YOU GIVE ME HEADACHES: THE EXAMINATION OF THE LINK BETWEEN HEADACHES AND TRAUMA

by

ALEXANDRIA BRIANNA ROGERS

(Under the Direction of Bernadette Heckman., Ph.D.)

ABSTRACT

A growing number of studies suggest a link between a past history of trauma and chronic headache disorders. Individuals diagnosed with post-traumatic stress disorder are more likely to have chronic migraines (Peterlin et. al., 2007). The experience of childhood trauma such as physical and/or sexual abuse predicted depressive disorder in approximately 50% of women. Women with migraines who were diagnosed with major depression were twice as likely to report childhood trauma than those without depression (Tietjen et al., 2007). The relationship between migraines and trauma history suggests a potential causal link that is poorly understood among those with chronic headache disorders. Although, research has shown that there is a connection between trauma history and chronic headache disorders, there is little research discussing environmental factors such as socioeconomic status, culture, and family life that could serve as potential protective factors. This dissertation examined how types and severity of trauma may be correlated to headache severity. It examined the role of adaptive coping and how they in turn mediate symptoms of headache and trauma by assessing 34 patients from a primary care clinic who have a history of headache. It was originally hypothesized that individuals with headache who have greater adaptive coping techniques would be associated with less severity and in

headache symptoms. Additionally, more severe trauma would be associated with increased headache severity. The study assesses the roles of trauma and headache severity on quality of life. It was hypothesized that trauma impact and headache severity will be mediated by adaptive coping. The study additionally hypothesized that trauma and headache severity would be associated with decreased quality of life. This dissertation used quantitative methods to analyze the severity of trauma and headache. It was found that 62% of participants endorsed a history of trauma and possibly met criteria for PTSD. Trauma was found to have a significant relationship with quality of life. Maladaptive coping strategies were found to be associated with trauma and lower quality of life. Adaptive coping and headache severity were not found to be a statistically significant predictors across all variables.

INDEX WORDS: Trauma, headaches, adaptive coping, quality of life

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Dedication

To my grandfather, may your memory always be a blessing. You were the first one to address me as doctor and my reason as to why I have decided to pursue a career as a psychologist helping patients with chronic and complex medical conditions.

Thank you for all of your support and the hours we spent laughing together.

Until we meet again.

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CHAPTER 1

INTRODUCTION

Statement of the Problem

Trauma can be defined and experienced in various ways, whether by being a survivor, a witness, or a person who was told about the event(s). When one discusses a history of trauma, it is usually told from one who survived emotional, physical, and sexual abuse. These types of trauma can lead to post-traumatic stress disorder and somatic symptoms. Approximately 70% of adults living in the United States have experienced a traumatic event, and 20% will eventually be diagnosed with post-traumatic stress disorder. 5% of Americans, which equates to more than 13 million people, have post-traumatic stress disorder at any given time. 1 out of 13 Americans will develop PTSD. This statistic is even higher for women. Women are twice as likely to develop PTSD than men. 1 out of 10 women will have PTSD sometime during their lives (Sidran 2017). Primary headache disorders may include migraine, tension-type headache (TTH), and cluster headache. TTH and migraines are common amongst American adults. 95% of the general population reports having experienced headache (WHO 2001). More than 37 million people in the United States suffer from migraines. It is estimated that 13% of adults have migraines, and about 3 million of those are considered chronic. Three million people suffer from at least one migraine per month, and 11 million reports that their migraines cause moderate to severe disability. 18% of women suffer from migraines, which like PTSD, is significantly higher percentage than the 6% of men sufferers. Migraines are most common amongst Caucasian adults between 35 and 55 in lower economic groups (Migraine 2017).

As trauma and headache disorders are shown to be common among American adults, it is possible to deduce that they would overlap. Previous research suggests a link between a history of trauma and chronic headache disorders (Peterlin et al. 2007). Psychiatric disorders have been shown to be comorbid with chronic headache disorders (Rozen & Fishman 2012). Individuals who have been diagnosed with post-traumatic stress disorder are more at risk of developing a chronic headache disorder (Peterlin et al. 2007). Childhood trauma, such as physical and sexual abuse, has been shown to predict depressive disorder and migraine in 50% of the female population. Research has shown that marginalized individuals are more likely to report migraine experience (Befus et al. 2018). Previous research has shown that primary headache disorders are negatively associated with quality of life. Quality of life components that have been studied include difficulty maintaining employment, absenteeism, lower socioeconomic status, and overall psychological health Stewart 2003, Hagen 2002). Research has shown that pediatric headache is associated with a decreased quality of life (Ung et al. 2019). Previous research has shown how variables such as social support, life meaning, self-care, resilience, spirituality protective factors to psychiatric disorders including post-traumatic stress disorder and major depressive disorder (Nichter et al. 2020, Elbogen et al. 2020, Kinney et al. 2020). However, little research has focused on how adaptive coping may affect the trauma and, in turn, headaches.

Additionally, little research has assessed the impact of trauma and headache severity on quality of life factors. Due to this lack of research, this study is warranted to fully understand possible headache development and develop treatment methods. This dissertation seeks to explain the relationship amongst trauma, headache, quality of life, and adaptive coping using a revised version of the stress process model (Pearlin et al. 1981).

Purpose of the Study

The purpose of this research is to explore further the link between a history of trauma and chronic headache disorder with adherence to adaptive coping and quality of life. There is little research discussing environmental factors such as socioeconomic status, culture, and family in the context of headache and trauma. Due to the lack of research, the primary aims of this dissertation are to investigate how types and levels of trauma may be correlated with headache severity, which may be mediated by adaptive coping and the role of trauma and headache severity on quality of life. With this in mind, the following research questions are:

1. What is the relationship between trauma impact and headache severity?

Hypothesis 1: There is a positive relationship between trauma impact and headache severity.

2. What is the role of adaptive coping on headache severity?

Hypothesis 2: There is a negative relationship between adaptive coping strategies and headache severity.

3. What is the role of adaptive coping on trauma impact?

Hypothesis 3: Less trauma impact will be associated with more adaptive coping strategies.

4. What relationship does adaptive coping have on trauma impact and headache severity?

Hypothesis 4: Adaptive coping will be a mediator to trauma impact and headache severity.

5. Does headache severity and trauma impact affect quality of life?

Hypothesis 5: Headache and trauma symptoms will be negatively associated with quality of life.

6. What is the relationship between adaptive coping and quality of life?

Hypothesis 6:Adaptive coping will be positively associated with quality of life.

7. What relationship does adaptive coping have with trauma impact and quality of life?

Hypothesis 7: Adaptive coping will be a mediator to trauma impact and quality of life.

Findings of this project can inform the development of trauma-based interventions that are aimed not only at improving the depression and anxiety related to the trauma but potentially the physical chronic pain conditions such as headaches that tend to be associated with trauma history. This research will identify types and severity of trauma and how they relate to the

severity of headache. It will identify potential protective factors that may impact overall headache development. It will assess economic disparities and their association with chronic headache disorders. This research will help create a more holistic treatment approach to assist with both mental and physical health concerns.

Definition of Terms

- **Headache Disorder**
    - The experience of recurrent headache characterizes headache disorders. The headache is described as painful and disabling. Migraine, tension-type headache (TTH), and cluster headache are all types of headache disorders (WHO 2020).
- **Trauma**
    - Trauma is defined as an event or series of events that are experienced by an individual, which are physically and/or emotionally harmful or threatening. Acute trauma is defined as a single event. Chronic trauma is repeated and prolonged harmful incidents such as neglect or abuse. Complex trauma is defined as exposure to a myriad of traumatic experiences (Missouri Department of Mental Health 2020).
- **Post-Traumatic Stress Disorder**
    - PTSD is a mental health disorder that is caused by experiencing or witnessing a traumatic event.
    - The following symptoms characterize it by the American Psychological Association in the *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (2013):

        - Intrusive memories could include recurrent, unwanted memories of the traumatic event, flashbacks, nightmares, and/or emotional or physiological reactions when reminded of the event.
        - Avoidance symptoms include avoiding thinking or talking about the event and avoiding places, activities, or people that could remind one of the event.
        - Negative thinking and mood changes may include negative cognitions about oneself or others, hopelessness, memory difficulties, interpersonal difficulties, detachment from others, anhedonia, difficulty experiencing positive emotions and feeling emotionally numb.
        - Changes in physical and emotional reactions may include irritability, hypervigilance, being easily startled or frightened, self-destructive behaviors, sleep disturbances, concentration difficulties, and guilt.

- **<u>Adaptive Coping</u>**
    - The Adaptive Coping subscale as referenced for the Brief Coping Orientations to Problems Experience Scale (Carver 1997) includes:
        - Planning
        - Positive reframing
        - Acceptance
        - Humor
        - Religion
        - Use of emotional support
        - Use of instrumental support

- **Quality of Life**
    - Quality of life is defined by The World Health Organization Quality of Life Scale (WHO 2006), which is divided across four domains assessing the following:
        - Physical health
        - Psychological health
        - Social relationships
        - Environment
- **Protective Factors**
    - Protective factors are characteristics that are associated with a lower level of adverse outcomes (SAMHSA 2019).
- **Risk Factors**
    - Risk factors are biological, psychological, family, community, and cultural characteristics associated with a higher likelihood of adverse outcomes (SAMHSA 2019).

CHAPTER 2

REVIEW OF THE LITERATURE

Primary Headache Disorders

Primary headache disorders including migraine, tension-type headache (TTH), and cluster headache comprise about 98% of all headaches (Ahmed 2012). Primary headaches have no known underlying cause. Headache is the most prevalent at 48.9% of the population regarding nervous system disorders. Approximately 95% of the general population has experienced headache. The World Health Organization listed headache as one of the top 10 causes of disability (WHO 2001). For women, headache is within the top 5 leading causes of disability (Solomon & Price 1989). Approximately 50 to 75% of adults between the ages of 18 to 65 have experienced a headache within the last year. Of that percentage, 30% or more have reported migraine. Chronic headache defined by experiencing 15 or more headache days per month affects about 1.7 to 4% of the adult population (WHO 2012). 1 in 10 general practitioner consultations, 1 in 3 neurology referrals, and 1 in 5 acute medical admissions are due to headache (Ahmed 2012). 25 million working days are lost per year due to migraine in the UK (Steiner et al. 2003).

Migraine. According to the Global Burden of Disease Survey, migraine is the third most common disorder and the seventh-highest cause of disability in the world (Stovner et al 2007).

Migraines are categorized by their pulsating nature. They can be aggravated by physical activity (WHO 2012). Due to activity potentially worsening migraines, overall daily functioning can is impacted and can lead to absenteeism. Migraine can be with and without an aura. Auras are typically visual or sensory symptoms that are gradual that are sometimes accompanied by nausea, photophobia, and phonophobia (Rizzoli & Mullaly 2018). In approximately 60% of the general population, migraines are unilateral and of moderate to severe intensity (Rizzoli & Mullaly 2018). Migraines typically begin around puberty. Women are most affected by migraine at a rate of 2:1. It mostly affects those between the ages of 35 to 45. Migraines are recurrent and can last anywhere from a couple of hours to 3 days. Frequency of attacks can range from one a year to once a week. Within children, migraines may have a shorter duration and they may experience abdominal concerns (WHO 2012). Chronic migraine can either chronic or episodic. Chronic migraine is defined as having more than 15 headache days per month with the absence of medication overuse. Episodic migraine is defined as experiencing less than 15 headache days per month (Olesen et al. 2006).

