (2015). Middle East respiratory syndrome. The Lancet. 386(9997):9951007.

Questionnaire

NAPATA College

Faculty of medicine

Questionnaire

Section 1

A) Socio-demographic characteristics of medical student

Age: …… Years

Gender:

Male ☐ Female ☐

Study year:

1st ☐ 2nd ☐ 3rd ☐ 4th ☐ Final ☐

Residence:

With family ☐ Dorms ☐

Family income:

Steady ☐ Non Steady ☐

B) Factor related COVID 19 of medical students

Do you have any history of COVID 19?

Yes ☐ No ☐

Do you have any Family/friends with history COVID 19?

Yes ☐ No ☐

Do you have any history of mental illness?

Yes ☐ No ☐

Do you have any Family with history of mental illness?

Yes ☐ No ☐

Do you have any Family member/members working in the medical field?

Yes ☐ No ☐

Do you have any Family member/friend contacted with COVID 19 cases?

Yes ☐ No ☐

What is Source of COVID updates

Social media ☐ News media ☐

Both (Social and News media) ☐ not follow updates ☐

Section 2: measurements of Depression (beck test)

1\ Feeling sad and depressed

A	I don't feel sad	
B	feel sad	
C	I feel sad all the time and I can't get rid of it	
D	I'm sad or unhappy that I can't stand it	

2\ Feeling pessimistic

A	Am I not pessimistic about my future?	
B	I feel pessimistic about my future	
C	I don't expect things to go well for me	
D	I feel that I have no hope in the future and that it will only get worse.”	

3\ Feeling of failure

A	I don't feel like a failure	
B	I failed too much	
C	When I look back at the past years of my life, I see nothing but abject failure	
D	I feel like a complete failure."	

4\ Enjoy

A	I enjoy enough aspects of life as I used to	
B	Not enjoying aspects of life as you used to	
C	I no longer get real enjoyment from anything in life	
D	never enjoy anything in life	

5\ cry

A	I don't cry more than I used to	
B	I cry more than I used to	
C	I cry a lot over anything simple	
D	I feel like crying but I can't	

6\ Feeling of tightness and constriction

A	"I'm not upset" now more than before	
B	I get annoyed more easily than usual	
C	I feel uncomfortable now all the time	
D	I lost the ability to be bothered even by things that were bothering me before	

7\ Loss of interest

A	I have not lost interest in others or activities.	
B	I care less about others or things than before.	
C	I lost most of my interest in others and other things.	
D	It's hard to take care of anything	

8\ Decision making and frequency

A	I make decisions as efficiently as I usually do.	
B	I find it more difficult than usual to make decisions.	
C	I have much more difficulty than I used to make decisions.	
D	have trouble making any decisions	

9\ Worthless

A	I don't feel worthless.	
B	I do not consider myself as valuable and useful as I used to be.	
C	I feel worthless compared to others.	
D	I feel completely worthless	

9\ Feelings of guilt or guilt

A	I do not feel guilt or guilt (remorse).	
B	I feel guilty or guilty (remorse) for many of the things I have done or should have done.	
C	I feel guilty or guilty (remorse) most of the time.	
D	I feel guilty or guilty (remorse) all the time	

10\ Feeling of anticipation of punishment

A	I do not feel that I am being punished.	
B	I feel that I may be punished.	
C	I expect to be punished	
D	I feel that I am being punished	

11\ Self-hatred or lack of self-love

A	My feeling about myself is the same.	
B	I lost confidence in myself.	
C	I am disappointed in myself or - I am disgusted with myself.	
D	I don't love myself or - hate myself	

13\ Blame and self-criticism

A	I do not criticize or blame myself more than usual.	
B	I criticize and blame myself more than I used to.	
C	I criticize and blame myself for all my mistakes.	
D	I criticize and blame myself for all the bad things that happen.	

14\ Suicide (self-killing)

A	I don't have a thought to get rid of my life.	
B	I have ideas to get rid of my life but I can't implement them.	
C	I will kill myself if I find an opportunity.	
D	I will kill myself	

15\ Fatigue and susceptibility to fatigue or stress

A	I am not more tired or stressed than usual.	
B	I get tired or stressed out more easily than usual.	
C	Fatigue or stress prevents me from doing many of the things I used to do.	
D	I'm a teenager or too tired to do most of the things I'm used to	

16\ sleep

A	I have not had any change in my sleep pattern.	
B	I sleep somewhat more than usual. I sleep a little less than usual.	
C	I sleep a lot more than usual - I sleep a lot less than usual.	
D	I sleep most of the day - wake up several hours early and can't go back (resuming) to sleep.	

17\ Decreased level of efficiency and work

A	I have the same amount of energy as usual	
B	I have less energy than I used to.	

C	I do not have enough energy to do many things	
D	I don't have enough energy to do anything	

18\ appetite

A	Has there been no change in my appetite	
B	My appetite is somewhat less than usual. OR - My appetite is somewhat larger than usual.	
C	My appetite is a lot less than usual. Or - my appetite is a lot larger than usual.	
D	I have no appetite at all. Or - I have a strong craving for food all the time.	

19\ Weight loss

A	I haven't changed my weight recently."	
B	Lost more than two kilos.	
C	Lost more than four kilos.	
D	Lost more than six kilos.	

20\ the focus

A	I can focus with my usual competence.	
B	I am unable to focus as efficiently as usual.	
C	It is difficult for me to focus my mind on anything for a long time.	
D	I find myself unable to focus on anything.	

21\ Interest in sex

A	I haven't noticed any change in my interest in sex lately."	
B	I'm less interested in sex than I used to.	
C	Is much less interested in sex now.	
D	I completely lost interest in sex."	

Depression Score: