



Master of Science in Public Health

Exposure to COVID-19 and its impact on mental health in conflict affected Colombia

Eksponering for COVID-19 og dennes påvirkning af mental sundhed i konfliktramte Colombia

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I marts 2020 annoncerede WHO, at den nye coronavirus, SARS-Cov-2, kunne karakteriseres som en pandemi. COVID-19 medførte usikkerhed i befolkninger verden over og øgede de generelle risikofaktorer der forbindes med forringet mental trivsel. Formålet med dette studie er at undersøge, hvordan COVID-19-eksponering påvirker mental sundhed i en stikprøve af den konfliktramte colombianske befolkning. Dette blev udført som en del af et større projekt i Colombia omhandlende mental sundhed, hvor der blev gennemført strukturerede interviews i fem forskellige regioner, udført af lokale interviewere. 4494 deltagere i alderen 18 år eller derover fra kommuner med mellem eller højt konfliktniveau var inkluderet. Logistisk regression blev udført med og uden interaktionsled, og sammenligningstest blev brugt mellem grupper. Studiet fandt at sandsynligheden for mental mistrivsel, der kræver behandling, er tre gange højere, blandt ofre for konflikten vs. ikke-ofre ($p < 0,001$). Sammenhængen mellem at være offer og at have forringet mental sundhed ændres ikke ved at blive eksponeret for COVID-19. Der blev ej heller fundet en signifikant forskel mellem grupperne af ofre og ikke-ofre i forhold til hvordan COVID-19 har påvirket deres mentale sundhed. En signifikant forskel mellem grupperne, hvor ofrene var mest negativt påvirket, blev set i forhold til, hvordan pandemien har påvirket deltagernes økonomiske sikkerhed og/eller stabilitet. Størstedelen af studiepopulationen er kvinder, og mange har husholdning i deres hjem som primære beskæftigelse, hvilket gør undersøgelsespopulationen mindre repræsentativ. Denne undersøgelse er begrænset til kun at vurdere angst og depression, og det foreslås, at PTSD og selvmordsrisiko også vurderes, inden der laves en endelig konklusion på hvordan COVID-19 eksponering påvirker denne befolkningsgruppes mentale sundhed.

Abstract

Background: In March 2020, WHO announced that the novel coronavirus, SARS-Cov-2, was characterized as a pandemic. The emergence of COVID-19 brought uncertainty to people around the world and heightened the presence of general risk factors known to be associated with poor mental health. The aim of this study is to investigate how COVID-19 exposure impacts mental health in a sample of the conflict-affected Colombian population.

Methods: This study was done as part of a bigger mental health project in Colombia. The project produced a large collection of data based on structured interviews in five different departments, carried out by local interviewers. 4494 participants, ages 18 years or above, from municipalities with a medium or high level of conflict were included. A logistic regression was conducted with and without an interaction joint, and comparable tests were used between groups.

Results: The probability of being a positive psychiatric case is three times higher among victims than non-victims ($p < 0.001$). The association between victim-status and mental health is not modified by COVID-19 exposure. When looking at the effect of being exposed to COVID-19 on the participants' mental health, no significant difference was found between victims and non-victims. Victims were significantly more negatively affected than non-victims in terms of the pandemic's influence on participants' feelings of economic security and/or stability.

Discussion: The majority of the study population are women of whom many are occupied in their homes, making the study population less representative. This study only assesses anxiety and depression. It is suggested that further research on other mental health outcomes should be conducted.

Conclusion: Victims of the Colombian armed conflict were more likely to have poor mental health, but being exposed to COVID-19 did not modify this association. COVID-19 has not had a stronger effect on mental health among victims compared to non-victims, with exception of perceived economic security and/or stability, where victims were most negatively affected.

Foreword

Through my student position in DIGNITY, I have gained access to a data set conducted for a project called “Abriendo Caminos – Mental Health in Post-Conflict Colombia”. The project is carried out by collaborating partners: DIGNITY, the Colombian Ministry of Health and Social Protection, and the private university Universidad Externado of Colombia. The main objective of the project is to facilitate the improvement of mental health in (post-)conflict Colombia. This thesis will become the first publication using this dataset, which includes 4494 individuals from conflict affected areas.

Abbreviations

Coronavirus = CoV

Gaitanist Self-Defense Forces of Colombia = AGC

Heidelberg Institute for International Conflict Research = HIIK

Institute for Peace and Development = INDEPAZ

Internally displaced people = IDP

International Classification of Diseases = ICD

International Committee on Taxonomy of Viruses = ICTV

Mental Health in Post-Conflict Colombia = MHPCC

National Liberation Army = ELN

Post-traumatic stress disorder = PTSD

Revolutionary Armed Forces of Colombia – Army of the People = FARC-EP

Revolutionary Armed Forces of Colombia = FARC

The United Self-Defence Forces of Colombia = AUC

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Introduction

In January 2020 a novel, a new strain, coronavirus emerged. This particular type had not previously been identified and was named SARS-Cov-2. Coronaviruses are a large family of viruses that can cause illnesses from mild viral infections to more severe diseases. By the end of January, the WHO Director-General, Dr Tedros Adhanom Ghebreyesus, declared the novel coronavirus outbreak a public health emergency of international concern, WHO's highest level of alarm. In the following months, the virus kept spreading and increasing in cases. By mid-March 2020, WHO announced that the outbreak could be characterized as a pandemic (1). The context of COVID-19 brought uncertainty to people and a normal response to this is fear, worry, and stress. This was for many added on top of the fear of contracting the virus. Various changes to people's daily lives were implemented around the world to slow down the spread of the virus. New realities such as working from home, temporary unemployment, isolation, lack of physical contact with family members, friends, etc. brought a focus on mental health (2).

Mental health conditions are increasing worldwide and in recent years the awareness of the important role that mental health plays, has increased. Around 20% of children and adolescents worldwide have a mental health condition, and among 15–29-year-olds suicide is the second leading cause of death. Mental health conditions can have a large effect on all areas of life, such as school, work, and performance to relationships with friends and family and one's ability to participate in daily life activities. Around one in five individuals, in settings affected by conflict, have a mental health condition. Despite progress, in some countries, these people often experience severe human rights violations, discrimination, and stigma (3).

A systematic review reporting the prevalence of major depressive disorder and anxiety disorders during the pandemic (Jan 1, 2020 – Jan 29, 2021) estimated an increase of 27.6% of major depressive disorder globally due to the COVID-19 pandemic. For anxiety disorders, an increase of 25.6% was estimated. The review concludes that the pandemic has created an increased urgency to strengthen mental health systems in most countries. Strategies to promote mental wellbeing, target determinants of poor mental health, and interventions to treat mental disorders should be incorporated (4).

Mental health is fundamental to our collective and individual ability as humans to think, feel, interact with each other, earn a living, and enjoy life. This means that the promotion, protection, and restoration of mental health can be regarded as a vital concern of individuals, communities, and societies throughout the world. Multiple social, psychological, and biological factors determine the level of mental health of a person at any point in time. Violence is for example a recognized risk of mental health issues (5). The prevalence of mental disorders in conflict settings is estimated to be 22.1%. This is estimated at any point in time in the conflict-affected populations assessed. It includes mental disorders such as depression, anxiety, post-traumatic stress disorder (PTSD), bipolar disorder, and schizophrenia. When estimated that approximately one person out of five, in conflict settings, has a mental disorder, it is in strong contrast to the mean global prevalence of one in 14, which is suggested by the Global Burden of Diseases, Injuries, and Risk Factors Study 2016 (6).

In 2016 a peace agreement was signed in Colombia called: the “*Final Agreement to End the Conflict and Build a Sustainable and Lasting Peace*” between the Government of Colombia and the Revolutionary Armed Forces of Colombia (FARC) guerrilla movement. The armed confrontation in Colombia has lasted for more than five decades (7). It officially began in 1964, with the formation of two guerrilla movements, the FARC and the ELN, but the violence had been ongoing long before. For a long time, it was the world’s longest active civil war. In the context of violence during the 1950s, the peasant farmers organized a series of self-protected and self-maintained areas, due to the landowning elite continuously trying to expand and pressure the government to act against these zones. In 1964, when the landowners’ troops were able to enter the villages, the fighters were gone. Their strategy had been redesigned, and they began to fight as a guerrilla army. A few years later their official name became the Revolutionary Armed Forces of Colombia (FARC). In the same year, a group of students had been inspired by the Cuban Revolution, and they formed the Army of National Liberation (ELN). They launched their first attack with a leaflet which called on: “Conservative and liberal masses to join together to defeat the oligarchy of both parties” (8). In the 1980s paramilitaries emerged. The groups came together as business leaders and large landholders, drug cartels, and the Colombian Army. Their objectives were to advance economic interests and combat the threat from the different guerrilla groups. The paramilitary groups had deep rooted support from the Colombian state, and they targeted much of their violence against political activists. In 1997

the overlapping paramilitary groups united into one national structure: The Self-Defense Forces of Colombia (AUC). This period was the most intense on the human rights abuses as the AUC expanded across the country. In 2002 Álvaro Uribe became president with a campaign against the guerrillas and with the blessing of the paramilitaries. He introduced his trademark Democratic Security policy, which led to an intensified militarization in the country and a rise in human rights abuses (8).

The Colombian armed conflict is a result of a deep rooted social and political conflict. A large number of the population live in poverty despite the huge natural wealth. In 2019 17.5 million (35.7%) of the population lived under the poverty line, where poverty is concentrated in rural areas. The Gini Index is a measure of the distribution of income across a population and in 2019 Colombia's Gini Index was 51.3. A higher Gini index indicates greater inequality, which is seen in Colombia (9).

Conflict often leads to health concerns, including a weak health care system and poorer access to health care (10). Following the peace agreement in Colombia, a mental health project was initiated, which has been carried out by collaborating partners: DIGNITY, the Colombian Ministry of Health and Social Protection, and the private university Universidad Externado of Colombia. The project is called: Mental Health in Post-Conflict Colombia (MHPCC) (11). DIGNITY is an independent human rights and development organization with the main vision of a world without torture and cruel, inhuman, and degrading treatment, and a mission to be the leading global organization for research-based prevention of torture, violence, and rehabilitation of traumatized victims. For 40 years, it has been a leading civil society force in the fight against torture, globally. It has more than 30 local and international partnerships with NGOs and research institutions around the world. DIGNITY operates in more than 20 countries in Africa, Eastern Europe, the Middle East, Asia, and Central America. They work in close partnerships with human rights defenders, civil society organizations, and government authorities (12).

The MHPCC aims to contribute to the implementation of the Comprehensive Health Care Policy (PAIS). This policy was introduced in 2016 to make the individual, family, and society the center of health action, rather than health providers and health insurers. The implementation

of PAIS and the Comprehensive Health Care Model (MIAS) is as well a strategic advance for the health system to ensure that citizens have access to the health services they need. Both policies aim at improving sustainability, quality, and equity in health by providing a framework of actions ranging from disease prevention and health promotion to treatment and rehabilitation. It includes a social reintegration at all stages of life, aiming at being as close as possible to the citizens' daily lives (13). The MHPCC aims to contribute to the PAIS by providing knowledge and tools for local approaches with a focus on mental health needs. The project aims at five (post-)conflict territories: Bolívar, Cauca, Meta, Putumayo, and Tolima. It links mental health, post-conflict healing, and reintegration of stigmatized groups through a multi-disciplinary research-based approach. The main objective of the project is to facilitate the improvement of mental health in post-conflict Colombia. Ultimately, the aim is to contribute toward building a peaceful and democratic society. Immediate, the objective is to facilitate the improvement of mental health in vulnerable and stigmatized groups in conflicted areas. This will be done through effective evidence-based interventions that respond to the needs and preferences of the populations in question. The overall objective and long-term goal are to investigate, implement and evaluate effective ways to improve mental health in post-conflict Colombia and thereby contribute to building a peaceful and democratic society (14).

The project has different outcomes. The first is to generate research-based knowledge about vulnerable populations including the dynamics between stigma, social capital, and mental health. This is done to guide the design of focused interventions. The second outcome is to implement innovative and evidence-based outreach interventions, through the health care system, which effectively strengthen mental health in vulnerable and stigmatized groups. To reach these outcomes, different approaches have been used, hereunder quantitative and qualitative investigations of the populations living in the project areas. Local interviewers were hired to cover the five selected departments. A questionnaire including sociodemographic information, different mental health instruments, traumatization, social capital, exposure to COVID-19, etc. was developed and the interview-based data collection was carried out by the Colombian interviewers (14). Around 4500 people were interviewed across the five departments.

Through my student position in DIGNITY, I have in my internship conducted a systematic review on mental health interventions in (post-)conflict settings in collaboration with Universidad Externado. The review will together with this thesis be part of the material that will support the development and design of the focused interventions to be implemented in Colombia.

The aim of the thesis is to research if an association between being a victim of the conflict and mental health is present and if this association is affected if COVID-19 exposure acts as an effect modifier. It will also investigate if there is a difference in how COVID-19 have affected victims compared to non-victims. The hypothesis is that victims are more likely to be mentally distressed, that being exposed to COVID-19 modifies the association between victim status and mental health, and that victims, compared to non-victims are more affected. There is a possibility that the conflict could also have made the victims more robust and thereby less affected by COVID-19 than had they not been victims living in an area affected by conflict.

Theoretical background

This section provides information about the included topics: Conflict, mental health, and COVID-19. It provides an overview of existing knowledge and relevant theories, and what is currently missing in this specific field. It will lastly present the research questions, aim, and objective.

Conflict settings

Since 1946 the overall number of war deaths has been declining globally and the nature of violence and conflict has substantially transformed. Yet, violence and conflicts are rising with conflicts waged between non-state actors. Dominant drivers of conflict today have become unresolved regional tensions, absent or co-opted state institutions, illicit economic gain, breakdown in the rule of law, and the scarcity of resources exacerbated by climate changes. In 2016, the experience of violent conflicts affected more countries than at any point in 30 years (15).

Heidelberg Institute for International Conflict Research (HIIK) has analyzed conflicts with a focus on conflict processes rather than only quantitative thresholds of casualties. The process-oriented approach gives a broader and more detailed empirical foundation to the analysis of political conflicts. In this approach, a political conflict is seen as an incompatibility of intentions between individuals or collective actors. This incompatibility emerges as observable and interrelated actions and acts of communication (measures) according to certain positional differences of values (issues) that are relevant to society and threaten the state functions and/or the international order. Actors, measures, and issues are the attributes of a political conflict (10).

Conflict actors are individuals as part of a collective or collective actors, such as states, organisations, and non-state actors, in direct pursuit of the conflict. These are acknowledged by other actors in their decision-making processes and are perceived to be relevant. Their actions must provoke a reaction, which means there must be reciprocity between actors. Actors can be considered a coalition if preferences are on the same side of a conflict and contrary to those of another actor/coalition. Indirect actors can be involved as supporters or interveners that wish to end the conflict without supporting either coalition (10).

Conflict measures are communication carried out in actions or acts by a conflict actor. They are essential for a conflict, and the intensity if occurring outside established regulatory procedures. If they threaten the international order, a state's core function, or have the prospect to do so, they can be in conjunction with other measures. The definition of regulatory procedures is the mechanisms of conflict management that are accepted by all conflict actors in their context and without threat or use of physical violence. This could be elections, public forums, or forms of negotiations. The core state functions are the provision of population security, and the guarantee of the integrity of a territory or a political, cultural, or socioeconomic order (10).

Conflict issues are immaterial or material goods that are pursued by conflict actors via conflict measures. They can be relevant to an entire society if they impact the coexistence of groups and individuals in a given polity or between polities. Conflict issues classify on a basis of ten items that represent common objectives of conflict actors:

1. *Ideology/system* is encoded if an actor aspires to change the religious, ideological, socioeconomic, or judicial orientation of a political system or of a regime type itself

2. *National Power* is referring to the power to govern a state
3. *Autonomy* is referring to extending or attaining the political self-rule of a dependent territory within a state or of a population without striving for independence
4. *Secession* refers to the aspired separation of a territory of a state aiming to merge with another state or to establish a new state
5. *Decolonization* is the independence of a dependent territory
6. *Subnational Predominance* focuses on the attainment of a de-facto control by a non-state actor or a government over a territory or a population
7. *Resources* are encoded if the possession of pasture, raw materials, or the profits gained thereof are pursued
8. *Territory* refers to a contested change of a delimitation of an international border
9. *International Power* describes an aspired shift in a power constellation in an international system or a regional system therein. This is done through a change of military or institutional capabilities, related violent measures, or an actor's economic or political influence
10. The last item *Other* is used as a residual category. Conflict actors can have several demands, and therefore claim more than one item at the same time (10).

IIK has developed a concept of conflict intensity: Low, medium, and high intensity (figure 1). To measure the levels of a violent conflict, five proxies are used to indicate means and consequences. The dimension of means regards the use of weapons and personnel deployment. The dimension of consequences is the number of casualties, refugees, IDPs, and the destruction level.

- The *weapons* indicator decides whether light (handguns, hand grenades, etc.) or heavy arms (artillery, heavy bombs, etc.) are being used. There is also a differentiation between limited and extensive use.
- The *personnel indicator* is measuring the number of participants in an individual measure. This is divided into low, medium, or high, and distinguished by two thresholds for 50 and 400 persons.
- The *casualties* indicator is the overall number of casualties, in a conflict, counted in a region per month, comprising the number of deaths from violent measures or the direct

consequence. This includes combatants and civilians that are injured or killed. This is as well scored as low, medium, and high by thresholds for 20 and 60 persons.

- The *refugee & IDPs* indicator is the overall number of refugees crossing the borders and IDPs in a region per month. They define displacement as the migration of humans being provoked by conflict measures i.e., inhumane living conditions. The thresholds are 1000 and 20,000 refugees, respectively.
- The *destruction* indicator is determined by four dimensions essential for the civilian population: Habitation, infrastructure, economy/self-sufficiency, and identity-establishing goods. The level is classified as low, medium, or high, by the number of dimensions affected in a region per month. 0 dimensions are classified as low, 1-2 dimensions are classified as medium and 3-4 dimensions are classified as high (10).

Each indicator is scored on a ternary scale (0-2), where low is 0, medium is 1, and high is 2. This aggregates the five individual scores that decide the intensity level (figure 1) (10).

intensityLevel	terminology	level of violence	intensity class
1	dispute	non-violent conflicts	low intensity
2	non-violent crisis		
3	violent crisis	violent conflicts	medium intensity
4	limited war		high intensity
5	war		

Figure 1: *Concept of conflict intensity from Heidelberg Institute for International Conflict Research*

HIIK has with the 29th edition of the Conflict Barometer covered the political conflicts worldwide for the year 2020. Wars and violent crises increased with a rise in the overall number of wars from 15 to 21, a total of 359 conflicts were observed worldwide, and about 60% were fought violently. On the list of highly violent conflicts in 2020, Colombia is listed twice under limited wars: The conflict between the government and the National Liberation Army (ELN)

and the conflict between inter-cartel violence, neo-paramilitary groups, and left-wing militants (10).

In 2016, when the peace agreement was signed in Colombia, it brought an initial decline in violence (7). But since then, conflict-related violence has taken new forms, where abuses by the armed groups, including massacres, killings, and massive forced displacement, in many remote areas, increased in 2021. A minority of FARC guerilla fighters, better known as FARC dissidents, refused to disarm, and continued to commit abuse since they rejected the terms of the peace agreement. Other FARC dissidents initially disarmed but created, or joined, new groups. This was done partly in response to attacks by armed groups and against former fighters. Until September 2021 more than 290 former FARC fighters were killed in these attacks (16).

In Colombia, the limited war between drug cartels, armed organisations, splinter groups of the demobilized FARC-EP, and other guerrillas continued throughout the year 2020. Meanwhile, the violent crisis between the government and the ELN escalated to a limited war. The president of Colombia Ivan Duque called off peace talks in 2019, and he has since then called on the group to declare a unilateral ceasefire to resume the negotiations. In the context of the COVID-19 pandemic, the ELN in Colombia declared a unilateral ceasefire in April 2020 (10). But in 2021 the ELN continued to commit war crimes and other very serious abuses against civilians. This includes killings, forced displacement, and child recruitment (16).

The violence was high in 2020, since the drug cartels, armed groups, splinter groups of the demobilized FARC-EP, and other guerillas were continuing turfing wars over subnational predominance and resources. The Colombian government has tried, but despite the effort, they still struggle to control the areas, which has previously been dominated by the FARC-EP. Repeatedly they have tried to exert control over drug trafficking routes but armed organisations such as ELN, Los Caparros, the Gaitanist Self-Defense Forces of Colombia (AGC), and FARC dissident groups have just intensified their violent operations. This has particularly been in the departments of Antioquia, Nariño, Cauca, Córdoba, Chocó, and Norte de Santander (10). Colombia consists of five regions, which are divided into 32 departments, and a Capital District, which is Bogotá. These departments are divided into 1,101 municipalities. There is a two-tier

local government structure, where the upper level is made up of the departments and the second tier is made up of the municipalities (17).

The armed conflict in Colombia continues to have a devastating impact on the civilian population. Due to COVID-19, the armed organisations introduced a lockdown and curfew on the civilian population enforced by violent means. Furthermore, the violence against community leaders and political activists is a contentious issue. 310 political activists and social leaders were killed in 2020, according to the Institute for Peace and Development (INDEPAZ) (10). In the population of 49 million Colombians, conflict-related violence has displaced more than 8 million since 1985. There have been reported more than 60,000 people displaced between January to September 2021, which is the highest number recorded since 2012. There is a lack in assisting the displaced people since municipalities and state governments often lack funding, and the response from the national government is often slow and insufficient (16).

Conflict often leads to health concerns, including a weak health care system and poorer access to health care (6). A systematic review and meta-analysis of WHO prevalence estimates of mental disorders in conflict settings find the prevalence estimated to be 22.1%. This estimation is made at any point in time in the conflict-affected populations assessed and includes mental disorders such as depression, anxiety, PTSD, bipolar disorder, and schizophrenia. The point prevalence for mild forms of depression, PTSD, and anxiety was 13%. For moderate forms, it was 4%. For severe disorders, such as bipolar disorders, severe depression, severe PTSD, severe anxiety, and schizophrenia the prevalence was 5.1%. It gives an estimation that at any point in time around 9% have moderate to severe mental disorders in the conflict-affected population. When estimated that approximately one in five people in conflict settings have a mental disorder, it is in strong contrast to data from the Global Burden of Diseases, Injuries, and Risk Factors Study 2016, which suggests a mean global prevalence of one in 14 (6).

Mental health

The Constitution of the World Health Organization reflects that mental health is an integral part of one's health and well-being: "*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*" (18). Mental health is a state of well-being, where an individual realizes his/her abilities, and he/she can cope with the normal

stresses of life. It also includes the ability to work productively and be able to contribute to one's community. Mental health is fundamental to one's individual and collective ability as humans to feel, think, earn a living, interact with others, and enjoy life. This means that protection, promotion, and restoration of mental health can be seen as a vital concern of societies, communities, and individuals around the world (5).

Different psychological, social, and biological factors determine the level of an individual's mental health at any point in time. (Sexual) violence and socioeconomic pressure are known risks to mental health. Sudden social change, gender discrimination, stressful work conditions, social exclusion, unhealthy lifestyle, gender discrimination, physical ill-health, and human rights violations are also associated with poor mental health (5).

It is important not only to protect and promote mental health in citizens but also to address the needs of people with mental disorders since the burden of mental health issues continues to rise. It has a significant impact on health, leading to various social, economic, and human rights consequences all over the world. Many different mental disorders with wide ranges of expressions are present, but in general, they are characterized by the combination of abnormal thoughts, emotions, perceptions, behaviour, and relationships with others. The determinants of mental health and disorders do not only include individual attributes like the ability to manage your own emotions, thoughts, behaviours, and interactions with others. It also includes cultural, social, political, economic, and environmental factors such as social protection, national policies, work conditions, standards of living, and community support. Other contributing factors known for mental disorders are genetics, nutrition, stress, perinatal infections and being exposed to environmental hazards (19).

Mental health can be assessed by different instruments measuring quality of life, functioning, distress, disabilities, PTSD, anxiety, depression, etc. In the systematic review on mental health interventions in (post-)conflict settings, mentioned in the introduction, an overview of the instruments used in the included studies was made. The review includes 27 studies evaluating a mental health intervention. To evaluate the intervention one or several instruments were used to report pre- and post-measures. These scales mainly focused on PTSD, anxiety, depression, quality of life, functioning, distress, and disabilities. The scale used the most within PTSD is

the PTSD Checklist for DSM-5 (PCL-5) which was used in five studies. Regarding anxiety and depression Hospital Anxiety and Depression Scale (HADS) was used three times and the Patient Health Questionnaire (PHQ-9) was used five times. For disability WHO Disability Assessment Schedule (WHODAS) was used in two studies and the Self-Reporting Questionnaire (SRQ) was used in four studies (Table 1) (20).

Table 1: *An overview of mental health instruments in conflict settings from a review on mental health interventions in (post-)conflict settings*

PTSD	Anxiety	Depression	QoL/functioning	Distress/disability
PTSD-SRII	HSCL-25	HSCL-25	WHOQOL	Kessler 6
PCL-5	HADS	HADS	MHC-SF	WHODAS
CAPS	TAI	Beck	GAF	SUDs
PSS-I-5	GAD-2	M.I.N.I	ICRC scale	IES-R
TEPT	APAI	PHQ-9		DASS21
HTQ		APAI		HSCL-25
TSCC				SRQ

Other scales that were used but not in the categories mentioned above were the Child Behavior Checklist (CBCL), Youth Self-Report (YSR), Multidimensional Scale of Perceived Social Support (MSPSS), Appetitive Aggression Scale (ASS), Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), Oslo Social Support Scale (OSS-3), Panic and Agoraphobia Scale (PAS), Social Phobia Inventory (SPIN), Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), The Inventory of Traumatic Grief, Obsessive-Compulsive Test-Yale Brown OCD Scale (YBOCS), and Internalized Stigma of Mental Illness Inventory (ISMI) (20). This list of instruments also shows that mental health is covering many aspects of a person’s well-being from sleep quality, trauma, and mental health diagnoses to quality of life. The systematic review did not find homogeneity in the included interventions, and little consensus on the instruments used in the 27 studies was found.

Fundamental to mental health is an environment that protects and respects basic civil, socioeconomic, political, and cultural rights. To maintain a high level of mental health, freedom and security provided by these rights are important. Promotion of mental health involves actions

that improve psychological well-being for example creating an environment that supports mental health. National policies regarding mental health should be concerned both with mental disorders and with broader issues to promote. It should be mainstreamed into nongovernmental and governmental programs and policies. Besides the health sector, it is important to involve the sectors for education, justice, labour, transport, housing, environment, and welfare (5). The health system has not adequately responded to the burden of mental disorders yet. The consequence is a gap between the need for treatment and its provision, which is wide all over the world. In countries with low- and middle-income, between 76-85% of people with a mental disorder, do not receive treatment. Further, a compounding problem, for those who receive treatment, is the poor quality of care. Besides healthcare services, these people often require social support and care, and they often need help to access educational programs and find employment and housing. This is to enable them to live and be active in their local communities (19).

The COVID-19 pandemic has heightened the general risk factors associated with poor mental health: Financial insecurity, fear, and unemployment. This, while the protective factors fell dramatically: Access to physical exercise, daily routine, social connection, access to health services, employment, and educational engagement. This led to a significant and unprecedented worsening of mental health. A report from OECD found that population mental health has worsened markedly during the pandemic. The prevalence of depression and anxiety increased significantly and even doubled in some countries. The COVID-19 crisis has had different waves of cases, restrictions, hospitalization, and deaths. A correlation between the periods with the highest rates of mental distress and the intensifying of COVID-19 deaths and strict confinement measures was found (21).

COVID-19

Coronaviruses (CoVs) were identified in humans as pathogens in the 1960s. They are positive-stranded RNA viruses, and the characteristic surface of a CoV virion, which can be seen under a microscope, is a crown-like appearance. Therefore, the viruses are named after the Latin word corona which means crown or halo. Most CoVs infect animals like birds, bats, and mammals that act as reservoirs and intermediate hosts. Sometimes the CoVs can change and infect

humans. Currently, seven CoVs are known to infect humans. Four of them mostly cause mild to moderate diseases like the common cold. The other three cause more severe, and possibly even fatal, diseases. Illness in humans most often affects the respiratory tract with symptoms that range from those of the common cold to very severe respiratory infection. These have emerged more recently. In 2002 SARS-CoV was responsible for the severe acute respiratory syndrome (SARS), in 2012 the MERS-CoV was responsible for the Middle East respiratory syndrome (MERS), and in late 2019 the SARS-CoV-2 was responsible for the latest coronavirus disease known as COVID-19 (22).

To clarify, the official name for the disease is COVID-19 and the virus that causes it is SARS-CoV-2, which is a shortening for severe acute respiratory syndrome coronavirus 2. Viruses are named after their genetic structure, and this facilitates the development of diagnostic tests, vaccines, and medicines. It is the International Committee on Taxonomy of Viruses (ICTV) that names the viruses. A disease is named to enable discussion on disease prevention, transmissibility, spread, severity, and treatment. WHO's role is human disease preparedness and response, and therefore are the diseases named by WHO in the International Classification of Diseases (ICD) (23).

The current hypothesis is that SARS-CoV-2 emerged in the City of Wuhan in China, where it was detected for the first time in December 2019. However, no direct ancestor to the virus that can fully explain its emergence has been found, but scientific evidence supports a zoonotic origin, which means it is transmitted between animals and humans. Three different analyses of closely related CoVs suggest that it diverged from the most similar known CoV in bats, which are the most likely the original animal reservoir. It is suggested that another intermediate animal host has probably been involved in the transmission since it is seen with other CoVs. Other analyses indicate that SARS-CoV-2 is unlikely to be a product of synthetic origin or in-vitro manipulation (22).

Evidence suggests that SARS-CoV-2 mainly spreads among people who are in close contact for example at a conversational distance. It can spread from the infected person's nose or mouth in small liquid particles when they breathe, speak, sneeze, or cough. The virus can be contracted by the other person when the infectious particles pass through the air and are inhaled. This is

called *short-range aerosol* or *short-range airborne transmission*. If the infectious particles come in direct contact with the mouth, nose, or eyes it is called *droplet transmission*. It can also spread in poorly ventilated or crowded indoor settings, where people spend a longer time. This causes aerosols to remain suspended in the air or move farther than a short distance. This is called *long-range aerosol* or *long-range airborne transmission*. People can also be infected if touching their mouth, nose, or eyes after touching objects or surfaces that are contaminated by the virus. Whether or not infected people have symptoms, they can be contagious and spread the virus to other people. Data find that infected people are most infectious just before developing symptoms and early in their illness, while people with more severe disease are infectious for a longer time (24).

Viruses will constantly mutate and the same counts for SARS-CoV-2. Many variants of the virus with different sets of mutations are already observed worldwide. Some mutations may increase transmissibility and/or gain greater ability to evade one's immune response, and in that way provide the virus with a selective advantage. These are seen as variants of concern, and they represent significant evolutionary jumps, but with no intermediate forms detected. Three main hypotheses are explaining these jumps: 1. *Prolonged infections* are likely to be seen in immunocompromised patients. This can allow the virus to accumulate mutations and, in that way, avoid one's immune response. This is without the evolutionary bottlenecks that are associated with transmission between humans. This hypothesis has the most direct supporting evidence and studies have shown that these immune escape mutations can particularly be seen in combination with convalescent plasma treatment. 2. *Transmission of the virus to an animal host* and prolonged circulation in this population, where mutations can be accumulated. This has been demonstrated but is most likely in wild animals. 3. *Circulation of the virus in countries with little (or no) genomic surveillance* that allows the mutations to accumulate without being detected. This is unlikely since travellers are being screened and many countries have extensive genomic surveillance programs. More evidence is needed to determine the hypothesis or combination that best explains the evolutionary jumps seen in some SARS-CoV-2 variants (22).

COVID-19 affects people in different ways, but most people being infected will experience mild to moderate illness and will recover without hospitalization. The most common symptoms are fever, coughing, tiredness, and loss of taste or smell. The less common symptoms are sore

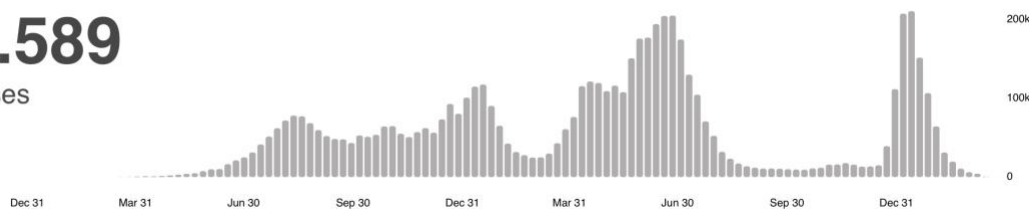
throat, headache, aches/pains, diarrhoea, a rash on the skin, discolouration of fingers or toes, and red or irritated eyes. The serious symptoms are difficulty breathing or shortness of breath, loss of speech or mobility, confusion, and chest pain. Some people will become seriously ill and will require medical attention. More likely to develop serious illness are older people and people with underlying medical conditions like diabetes, chronic respiratory disease, cancer, or cardiovascular disease. But anyone can get sick with the virus and become seriously ill or die no matter the age (25). 24 February 2022, there have been 428.511.601 confirmed cases of COVID-19, and 5.911.081 deaths, reported to WHO. The prevalence of confirmed cases is highest in Europe, hereafter the Americas, South-East Asia, Western Pacific, Eastern Mediterranean, and lastly Africa (26). It is important to notice that regions have different test capacities, and this might affect the number of confirmed cases.

To end the pandemic, the development and the rapid deployment of COVID-19 vaccines are fundamental. This will also contribute to protecting health systems and help restore global economies. Equitable access to the vaccines is key to ending the pandemic since no country is safe from COVID-19 until all are safe (27). Following vaccines are authorized for use in the EU by the European Medicines Agency (EMA): AstraZeneca AB, Spikevax (previously COVID-19 Vaccine Moderna), Nuvaxovid, COVID-19 Vaccine Janssen, and Comirnaty (developed by BioNTech and Pfizer) (28). On the 21st of February 2022, a total of 10.407.359.583 vaccine doses have been administered globally (26).

COVID-19 arrived in Latin America in February 2020 and has since then generated uncertainty in economic, health, social, and financial aspects. Also, these countries were not all prepared for updating their strategies and processes, and for rearranging their national system in the face of disease complexity, and the magnitude situation that the pandemic represented. The first transmission-positive case in Colombia occurred in early March. This prompted the implementation of weak measures to mitigate the transmission risk. The borders closed and the start of the contingency stage was established. The first strategy was defined to deal with the dissemination of transmission and the speed, expand capacity, and establish timely and effective intervention measures. All to control the pandemic (29). In Colombia, there have, until the 22nd of March 2022, been 6.080.589 confirmed cases of COVID-19 reported to WHO and 139.434 deaths (figure 2) (26).

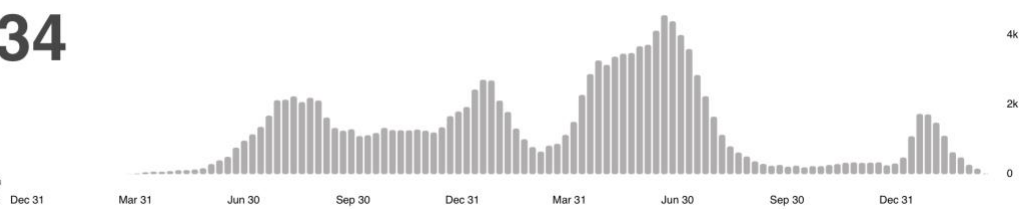
6.080.589

confirmed cases



139.434

deaths



Source: World Health Organization
Data may be incomplete for the current day or week.

Figure 2: *Prevalence of confirmed COVID-19 cases and deaths in Colombia from WHO*

Colombia is a developing country with actions focused on continuously improving: Promoting favourable living conditions, education, citizenship culture, public services, production mechanisms, exports of products, etc. All areas that have been affected as COVID-19 spread throughout the country and negatively affected the Colombian population's health. The Health and Social security system is the service with the greatest impact due to transmission chains being rapidly generated. But the health system is also one of the most vulnerable and negatively affected sectors. This is due to the absence of resources for personal protection, insufficient, or lack, of intensive care units, equipment, and materials, and most important is a lack of trained human resources (29).

Clear contingency mechanisms and measurable epidemiological surveillance protocols, to prevent the spread of the disease in the vulnerable population, have not been established. The number of cases in the country continued to increase during the first months, the diagnostic tests were deficient in quality and quantity, and the hospital network was worn out (29). On 20th March 2020, a complete quarantine was declared to prevent the virus from spreading. This quarantine was extended three times until 31st August 2020. It is necessary to consider the consequences of a situation like this, especially when poverty rates, employment, and quality of life in Colombia are not favourable when shutting down the country's economy (30).

Isolation or mandatory quarantine is the separation and restriction of persons who may be exposed to a disease to reduce the risk of infecting others. Modern quarantine strategies have

been implemented to reduce the spread of SARS-CoV-2 including voluntary curfews for households, restricting group gatherings, closing public transportation systems and other travel restrictions, and cancelling planned social and public events. Research has shown that one of the most important protective factors for mental health is social support, which is a paradoxical issue while in isolation since it has been studied as a risk factor particularly linked to depression and suicide. Other psychological effects of quarantine include emotional disturbance, bad moods, irritability, stress-induced depression, stress, insomnia, and post-traumatic stress symptoms (30).

The effects on the emotional and mental health of Colombians concerning the COVID-19 are still uncertain. However, incidents of domestic and gender violence, suicide, depression, acute stress, and other health issues are expected to increase (30). A study on 3549 people in ten Colombian cities with high and low COVID-19 circulation showed that 75% of the people surveyed have had some mental health problem in relation to the mandatory preventive isolation. Of these claiming to have some mental illness 54% said they felt nervous, 52% felt tired, 46% felt restless and impatient and 34% felt angry or rage about the isolation. Young people aged 18-29 years were most affected (31). A more recent study conducted with an online questionnaire on 700 Colombian adults above 18 years showed that 7.6% of the participants reported a high risk of suicide. The high risk was associated with a high perception of related stress to COVID-19, risk of depressive episodes and insomnia (32). Another study evaluated the prevalence and variables related to perceived stress related to the pandemic in 406 Colombian adults through the Perceived Stress Scale modified for COVID-19 (PSS-10-C). 90.6% of the participants had a university degree and 44.1% of them were health professionals. 45.7% considered the public health policies for preventing the spread of COVID-19 inconsistent with scientific recommendations. 14.3% scored high on perceived stress, and the inconsistency between the policies and scientific evidence was related significantly to the high perception of stress associated with COVID-19. The authors suggest that a distal variable, such as mistrusting government institutions, may be a stress factor for citizens (33). Lastly, a study including 1248 participants determined the prevalence of depression and anxiety in adults from the Valle del Cauca region in Colombia during the COVID-19 social isolation. They used the Hamilton Depression Rating Scale and the Hamilton Anxiety Rating Scale. It showed that women were more likely to have symptoms of depression, and individuals aged 24-29 were

less likely to reveal anxiety symptoms than those aged 18-23. They observed that 1% of the participants fell under more than major depression, 13.3% fell under major depression, 13.9% under less than major depression, and 20.2% under minor depression. Interesting was that 48.3% of the participants showcased some level of depression. Furthermore, 29.9% had symptoms of mild anxiety and 20.7% of moderate or severe anxiety (34). Common for the above-mentioned studies is that they are all conducted online, and they all suggest that further research is needed.

To the best of my knowledge, no research on mental health combining exposure to both COVID-19 and being a victim of a conflict is published. Therefore, the aim of this thesis is to research if there is an association between being a victim of the conflict and mental health and if COVID-19 exposure is an effect modifier on this association. It will also investigate if there is a difference in how COVID-19 have affected victims compared to non-victims. The hypothesis is that victims are more likely to be mentally distressed, and that being exposed to COVID-19 modifies the association between victim status and mental health. Meaning that if you are a victim and exposed to COVID-19 there is a higher probability of being mentally distressed. Lastly, the hypothesis is that victims, compared to non-victims are more affected by COVID-19. There is a possibility that the conflict could also have made the victims more robust and thereby less affected by COVID-19, than had they not been victims living in an area affected by conflict.

Methods

This section will provide information on the study population, the questionnaire used in the interview, a description of variables, statistical analysis, validation, and ethical approval.

The study is a cross-sectional study, which is normally used to examine the presence or absence of exposure and an outcome at a specific point in time. It is therefore designed in a way where all data is collected at a set point, which makes it possible to assess the characteristics of a population or the prevalence of variables of interest. The advantage of using this research design is that it is intuitive and clear, and it facilitates collecting a large amount of data on a great

number of variables at once. The method can be standardized, and since there is no follow-up, it gives the researcher a better control and overview of the process (35).

Study population

The population included in this study is civilians aged 18 years or above, who were capable of answering the questionnaire. They came from five different departments in Colombia: Bolívar, Cauca, Meta, Putumayo, and Tolima (Figure 3). In these departments, 15 municipalities were selected by Universidad Externado.



Figure 3: *Map of the selected departments included in the MHPCC project*

Before this selection, a classification of the municipalities regarding their conflict level was made. To meet the objectives of the project which, among others, were to gain knowledge about the conflict-affected population, the included municipalities were selected based on certain requirements. These regarded conflict level, safety, and mental health, which altogether comprised a final conflict score. Municipalities with a low level of conflict and violence, or a low presence of victims of the conflict were not the target of this study. The focus of the MHPCC study was to gain knowledge about the most vulnerable groups of the Colombian

population and those most affected by the armed conflict. Universidad Externado, therefore, conducted a descriptive analysis to classify the municipalities into three levels of conflict: low, medium, and high. This was done for each municipality based on the number of victims, the number of violent events, level of mental disorder consultations, suicide attempt rate, and cases of gender violence.

Along with the classification of municipalities following exclusion criteria were set:

1. Low level of casualties
2. Low level of violent acts
3. High level of mental disorder consultations along with a low level of suicides/suicide attempts
4. Security (exclusion if the municipality is not secure enough)
5. Access (exclusion if access to the municipality is problematic)

Table 2 shows the results of the classification and overall, 177 municipalities were analyzed. 40% (N=71) were classified as having a high level of conflict, 20% (N=35) had a medium level of conflict and 40% (N=71) had a low level of conflict. The departments with the highest percentage of municipalities classified with a high level of conflict were Cauca with 74% (N=31) and Putumayo with 69% (N=9). After excluding the municipalities with a low level of conflict (N=71) a random selection through an algorithm was conducted among the municipalities with a medium and high level of conflict (N=106). The algorithm will not be explained in detail here since this was developed and carried out by Universidad Externado. Three municipalities in each department were selected, one with a medium conflict level and two with a high conflict level. For each selected municipality, a municipality of potential replacement was randomly identified, within the same group, in case something made it difficult to conduct the interviews in the area.

Table 2: *The municipalities in the Mental Health in Post-Conflict Colombia (MHPCC) project classified into low, medium, and high levels of conflict*

N (%)	Bolívar	Cauca	Meta	Putumayo	Tolima	Total
High	5 (11)	31 (74)	11 (38)	9 (69)	15 (32)	71 (40)
Medium	10 (22)	6 (14)	6 (21)	2 (15)	11 (23)	35 (20)
Low	31 (67)	5 (12)	12 (41)	2 (15)	21 (45)	71 (40)
Total	46 (100)	42 (100)	29 (100)	13 (100)	47 (100)	177 (100)

After the 15 municipalities had been chosen by Universidad Externado, the households in each of the municipalities were selected by the Colombian Ministry of Health. The election process is based on a probability sampling, which is a method the Ministry of health uses when conducting bigger population surveys. The probability sampling is based on a randomization principle, which means that everyone in the research population has an equal chance to be part of the sample population. This method was used to make sure the study population was representative of the targeted general population. The selection of the study population is carried out following a multi-stage sampling, which in this study, was started after the departments were selected. It, therefore, began with the election of the UPM (municipalities), then an election of USM (blocks in the urban area and lane/paths in rural areas). Within the USM a segment is selected and within each segment, dwellings are selected. Inside the dwellings, households are selected, and in each household, the first person the interviewer met above 18 years was interviewed.

The sample size of the MHPCC study was calculated by the Colombian Ministry of health. It was based on the size of the population aged 18 years or above in the included municipalities and selected key indicator- and effect measures. The calculation resulted in a sample size of 5800 individuals. Due to the pandemic, reaching participants in all selected households were challenging, both due to temporary regional lockdowns, but also since people did not always open their doors or were not home. Revisiting households on other days was not always practically possible due to the remoteness of some areas. Also, some interviews could not be fully validated and were subsequently excluded, which resulted in a final study sample of 4494 individuals.

For this study focusing on COVID-19, it is considered a large sample. The above-mentioned total sample size of 5800 was calculated for the entire MHPCC survey before the smaller section on COVID-19 was added, and this study was designed.

Tools

The interviewers carried out structured face-to-face interviews for the MHPCC survey based on an extensive questionnaire developed by DIGNITY and Universidad Externado. A structured interview is a data collection method that is based on asking predetermined questions in a set order. Quantitative research is based on close-ended questions. It is the most systematized type of interview, which allows to easily compare responses between participants. Several advantages of using a structured interview should be mentioned. Due to the predetermined structure, there is a reduced risk of bias. First of all, you avoid the risk of an interviewer favouring questions providing information that confirms their already existing beliefs or hypotheses, which would be defined as confirmation bias. Compared to other interviewing methods, there is a better inter-interviewer reliability, since all participants are presented with the same questions in the same order. In the end, it is more cost-effective since there is less preparation needed for each interview, which makes the process less time-consuming (36).

The MHPCC questionnaire is based on different questions and instruments, and it is developed by DIGNITY and Universidad Externado specifically for this project. The finalized questionnaire includes 140 questions. Since it was delayed due to the pandemic, a section about COVID-19 exposure and its impact on mental health was added at the end of the questionnaire. The questionnaire is extensive, and several instruments are included to collect as much data as possible, within the vulnerable population that is not easily accessed. The interview was set to last 45-75 minutes. The interview started with an introduction that is further described in the section about *ethics and informed consent*. Since they were conducted during the pandemic, the first question asked if the person or someone in the household was diagnosed with COVID-19, or if the person has had a suspicion of COVID-19 within the last 14 days. Then it was asked if they had experienced any of the following symptoms within the last 14 days: Fever over 38 degrees, dry coughing, difficulty breathing, change or disturbance in taste or smell, nasal

congestion, fatigue, or diarrhoea. If the answer was no, the questionnaire could continue. Then the participants had to confirm that they were above 18 years, and if not, it was asked if another person in the household meeting this criterion was available. The participant was then asked, if they thought, they would have any difficulty preventing them from answering the questionnaire, and if yes which of the following: Deafness, blindness, muteness, cognitive or mental difficulties, or others. If any difficulties, they were asked if they needed support to participate, and if it was possible for them to continue with that support. Then they were again asked, if they still wanted to participate, knowing what they now knew about the study. They gave informed consent by signing an informed consent form, which included a description of the overall project.

The introduction was followed up by questions regarding demography. These are included in this study, and they will be listed in the section about variables. The instruments included in the questionnaire were: the Hopkins Symptom Checklist-25 (HSCL-25) to measure anxiety and depression, the PTSD Checklist – Civilian Version (PCL-C), Life Events Checklist for DSM-5 (LEC-5), which screens for potentially traumatic events in a respondent's lifetime, Okasha's Suicidality Scale to measure suicide risk, Connor-Davidson Resilience Scale to assess psychological resilience, and lastly the short social capital assessment tool (SASCAT). These scales were chosen from the following criteria: International validated, available in Spanish, previously used in conflict areas, and easy to use and administrate. The items were as well included, if every item were meaningful for the objective. Questions about being a victim of the conflict, self-rated health, diagnoses, discrimination, trauma, COVID-19 exposure, etc. were also included.

The order of the questionnaire was structured having in mind that sensitive questions should not be asked too early, so that the participant had the chance to get settled and build trust with the interviewee. It could not be in the end either, since they did not want to risk upsetting the participant just before leaving them. Therefore, the questionnaire was constructed with the most sensitive questions i.e., Okasha's Suicidality Scale in the middle of the interview.

For this study, the HSCL-25 scale is included as an assessment of mental health as an outcome.

HSCL-25

This instrument is listed in table 1 (p. 12). It is a widely used and well-known screening instrument, originally designed by Parloff, Kelman, and Frank at Johns Hopkins University, and its history dates from the 1950s. HSCL-25 consists of 25 items, and it is a symptom inventory that measures symptoms of depression and anxiety. Part I has 10 items for anxiety symptoms and part II has 15 items for depression symptoms. Each question includes a scale with four response categories respectively rated 1 to 4:

- 1: “Not at all”
- 2: “A little”
- 3: “Quite a bit”
- 4: “Extremely”

From the items, two scores are calculated. The total score is the average of all 25 items and the depression score is the average of the 15 items in part II. In several populations, it is consistently shown that the total score is highly correlated with the severe emotional distress of unspecified diagnosis. The depression score is correlating with major depression, which is defined by the Diagnostic and Statistical Manual of the American Psychiatric Association, IV Version (DSM-IV) (37). A person is considered a “probable psychiatric case” if the mean score on the HSCL-25 is 1.55 or below. A cut-off value of 1.75 or below is recommended as a valid predictor of a mental disorder, also defined as a “positive psychiatric case”, assessed independently by a clinical interview, but it is somewhat dependent on diagnosis and gender. This cut-off is also generally used for the diagnosis of major depression which is defined as a case, in need of treatment (38). For this study, a Spanish version of the questionnaire is used, and this version specifically suggests the cut-off value of ≥ 1.75 (39).

This Spanish version is, among others, validated in a community sample of Spanish-speaking Peruvian adults (N = 844) (40). Validity is a way to tell if an instrument measures what it is supposed to, and if it performs as it is designed to. It is rare, if not impossible, for an instrument to be 100% valid, so it is generally measured in degrees. Validation includes collecting and analyzing data to find the accuracy of an instrument. Validity can be divided into external validity, which is the extent to which a study’s results can be generalized from a sample to a

population, and internal validity, which refers to the content of an instrument and its appropriateness, meaning if the measures in the instrument assess what we want to know (41). The study showed excellent or good internal consistency (Cronbach's α): HSCL-25 total: $\alpha = 0.904$, anxiety: $\alpha = 0.806$ and depression: $\alpha = 0.864$. Other similar studies show good internal consistency of the HSCL-25 in these settings with generally: $\alpha > 0.90$ for the total score and $\alpha > 0.80$ for anxiety and depression (40).

Variables

The variables used to conduct the descriptive analysis of the population characteristics are gender, age, department, municipality, area (urban/rural), ethnicity, education level, occupation, and health coverage/insurance (yes/no).

Research question 1: Is there an association between being a victim of the conflict and mental health?

In this question, the exposure is being a victim to the conflict and the outcome is mental health, which is measured by the HSCL-25 score, where a cut-off score of 1.75 is used to decide if the participant is a positive psychiatric case. Age and gender are included as confounders and adjusted for.

- a. Exposure: Victim of the conflict (*categorical - binary*)
 - Yes/No
- b. Outcome: Positive psychiatric case (*categorical - binary*)
 - Yes/No

Research question 2: Are victims more affected by COVID-19, when looking at subjective measures, compared to non-victims?

This research question includes subjective measures asking directly about COVID-19's effect on parameters that affect mental health. The first four are reported on a Likert scale with five options (1=very negative effect to 5=very positive effect) (*categorical - ordinal*).

1. To what degree has the pandemic affected your family relations?
2. To what degree has the pandemic affected your economic security and/or stability?

3. To what degree has the pandemic affected your social life and social relations?
4. To what degree has feelings of fear of illness or death affected your life and emotional state?

The last one is reported on a 5-point scale (1=not at all to 5=a lot) (*categorical - ordinal*).

- To what degree has COVID-19 affected your mental health?

Research question 3: Is being exposed to COVID-19 an effect modifier, when being a victim of the conflict is the exposure, and mental health is the outcome?

In this question, the exposure and outcome are the same as in the first research question. An extra variable, being exposed to COVID-19, is added as an effect modifier. Age and gender are again included as confounders and adjusted for.

- a. Exposure: Victim of the conflict (*categorical - binary*)
→ Yes/No
- b. Outcome: Positive psychiatric case (*categorical - binary*)
→ Yes/No
- c. Effect modifier: Exposed to COVID-19 (*categorical – binary/nominal*)
 - Diagnosed with COVID-19 → Yes/No
 - Family or close relation affected with COVID-19 → No, diagnosed, or dead
 - Colleague/someone in workplace affected with COVID-19 → No, diagnosed, or dead
 - Someone else in circle of contacts affected with COVID-19 → No, diagnosed, or dead

Data collection and management

Data was collected through research personnel conducting questionnaire-based interviews with inhabitants in five selected Colombian departments: Bolívar, Cauca, Meta, Putumayo, and Tolima. Data collection took place from January to October 2021. The research personnel conducting the interviews were 24 interviewers hired for the MHPCC survey based on their professional background within the fields of health, psychology, social work, etc., and based on previous experience with interviewing or working with vulnerable and/or traumatized populations. Experienced interviewers within the field were chosen due to the conflict affected population and the sensitive questions in the questionnaire that could lead to reactions in the participants. For practical reasons, they carried out interviews in the department in which they

lived themselves. Before commencing their work as interviewers, they participated in an online-based preparatory training arranged by Universidad Externado. This training included a thorough introduction to the MHPCC survey and its purpose, a detailed review of all sections and questions of the questionnaire to avoid any confusions or misunderstandings, appropriate interviewing techniques, and how to approach and register the households. The training also included recommendations on how to identify and help people seriously affected by trauma and mental health issues. To provide support to the interviewers, they had the opportunity to debrief any challenging situations that might occur during the months-long interviewing process, and they were frequently contacted by their respective department's local coordinator. The interviewers also had the opportunity to contact the involved staff from Universidad Externado, of which some were trained psychologists and one was a psychiatrist.

The questionnaire was entered in Survey123, which is a complete digital solution for creating, sharing, and analyzing surveys. It can be used when disconnected from the internet, and it can be securely uploaded (42). Data was collected by tablets in most cases. If any technical issues occurred or an interviewer did not feel safe bringing the tablet, then the questionnaire was filled out on paper and afterwards typed into Survey123. The data from Survey123 was exported to SPSS, and each participant was anonymized, by Universidad Externado, who managed the entire data collection part. Data was cleaned and organized in collaboration with Universidad Externado and DIGNITY. Questions that were not asked by the interviewer, or not answered by the participant were entered as missing values.

The variables used for this study were extracted into a separate data set in SPSS. This data set was translated to English and organized before the statistical analysis was conducted.

Statistical methods

The analysis was conducted using IBM SPSS Statistics for Windows version 27 and Stata Statistical Software version 17 BE.

Missing values

Participants with less than 50% response in the HSCL-25 tool were excluded from the analysis including the HSCL-25 score. The missing values for the HSCL-25 scale item responses were imputed with the mean score. So, for each individual, missing responses were replaced with the mean value of their responses to the rest of the items contained in the scale (43).

Statistical analysis

To describe the population a descriptive analysis was conducted. This was done by reporting frequencies, means, and ranges of the above-mentioned variables to characterize the study population. The overview of victim status was constructed as a summarized table to be able to split the population into two groups: victims and non-victims. The definition of probable psychiatric cases and positive psychiatric cases includes cut-off scores of 1.55 and 1.75 respectively. The overview of COVID-19 exposure is presented as a descriptive table.

The first research question: *Is there an association between being a victim of the conflict and mental health*, is analyzed by using logistic regression, since the outcome (positive psychiatric case = yes/no) is binary. The association between being a positive psychiatric case, and whether a person is a victim of the conflict or not is analysed by a chi-square test. The logistic regression is analysed using odds ratios, confidence intervals, and a significance level. This analysis is adjusted for age and gender.

The second research question: *Are victims more affected by COVID-19, when looking at subjective measures, compared to non-victims*, is analyzed by comparing mean values between the groups: victims and non-victims. For the outcome measures that are normally distributed an independent t-test will be used, and for the ones not being normally distributed the nonparametric Mann-Whitney U test is used. This is analyzed by significance level.

The third research question: *Is being exposed to COVID-19 an effect modifier, when being a victim of the conflict is the exposure and being a positive psychiatric case is the outcome*. An interaction joint between victim status and COVID-19 exposure is added to the logistic regression from the first research question, with the purpose to analyse whether COVID-19

exposure is an effect modifier on the outcome, which is still being a positive psychiatric case (yes/no). Effect modification means that the effect from an exposure on an outcome is affected by a third variable, which is the effect modifier. This is analysed by adding an interaction between the main exposure and the effect modifier to the analysis. If the interaction is significant, the third variable will be considered a modifier on the exposures effect on the outcome. This analysis will as well be analysed by significance level and adjusted for age and gender.

Ethics and informed consent

The ethical approval in Colombia was made by the Ethics Committee of Universidad Externado, and in addition, it was assessed and approved by DIGNITY's Ethics Committee.

All participants gave their informed consent to participate. Before this, they were informed about the objectives of the study and the content of the questionnaire. Also, that participation was voluntary, that they had the right not to answer all questions, and the right to withdraw at any time. They were also informed that they could stop and obtain help and support from the research team if needed, and they were given contact information for the principal investigator to be able to ask questions afterwards. Finally, participants were informed that data was kept confidential and only accessible to the research team, that no names would be used in relation to the investigation, and that possible publications based on the project did not entail any intellectual property rights for the participants.

Results

The overall study population includes 4494 individuals. The majority of the participants are women who comprise 73.6% (N=3302) of the population compared to 26.1% men (N=1172). The mean age is 45.08 years, ranging from 18 to 103 years. The education level, that most of the participants have, is primary school which 31.1% (N=1303) of the participants have. 4.3% (N=178) have a complete university degree and 1.0% (N=41) have a complete postgraduate degree. Almost half of the participants 45.0% (N=2003) are occupied in their homes, doing housekeeping or similar. The vast majority, 94.7% (N=4227) of the population, reported they had health coverage or insurance (Table 3).

Table 3: Demographic and characteristics of the study population including 4494 individuals participating in the Mental Health in Post-Conflict Colombia (MHPCC) project

N (%)	Total	Victim	
		Yes (N=2232)	No (N=2257)
Gender (N=4482)			
Male	1172 (26.1)	615 (27.6)	561 (24.9)
Female	3302 (73.6)	1614 (72.3)	1687 (74.9)
Transgender	1 (0.0)	1 (0.0)	-
Other	7 (0.2)	2 (0.1)	5 (0.2)
Age (N=4474)			
- Mean (range)	45.08 (18-103)	46.36 (18-94)	43.82 (18-103)
Geographic area (N=4424)			
Urban	2932 (66.3)	1358 (61.5)	1571 (71.0)
Rural	1492 (33.7)	849 (38.5)	641 (29.0)
Education level (N=4182)			
None	72 (1.7)	48 (2.3)	24 (1.1)
Preschool	58 (1.4)	26 (1.3)	32 (1.5)
Primary school	1303 (31.2)	757 (36.8)	546 (25.8)
Secondary school	587 (14.0)	293 (14.2)	293 (13.8)
High School	1212 (29.0)	533 (25.9)	677 (31.9)
Short vocational education*, incomplete	89 (2.1)	28 (1.4)	61 (2.9)
Short vocational education, complete	399 (9.5)	182 (8.8)	217 (10.2)
Long vocational education*, incomplete	25 (0.6)	10 (0.5)	15 (0.7)
Long vocational education, complete	104 (2.5)	35 (1.7)	69 (3.3)
University degree (incomplete)	108 (2.6)	46 (2.2)	62 (2.9)
University degree (complete)	178 (4.3)	80 (3.6)	98 (4.6)
Postgraduate degree, incomplete	6 (0.1)	3 (0.1)	3 (0.1)
Postgraduate degree, complete	41 (1.0)	18 (0.8)	23 (1.1)

Ethnicity (N=4342)			
Indigenous	347 (8.0)	215 (9.9)	132 (6.1)
Gipsy/Roma	2 (0.0)	1 (0.0)	1 (0.0)
Black, mulatto, afro-Colombian	921 (21.2)	499 (22.9)	420 (19.4)
None of the above	3072 (70.8)	1461 (67.1)	1609 (74.4)
Occupation (N=4453)			
Working	1658 (37.2)	829 (37.5)	828 (37.0)
Searching for job	409 (9.2)	177 (8.0)	232 (10.4)
Studying	128 (2.9)	39 (1.8)	89 (4.0)
Housekeeping	2003 (45.0)	1050 (47.5)	951 (42.5)
Unable to work	162 (3.6)	86 (3.9)	75 (3.4)
Other	93 (2.1)	31 (1.4)	62 (2.8)
Health coverage/insurance (N=4462)			
Yes	4227 (94.7)	2135 (96.3)	2089 (93.2)
No	235 (5.3)	82 (3.7)	152 (6.8)

Note: Victims are either recognized by law or self-recognised

*Short vocational education is between 1-2 years and long vocational education is 3+ years

The participants are evenly distributed in the included departments ranging from 17.3% (N=778) in Putumayo to 22.4% (N=1008) in Tolima (Table 4). Putumayo has the highest percentage of municipalities with a high conflict level (Table 2, p. 22), which can, due to security, be the reason that fewer participants were interviewed in this department. The number of participants in each municipality range from 97 participants from Orito in Putumayo to 396 participants from Chaparral in Tolima. Each of the 15 municipalities counts for between 2.2-8.9% of the overall number of participants, most of them around 6-9%, which is a good spread that makes the study population geographically representative (Table 4).

Table 4: Geographical representativeness of included departments and municipalities in the Mental Health in Post-Conflict Colombia (MHPCC) project (N=4466)

Region	Department	N (%)	Municipality	Conflict level	N (%)
Atlántica	Bolívar	918 (20.4)	El Carmen de Bolívar	Medium	305 (6.8)
			Santa Rosa	High	372 (8.3)
			San Pablo	High	241 (5.4)
Pacífica	Cauca	915 (20.4)	Buenos Aires	High	389 (8.7)
			Cajibío	High	129 (2.9)
			Guachené	Medium	369 (8.3)
Oriental	Meta	875 (19.5)	El Dorado	High	180 (4.0)
			Granada	Medium	394 (8.8)
			San Juan de Arama	High	301 (6.7)
	Putumayo	778 (17.3)	Orito	High	97 (2.2)
			Mocoa	High	386 (8.6)
			San Francisco	Medium	295 (6.6)
Central	Tolima	1008 (22.4)	Chaparral	High	396 (8.9)
			Icononzo	Medium	381 (8.5)
			Lérida	High	231 (5.2)

Overall, half of the study population (N=2256) are recognised, in some way, as victims of the conflict. They either reported that they were self-recognised as a victim (N=2210) and/or that they were recognised by law (N=1305) (Table 5). Law 1448, also known as the *Victims and Land Restitution Law*, was passed in 2011 in Colombia. The main objective of the law was to recognise the victims of the armed conflict and to secure the victims' right to access justice, truth, and appropriate compensation (44).

Table 5: *Participants self-recognised as a victim, recognised by law, and overall victims in the Mental Health in Post-Conflict Colombia (MHPCC) project*

N (%)	Yes	No	Total
Self-recognised as a victim	2210 (49.3)	2272 (50.7)	4482 (100)
Recognised as a victim by law	1305 (29.2)	3166 (70.8)	4471 (100)
Victim of the conflict overall	2232 (49.7)	2257 (50.3)	4489 (100)

Of the total study population 25% (N=1120) are considered *probable* psychiatric cases, and 17.6% (N=788) of the total study population are considered *positive* psychiatric cases (Table 6). In the HSCL-25 score, 7 participants (0.2%) were excluded due to a response rate of less than 50%.

Table 6: *Prevalence of probable psychiatric cases and positive psychiatric cases in the Mental Health in Post-Conflict Colombia (MHPCC) project*

Probable psychiatric case if score ≥ 1.55	N (%)
< 1.55	3360 (75)
≥ 1.55	1120 (25)
Total	4487 (100)
Positive psychiatric case if score ≥ 1.75	
< 1.55	3360 (75)
$\geq 1.55 < 1.75$	332 (7.4)
≥ 1.75	788 (17.6)
Total	4487 (100)

Note: The scale used is the HSCL-25

4.2% (N=187) of the study population reported that they had been diagnosed with COVID-19 (Table 7). The questionnaire did not specify whether this depended on a test result, clinical exam, or suspicion. 26.8% (N=1190) of the study population was affected by COVID-19, either by knowing someone who had COVID-19 or by knowing someone who presumably died because of COVID-19.

Table 7: *Distribution of COVID-19 exposure among the participants in the Mental Health in Post-Conflict Colombia (MHPCC) project*

N (%)	No	Yes		Total
Diagnosed with COVID-19	4285 (95.8)	187 (4.2)		4487 (100)
		Diagnosed	Died	
Family or close relation affected	3674 (82.1)	617 (13.8)	185 (4.1)	4476 (100)
College/someone in workplace affected	4161 (93.1)	219 (4.9)	91 (2.0)	4471 (100)
Someone else in circle affected	3865 (86.5)	341 (7.6)	264 (5.9)	4470 (100)

Research question 1: Is there an association between being a victim of the conflict and mental health?

There is an association between victim status and being a positive psychiatric case ($p < 0.001$), which means the two variables are dependent. Among the victims, 25.1% ($N=561$) (Table 8) are positive psychiatric cases (odds: 0.33), and among the non-victims 10% ($N=226$) (Table 8) are positive psychiatric cases (odds: 0.11). The odds ratio (OR), adjusted for age and gender, is 3.10 (95% CI=2.62–3.68), which means the probability of being a positive psychiatric case is three times higher among the victims versus not being a victim ($p < 0.001$).

Table 8: *Distribution of victims and positive psychiatric cases among the participants in the Mental Health in Post-Conflict Colombia (MHPCC) project*

N (%)	Positive psychiatric case			
		Yes	No	Total
Victim to the conflict	Yes	561 (25.1)	1670 (74.9)	2231 (100)
	No	226 (10.0)	2026 (90.0)	2252 (100)
	Total	787 (17.6)	3696 (82.4)	4483 (100)

Note: Positive psychiatric case if HSCL-25 ≥ 1.75

Research question 2: Are victims more affected by COVID-19, when looking at subjective measures, compared to non-victims?

Among the subjective measures the lowest scores are seen in the question: “To what degree has the pandemic affected your economic security and/or stability”, where the victims have the lowest mean (SD) of 1.73 (0.92) compared to non-victims of 1.89 (0.95) ($p < 0.001$). The highest scores are seen in: “To what degree has the pandemic affected your family relations”, where the non-victims score the lowest at 2.50 (1.04) compared to victims at 2.57 (1.07) ($p = 0.03$) (Table 9).

Table 9: Subjective measures on COVID-19 affection stratified by victim status among the participants in the Mental Health in Post-Conflict Colombia (MHPCC) project

Mean (SD)	Victim		Diff.	p
	Yes	No		
To what degree has the pandemic affected your family relations (N=4445)	2.57 (1.07)	2.50 (1.04)	0.07	0.03
To what degree has the pandemic affected your economic security and/or stability (N=4463)	1.73 (0.92)	1.89 (0.95)	-0.16	<0.001
To what degree has the pandemic affected your social life and social relations (N=4463)	2.27 (0.95)	2.30 (0.93)	-0.03	0.40
To what degree has feelings of fear of illness or death affected your life and emotional state (N=4451)	2.17 (0.85)	2.20 (0.89)	-0.03	0.38

Note: Reported on a Likert scale from 1 (very negative effect) to 5 (very positive effect)

The subjective measure: “To what degree has COVID-19 affected your mental health” is reported on a different scale than the items above. The highest score is seen in the victims with the mean (SD) being 2.49 (1.31) compared to non-victims 2.44 (1.34). The difference between the groups is not significant ($p = 0.11$) (Table 10).

Table 10: *Subjective measures on COVID-19 affection on mental health stratified by victim status among the participants in the Mental Health in Post-Conflict Colombia (MHPCC) project (N=4458)*

Mean (SD)	Victim		Diff.	p
	Yes	No		
To what degree has COVID-19 affected your mental health	2.49 (1.31)	2.44 (1.34)	0.05	0.11

Note: Reported on a 5-point scale from 1 (not at all) to 5 (a lot)

Research question 3: Is being exposed to COVID-19 an effect modifier, when being a victim of the conflict is the exposure and mental health is the outcome?

A multivariable analysis with being a positive psychiatric case as an outcome and victim status as exposure, including an interaction between victim status and being diagnosed with COVID-19, shows no significant interaction ($p=0.761$) (95% CI=0.50-2.58)) (Table 11). The analysis is adjusted by gender and age. Since the interaction is not significant, being diagnosed with COVID-19 is not considered an effect modifier between victim status and mental health. The OR for being a victim and a positive psychiatric case, when the interaction is included, is 3.08 (95% CI=2.59–3.67). There is a significant gender difference with the probability of being a positive psychiatric case on 2.26 times higher among women (95% CI=1.83–2.79) compared to men ($p<0.001$) (Table 11).

The other COVID-19 exposures from Table 7: Family or close relation affected, college/someone in workplace affected, and someone else in circle affected, were each replaced with being diagnosed with COVID-19 in the interaction joint, but none of these was significant effect modifiers either.

Table 11: *Multivariable logistic regression including an interaction between victim status and being diagnosed with COVID-19 with mental health (being a positive psychiatric case) as the outcome (N=4447)*

Variable		OR (SE)	P-value	95% CI
Victim				
	No	1 (-)		
	Yes	3.08 (0.27)	<0.001	2.59 – 3.67
Diagnosed with Covid-19				
	No	1 (-)		
	Yes	1.04 (0.23)	0.888	0.55 – 1.99
Victim x diagnosed with COVID-19			0.761*	
Gender				
	Male	1 (-)		
	Female	2.26 (0.24)	<0.001	1.83 – 2.79
	Other	1.97 (2.22)	0.548	0.22 – 18.00
Age		1.00	<0.001	1.00 – 1.01

*p-value for the interaction of the overall effect of being a victim and COVID-19 exposure

Note: Positive psychiatric case if HSCL-25 \geq 1.75

Discussion

This section highlights and discusses the results of the study and the methodology. This will include findings from previous studies mentioned in the theoretical background, limitations, and advantages.

The aim of this thesis was to research if there is an association between being a victim of the conflict and mental health, and if this association is affected if COVID-19 exposure is included as an effect modifier. There is a significant association between being a positive psychiatric case and whether a person is a victim of the conflict. The probability of being a positive psychiatric case is three times higher, among the victims versus non-victims, which is a significant difference. Surprisingly, COVID-19 exposure does not significantly influence the

mental health of the study population, as the association between being a victim and mental health is not modified by COVID-19 exposure. The thesis also researched if there is a difference in how COVID-19 have affected victims compared to non-victims. The most negative effect is seen in how the pandemic has affected the participants' economic security and/or stability, with a significant difference between the groups, with the victims being most negatively affected. Surprisingly, there is not a significant difference between the groups when looking at how COVID-19 has affected the participants' mental health.

Existing literature

To my knowledge, no literature has researched the impact of COVID-19 on the mental health between victims and non-victims. As mentioned previously, a systematic review and meta-analysis present the WHO prevalence estimates of mental disorders in conflict settings. It estimated the prevalence of mental disorders (mild, moderate, and severe) in conflict settings to be 22.1% (6). Compared to this, 25% of this study population are considered probable psychiatric cases with a cut-off score of 1.55 or higher on the HSCL-25 scale. This is an even stronger contrast to the estimates from the Global Burden of Diseases, Injuries, and Risk Factors Study 2016, which suggested a mean global prevalence of one in 14 (7.14%). The systematic review also estimated the prevalence of severe disorders, such as severe depression, severe PTSD, and severe anxiety to be 5.1% and for moderate disorders to be 4.0% (6). The population in this study finds 17.6% to be positive psychiatric cases with a score of 1.75 or higher. Previous studies have shown that this cut-off on the total score is highly correlated with the severe emotional distress of unspecified diagnosis (37). It shall be mentioned that the systematic review has conducted a meta-analysis, and the severity levels for depression and anxiety are from the Global Burden of Diseases. Therefore, the measures are not directly comparable, but it can give the impression that this study population might have a higher prevalence of mental disorders.

The studies from Colombia, mentioned earlier, find that the effects of COVID-19 on the emotional and mental health of Colombians are still uncertain. In the theoretical background, several factors associated with poor mental health are mentioned, for example, financial insecurity lack of social connection, and fear. Some of these factors are included in the

subjective items of the COVID-19 section. A significant difference was seen in the item about the pandemic's effect on economic security and/or stability, where the victims were the most negatively affected. Surprisingly, none of the other items showed that the victims were significantly more negatively affected.

A study found that 75% of the people surveyed have had some mental health problem in relation to the mandatory preventive isolation (31). Another study found that 7.6% of the participants reported a high risk of suicide and that the high risk was associated with a high perception of stress related to COVID-19 (32). Lastly, a study determined the prevalence of depression and anxiety in adults during the COVID-19 social isolation, and it found that women were more likely to have symptoms of depression. They observed that 48.3% of the participants showcased some level of depression (34). It is shown that COVID-19 has affected the Colombian population, but it is unknown, whether the victims in the population are at higher risk of being mentally distressed. Surprisingly, this study did not find an interaction between victim status and COVID-19 on mental health. Neither was the mental health of victims more negatively affected by COVID-19 than non-victims.

Study design

Using a cross-sectional study has some limitations and disadvantages. They have no dimension of time, so supporting conclusions on the risk or cause of diseases, treatment effects, etc. is not possible. Another study design that could have been useful to answer research question 2 and research question 3 about being exposed to COVID-19, and its impact on mental health, in conflict affected populations, is a cohort study. This study design would make it possible to conduct several measures in the same population at different times. The baseline measure should then be before the pandemic, and the measures from this study could be a follow-up measure. That would make it possible to analyze paired tests for the same person before and after/during the exposure. This would give a more specific measure of the impact, which in this case would be the effect measure on the HSCL-25 scale. This is however not possible since a pandemic cannot be foreseen. Also, it might be difficult to assess the same person, as they were not selected personally, but as being the first person, above 18 years, the interviewer met in the selected household. Local lockdowns would also make it difficult, and for this study, it was

only possible to collect data, when an area was not under lockdown, which makes it difficult to plan follow-ups when lockdowns cannot be foreseen. At the same time, a cohort study is more time consuming and the cost of data collection etc. is higher, which makes the choice of a cross-sectional study reasonable.

Selection bias

The MHPCC project is developed and carried out in collaboration with the three partners: DIGNITY, the Colombian Ministry of Health and Social Protection, and the university Universidad Externado of Colombia. Each partner has an important role and has taken responsibility for different tasks. Universidad Externado selected the departments and the Ministry of health randomized households within these departments. This also means that these parts were completely out of DIGNITY's hands and that they did not have any control of these tasks. It would not be realistic for DIGNITY staff, placed in Denmark, to carry out these processes. Due to the Colombian partners having a big local knowledge and experience with national surveys, it was an obvious decision that they were responsible for this.

A detailed selection process was carried out by the Colombian Ministry of Health and Universidad Externado. The smallest sample is from Putumayo, but this department also has the highest percentage of municipalities (17.3%) with a high conflict level, so this is expected. The Ministry of health has great experience conducting national population surveys, which has made the study population geographically representative.

The MHPCC project was developed for a post-conflict Colombia, but in HIIK's Conflict Barometer you will find Colombia listed twice, on the list of highly violent conflicts. It was assumed that Colombia would be a post-conflict country after the peace agreement in 2016, but as mentioned in the theoretical background the conflict-related violence has just taken new forms. The selection of municipalities with high and medium conflict levels are excluding the municipalities with the highest conflict level, due to security reasons. Therefore, the population that might be most affected by the conflict are not represented in this study. Universidad Externado has a different classification of conflict levels, compared to HIIK. Universidad Externado has developed the classification for this study, and they are including different

mental health parameters, whereas HIIK's classification does not include parameters on mental health.

The majority of the study population, 73.6% (N=3305), are women, and almost half of the participants 44.6% (N=2004) are occupied at home doing housekeeping or similar. This is probably due to the data collection being carried out during the day, while some people have been at work, in school, or similar. This makes the study population less representative, and it may affect the results since women, among other differences, have a higher prevalence of depression (34). This is considered a limitation of the study, and it would be highly relevant to make analyses stratified on gender.

Previous studies mentioned in the theoretical background, assessing COVID-19 exposure and its impact on mental health in Colombia, have exclusively been conducted through online surveys. This study population might be different from the population in those studies since this questionnaire is not conducted online but by interviewers visiting households. Data from The World Bank shows that 70% of the Colombian population uses the internet (45). The population that does not have access to the internet might be in the conflict affected areas, which possibly makes this population difficult to reach. Therefore, it can be a strength of this study that the study population, in this way, is unique. Due to ethical reasons, the data collection was not carried out by phone calls since it included several vulnerable questions, and partners wanted to be sure that participants reacting to these, would get proper help.

Information bias

The cross-sectional study design can only assess information at one point in time, which makes it difficult to assess i.e., risks. This can be taken into account by formulating questions that assess the participant's past. In this study, it could be asking about participants' mental health before the pandemic, but this may cause recall bias. This would occur when participants' assessment of disease, status, etc., influences their response to the questionnaire (35). The only item in this study that assesses the past is the HSCL-25, which asks the participants to describe how much the symptoms bothered them or distressed them in the last week, including the day of the interview. They may score higher or lower depending on their symptoms on the day of

the interview, but since it only goes a week back it will not require further considerations on recall bias.

The survey was conducted through questionnaire-based, structured face-to-face interviews, which has some limitations. Due to the structure, there is no flexibility in the interviews. This is both a strength, but also a limitation since the interviewers cannot ask further questions and therefore might miss information about details, explanations, etc. This also means very little room for nuance, and if a participant does not identify themselves with any of the given answers, it might not reflect their true feelings. Another limitation is that the structured interview can seem rigid and formal, and this can make the participant feel uncomfortable or nervous, due to the lack of trust between the interviewer and participant. This can have affected the answers (36). Some items in the questionnaire allowed the participants to report other answers than the ones given, but for the HSCL-25 and the COVID-19 section, included in this study, it was not an option. If an open question was included in the section about COVID-19 affection, it might have given further information that could bring nuance to the quantitative results. For example, it could be used to investigate why COVID-19 exposure does not have a higher impact on victims compared to non-victims.

In this study, the participants are asked many sensitive questions, which they might prefer to answer anonymously, but this was not an option, and it could have affected the answers. The length of the interview is also worth mentioning. It was set to last 45-75 minutes, which is a long time to keep concentration. The section in the questionnaire about COVID-19 was the last in the interview, which can have affected the answers. It is good for the trust between participant and interviewer, but not good for the concentration.

A few participants did not answer all questions on the HSCL-25 scale. In general, missing values should always be considered since they might skew the final results, for example, if those who do not answer, are also the ones who would otherwise score the highest. However, in this study, only 7 participants (0.2%) were excluded due to a response rate below 50%. Instead of replacing the missing values with the mean score for the participant, an imputation model could have been used. This is a technique used for replacing missing values with

substitute values to retain most information of the dataset. This was not done since the number of participants excluded because of a low response rate was very low.

The questionnaire did not specify in the section about COVID-19, whether it was a requirement that the diagnosis was confirmed by a test. It is therefore assumed that some of those who reported 'yes' had not been tested but are assuming positive based on symptoms etc. Since this is not a medical study, but a study on mental health and how study participants experience COVID-19, it is not considered a limitation.

The outcome in this study is defined by the HSCL-25, which is a score that is used to assess depression and anxiety. As shown in the theoretical background, many other scales can be used to assess mental health, and it could as well be highly relevant to include measures i.e., on suicide risk and PTSD as an outcome. Several studies have found an increase in the prevalence of anxiety and depression due to the pandemic (4, 21, 30, 34). Hereunder, the systematic review mentioned in the background chapter that estimated an increase of 27.6% in major depressive disorder and 25.6% for anxiety disorders globally due to the COVID-19 pandemic (4). For this reason, the HSCL-25 was selected as a proper outcome. In this study, it is used to define if a participant is a positive psychiatric case, but it could also be used as specific measures on anxiety and depression, which might have led to different results.

The data collection was conducted from January to October 2021 with the majority of the interviews being carried out during the first half of the year. The relatively low number of cases being diagnosed with COVID-19 can be due to low test capacity in the selected municipalities. Also, it is quite early in the pandemic, and this can also affect the low number of cases. If the data collection was collected later, there might be a higher prevalence of mental distress since the pandemic would have been ongoing for a longer period. One of the studies mentioned earlier found a correlation between the periods with the highest rates of mental distress and the intensifying of COVID-19 deaths and strict confinement measures (21). Since data is collected over a relatively long period, it can have affected the results since a participant might have been, more or less, affected according to the different regional circumstances of the pandemic. Data were collected while no lockdown or strict confinement in the specific area was present, which might have improved the study populations' mental health. But uncertainty regarding if, or

when, a new lockdown would occur has still been present, and this uncertainty has probably affected the population regardless of lockdown or not.

Conclusion / Perspectives

In January 2020 a novel coronavirus was identified. In the following months, the virus kept increasing in cases and by mid-March, WHO announced that the outbreak could be characterized as a pandemic. The context of COVID-19 brought uncertainty fear, worry, and stress to people, which brought a focus on mental health. Mental health conditions are increasing worldwide and in recent years the acknowledgement of the important role that mental health plays have increased. A project called Mental Health in Post-Conflict Colombia is carried out by collaborating partners: DIGNITY, the Colombian Ministry of Health and Social Protection, and the private university Universidad Externado of Colombia. The main objective of the project is to facilitate the improvement of mental health in post-conflict Colombia. Local interviewers were hired and carried out structured face-to-face interviews based on an extensive questionnaire developed by DIGNITY and Universidad Externado. The study population included is civilians aged 18 years or above from five different departments in Colombia: Bolívar, Cauca, Meta, Putumayo, and Tolima. In these departments, 15 municipalities with a medium or high conflict level were selected by Universidad Externado and the selection of households was conducted by the Colombian Ministry of health. The overall study population includes 4494 individuals, where half of the population was a victim of the conflict. Of the total study population, 25% are considered *probable* psychiatric cases and 17.6% are considered *positive* psychiatric cases.

The study finds a significant association between being a positive psychiatric case and whether a person is a victim of the conflict ($p < 0.001$). The probability of being a positive psychiatric case is three times higher, with an OR of 3.10 (95% CI=2.62–3.68), among the victims versus non-victims ($p < 0.001$). The most negative effect is seen in terms of how the pandemic has affected the participants' economic security and/or stability, with a significant difference between the groups ($p < 0.001$), with the victims being most negatively affected. No significant difference between the groups was found when looking at how COVID-19 has affected the participants' mental health. The study also finds that COVID-19 exposure does not significantly

influence the mental health of the study population. This means that there is no interaction between victim status and COVID-19 exposure since being diagnosed with COVID-19 is not a significant effect modifier ($p=0.761$) on the association between victim status and mental health.

Some limitations that can have affected the results should be mentioned. The data collection was carried out quite early in the pandemic, which might be the reason that the number of exposed cases was low. A higher number of cases could have affected the outcome. The majority of the study population are women, and many are occupied in their homes. This makes the study population less representative. The data was collected through questionnaire-based, structured face-to-face interviews, which do not give place for flexibility and nuances. Neither were the participants anonymous which can have affected their answers to the more sensitive questions. The outcome is mental health measured by the HSCL-25. This instrument is limited to measuring anxiety and depression, which excludes important measures on i.e., PTSD, suicide risk etc.

An advantage of the study, among others, is the sample size of 4494 individuals. It is carried out by three partners: DIGNITY, the Colombian Ministry of Health and Universidad Externado, which each has expert knowledge they have contributed with. The structured questionnaire has great reliability, and the HSCL-25 instrument is a widely used and well-known screening instrument that is validated among a Spanish speaking population. Data collection was conducted by local interviewers, that were carefully chosen for the project, and they were able to support participants if needed. The study population might be different from the ones included in the studies using online surveys, since access to internet was not needed in this data collection. This can have made this (post-)conflict affected population quite unique.

To the best of my knowledge, no research on mental health combining exposure to both COVID-19 and being a victim of a conflict is published. This thesis was conducted as part of the MHPCC project, and it will be a part of the material that will support the development of designing the focused interventions that will be implemented in Colombia. The contribution that this study can provide, is that victims are more likely to be mentally distressed, which was expected. It was unknown how the pandemic has affected the population but being exposed to

COVID-19 did not modify mental health. Neither was there seen a difference in how COVID-19 has affected the participants' mental health between victims and non-victims. These results do not give reason to think that further considerations regarding COVID-19 exposure should be made, when developing interventions regarding anxiety and depression. It is still unknown if the results are the same if other outcomes are included i.e., PTSD and suicide risk. My suggestion for further research is to include those as outcomes to have a complete and overall picture of how COVID-19 affects the victims in the conflict-affected population.

References

1. WHO. *About the virus* [Internet]. World Health Organization [cited 2022 Feb 18]. Available from: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov>
2. WHO. *Mental health and COVID-19* [Internet]. World Health Organization [cited 2022 Feb 18]. Available from: <https://www.who.int/teams/mental-health-and-substance-use/mental-health-and-covid-19>
3. WHO. *Mental health* [Internet]. World Health Organization [cited 2022 Feb 22]. Available from: <https://www.who.int/westernpacific/health-topics/mental-health>
4. COVID-19 Mental Disorders Collaborators*. *Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic*. *Lancet*. 2021 Nov 6;398(10312):1700–12.
5. WHO. *Mental health: strengthening our response* [Internet]. World Health Organization; 2018 Mar 30 [cited 2022 Feb 18]. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
6. Charlson F, van Ommeren M, Flaxman A, Cornett J, Whiteford H, Saxena S. *New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis*. *Lancet*. 2019 Jul 20;394(10194):240–8.
7. Colombian Government. *Final Agreement to End the Armed Conflict and Build a Stable and Lasting Peace* [Internet]. Peace Agreement Access Tool; 2016 Nov 24 [cited 2022 Feb 18]. Available from: <https://www.peaceagreements.org/wgenerateAgreementPDF/1845>
8. *Colombian Armed Conflict* [Internet]. Justice for Colombia. [cited 2022 Feb 18]. Available from: <https://justiceforcolombia.org/about-colombia/colombian-armed-conflict/>

*Authors are listed in the end of the article

9. Jose Cuesta. *Poverty & Equity Brief, Latin America & the Caribbean, Colombia* [Internet]. World Bank Group; 2020 Apr [cited 2022 Feb 18]. Available from: https://databank.worldbank.org/data/download/poverty/33EF03BB-9722-4AE2-ABC7-AA2972D68AFE/Global_POVEQ_COL.pdf
10. *Conflict Barometer 2020* [Internet]. Heidelberg Institute for International Conflict Research; 2021 Mar [cited 2022 Feb 18]. Available from: https://hiik.de/wp-content/uploads/2021/05/ConflictBarometer_2020_2.pdf
11. *Collaborating partners – Mental Health in post-conflict Colombia* [Internet]. [cited 2022 Feb 22]. Available from: <https://mentalhealthcolombia.org/collaborating-partners/>
12. *About DIGNITY* [Internet]. Danish Institute Against Torture [cited 2022 Feb 18]. Available from: <https://www.dignity.dk/en/about-dignity/>
13. Quintero G A, Vergel J, Laverde Á, Ortíz L-C. *Educational Strategies to Develop and Implement a Comprehensive Health Care Model Focused*. J Med Educ Curric Dev. 2020 Jun 26; 7:2382120520930260
14. *The Project – Mental Health in post-conflict Colombia* [Internet]. [cited 2022 Feb 22]. Available from: <https://mentalhealthcolombia.org/the-project/>
15. United Nations. *A New Era of Conflict and Violence* [Internet]. [cited 2022 Mar 15]. Available from: <https://www.un.org/en/un75/new-era-conflict-and-violence>
16. Human Rights Watch. *Colombia: Events of 2021* [Internet]. World Report 2022 [cited 2022 Mar 11]. Available from: <https://www.hrw.org/world-report/2022/country-chapters/colombia>
17. OECD. *Colombia, Basic socio-economic indicators* [Internet]. OECD; 2016 Oct [cited 2022 Apr 8]. Available from: <https://www.oecd.org/regional/regional-policy/profile-Colombia.pdf>

18. *Constitution of the world health organization* [Internet]. 1946 Jul 22 [cited 2022 Feb 18]. Available from: <https://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf?ua=1>
19. WHO. *Mental disorders* [Internet]. World Health Organization; 2019 Nov 28 [cited 2022 Mar 3]. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-disorders>
20. Christiansen N F. *A systematic literature review on interventions addressing mental health in (post-)conflict affected populations*. [Unpublished]. 2022.
21. OECD. *Tackling the mental health impact of the COVID-19 crisis: An integrated, whole-of-society response* [Internet]. OECD; 2021 May 12 [cited 2022 Mar 23]. Available from: https://read.oecd-ilibrary.org/view/?ref=1094_1094455-bukuf1f0cm&title=Tackling-the-mental-health-impact-of-the-COVID-19-crisis-An-integrated-whole-of-society-response
22. ECDC. *Coronaviruses* [Internet]. European Centre for Disease Prevention and Control; 2022 Jan 18 [cited 2022 Feb 23]. Available from: <https://www.ecdc.europa.eu/en/covid-19/latest-evidence/coronaviruses>
23. WHO. *Naming the coronavirus disease (COVID-19) and the virus that causes it* [Internet]. [cited 2022 Feb 23]. Available from: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it)
24. WHO. *Coronavirus disease (COVID-19): How is it transmitted?* [Internet]. World Health Organization; 2021 Dec 23 [cited 2022 Feb 23]. Available from: <https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-how-is-it-transmitted>
25. WHO. *Coronavirus* [Internet]. World Health Organization [cited 2022 Feb 23]. Available from: <https://www.who.int/westernpacific/health-topics/coronavirus>
26. WHO. *WHO Coronavirus (COVID-19) Dashboard* [Internet]. World Health Organization [cited 2022 Feb 25]. Available from: <https://covid19.who.int>

27. WHO. *COVID-19 vaccines and vaccination* [Internet]. World Health Organization [cited 2022 Feb 25]. Available from: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/covid-19-vaccines-and-vaccination>
28. EMA. *COVID-19 vaccines: authorised* [Internet]. European Medicines Agency; 2021 [cited 2022 Feb 25]. Available from: <https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines/vaccines-covid-19/covid-19-vaccines-authorised>
29. Almeida-Espinosa A, Armiento-Ardila J A. *COVID-19: implications of SARS-CoV-2 in Colombia* | *Gac Med Mex*; 2020 May 27. 2020;156:330-334
30. Trejos-Herrera A M, Vinaccia S, Bahamón M J. *Coronavirus in Colombia: Stigma and quarantine*. *J Glob Health*. Dec 2020. 10(2):020372.
31. Rivillas-García J C, Murad-Rivera R, Sánchez S M, Rivera-Montero D, Calderón-Jaramillo M, Castaño L M, Royo M. *Social response to early-stage government control measures of COVID-19 in Colombia: population survey, April 8-20 2020*. [Internet]. ProFamilia; 2020 May 17 [cited 2022 Mar 22]. Available from: <https://profamilia.org.co/wp-content/uploads/2020/05/Social-response-to-early-stage-government-control-measures-of-COVID-19-in-Colombia-Population-survey-April-8-20-2020.pdf>
32. Caballero-Domínguez C C, Jiménez-Villamizar M P, Campo-Arias A. *Suicide risk during the lockdown due to coronavirus disease (COVID-19) in Colombia*. *Death Stud*. 2020 Jun 26;1–6.
33. Pedrozo-Pupo J C, Pedrozo-Cortés M J, Campo-Arias A. *Perceived stress associated with COVID-19 epidemic in Colombia: an online survey*. *Cad Saude Publica*. 2020 Jun 2020;36(5):e00090520.
34. Ocampo González Á A, Castillo García J F, Pabón Sandoval L C, Tovar Cuevas J R, Hidalgo Ibarra S A, Calle Sandoval D A, et al. *Depressive symptomatology in adults during the COVID-19 pandemic*. *J Investig Med*. 2022 Feb;70(2):436–45.

35. Laake P, Breien H, Olsen BR. *Research in Medical and Biological Sciences - From Planning and Preparation to Grant Application and Publication*. 2nd Edition. Vol. 2015. Elsevier Science;
36. *Structured Interview | Definition, Guide & Examples* [Internet]. Scribbr; 2022 [cited 2022 Apr 29]. Available from: <https://www.scribbr.com/methodology/structured-interview/>
37. *Hopkins Symptom Checklist (HSCL)* [Internet]. Harvard Program in Refugee Trauma [cited 2022 Mar 29]. Available from: <http://hprt-cambridge.org/screening/hopkins-symptom-checklist/>
38. Bris T L. *The Hopkins symptoms checklist in 25 items: translations in Castilian, Galician, Catalan, French, Greek, Italian, Polish, Bulgarian and Croatian synthesis*. HAL; 2018 Jul 4; 166108511
39. Morales Soto N R, Perales Cabrera A, Instituto Nacional de Salud (Peru) P, Ministerio de Salud. *Atención de víctimas de violencia derechos de las personas*. Ministerio de Salud: Instituto Nacional de Salud; 2010.
40. Morote Rios R, Hjemdal O, Martinez Uribe P, Corveleyn J. *Life stress as a determinant of emotional well-being: development and validation of a Spanish-Language Checklist of Stressful Life Events*. Health Psychol Behav Med. 2014 Jan 1; 2(1):390–411.
41. *Epidemiology: Validity*. Research Guides at Pennsylvania College of Technology [Internet]. [cited 2022 May 25]. Available from: <https://pct.libguides.com/epidemiology/clinical-research/validity>
42. *ArcGIS Survey123 - Create Smart Surveys & Forms for Data Collection* [Internet]. ESRI; [cited 2022 Apr 6]. Available from: <https://www.esri.com/en-us/arcgis/products/arcgis-survey123/overview>

43. Rodríguez-Barragán M, Fernández-San-Martín M I, Clavería-Fontán A, Aldecoa-Landesa S, Casajuana-Closas M, Llobera J, et al. *Validation and Psychometric Properties of the Spanish Version of the Hopkins Symptom Checklist-25 Scale for Depression Detection in Primary Care*. Int J Environ Res Public Health; 2021 Jul 24 ;18(15):7843.

44. The congress of the republic. *Law 1448 of 2011* [Internet]. UNESCO; 2011 Jun 4 [cited 2022 May 4]. Available from:
<https://en.unesco.org/creativity/sites/creativity/files/law1448v18jun20.pdf>

45. *Individuals using the Internet (% of population) - Colombia | Data* [Internet]. The World Bank; 2022 [cited 2022 May 18]. Available from:
<https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=CO>

HOPKINS SYMPTOM CHECKLIST-25

HSCL-25



Name: _____	Date _____	Clinician	

Date of Birth _____	Sex _____	Marital _____	Status

INSTRUCTIONS

Listed below are symptoms or problems that people sometimes have. Please read each one carefully and describe how much the symptoms bothered you or distressed you in the last week, including today. Place a check in the appropriate column.

	PART I				
	ANXIETY SYMPTOMS	Not at all	A little	Quite a bit	Extremely
1.	Suddenly scared for no reason				
2.	Feeling fearful				
3.	Faintness, dizziness or weakness				
4.	Nervousness or shakiness inside				
5.	Heart pounding or racing				
6.	Trembling				
7.	Feeling tense or Keyed up				
8.	Headaches				
9.	Spell of terror or panic				
10.	Feeling restless or can't sit still				

	PART II				
	DEPRESSION SYMPTOMS	Not at all	A little	Quite a bit	Extremely
11.	Feeling low in energy, slowed down				
12.	Blaming yourself for things				
13.	Crying easily				
14.	Loss of sexual interest or pleasure				
15.	Poor appetite				
16.	Difficulty falling asleep, staying asleep				
17.	Feeling hopeless about future				
18.	Feeling blue				
19.	Feeling lonely				
20.	Thought of ending your life				
21.	Feeling of being trapped or caught				
22.	Worry too much about things				
23.	Feeling no interest in things				
24.	Feeling everything is an effort				
25.	Feeling of worthlessness				