Tension-type Headache. Approximately 80% of the general population experiences tension-type headaches. TTH is the most common of primary headache disorders. TTH is dull and bilateral in nature (Rizzoli & Mullaly 2018). It has been described as tightness or pressure of mild to moderate intensity. The Migraine Trust reports that TTH can be triggered by anxiety, stress, depression, and insomnia (2020). Langemark et al. (1988) reports that environmental factors in TTH. Additionally, factors like tenderness of the pericranial muscles, mental health disorders, and other mechanical disorders affecting the spine and neck can contribute to TTH. Unlike other types of primary headache disorders, TTH is not aggravated by physical activity (Rizzoli & Mullaly 2018). Episodic TTH, TTH that occurs

fewer than 15 days per month is reported by 70% of the general population. Chronic TTH, TTH that occurs more than 15 days per month is reported by 1 to 3% of the adult population (WHO 2012).

Cluster Headaches. Cluster headaches amongst the trigeminal autonomic cephalgia (TAC) headache subtype. TAC is a subtype of headache disorders by their short duration and their unilateral nature. They also feature autonomic symptoms such as lacrimation, rhinorrhea, conjunctival injection, and ptosis (Ahmed 2012). Cluster headaches have a lifetime prevalence rate of 0.12% (Fischera et al. 2008). Typically, cluster headache is more common amongst males than females with a ratio of 3.5 to 1. On average, cluster headache develops between the ages of 30 to 50. Approximately 65% of those with cluster headache are active smokers or have a history of smoking (Schurks et al. 2006). The Migraine Trust states that cluster headache can be triggered by alcohol, strong fumes, and exercise. Cluster headaches can last between 15 minutes to 3 hours. 80% of people with cluster headache report that cluster headaches occur 4 to 12 weeks per year around the same time each year. This is termed episodic cluster headache. The

other 20% report that they do not have free intervals without cluster headache. This is termed chronic cluster headache (2020).

Psychiatric Comorbidity

Research shows that post-traumatic stress disorder and migraine are correlated. However, within the context of this research, there has been a severe lack of diversity. This is due in part to the fact that 70% of migraine sufferers are women. This limits the sample size. According to the Migraine Research Foundation, the reasoning behind this phenomenon is due to estrogen levels. Not all migraines are hormonal, but they do account for the

discrepancy between men and women. It is also stated that 37% of women suffer from migraines after they begin their reproductive years (2017).

Post-traumatic stress disorder in both episodic and chronic migraine was further studied by Peterlin et al. (2007). The research assessed the frequency of self-reported post-traumatic stress disorder within patients that struggled with episodic and chronic migraine. The 60 participants were recruited from a headache center and have diagnoses of episodic, chronic, and transformed migraine. Over 90% of the participants were Caucasian women. Of those 60 participants, 53.3% of the participants were diagnosed with episodic migraines, and the others were diagnosed with chronic migraine. Post-traumatic stress disorder was measured through the use of the Life Events Checklist and the Civilian Version of the Post-traumatic Stress Disorder Checklist. The body mass index of each participant was another item that was measured due to the association between obesity and migraine as well as obesity and depression. The study found that those diagnosed with chronic migraine displayed greater instances of depression than those diagnosed with episodic migraines. Also, post-traumatic stress disorder was more common amongst those suffering from chronic migraine. It made note that of the 60 participants, 22 of

them stated they had a history of depression. The majority of which was diagnosed with chronic migraines. Of the 28 chronic migraine patients, 15 stated that they were diagnosed with depression. These findings are a clear example of how comorbid PTSD and depression are. It stated how life events studied were, "witnessed it, happened to me, and learned about it." 78% of the participants disclosed that the life event had happened to them and 93% reported it either happened to them or they had witnessed it. Researchers found that as the number of traumatic life events increased so did the chronic migraine/episodic migraine

index. However, it stabilized after three life events. Of the 3 participants with episodic migraine only 4 met the criteria for PTSD, but of the 28 participants with chronic migraine, 12 met the criteria for PTSD. The study concluded that a history of trauma and/or post-traumatic stress disorder diagnosis might be a risk factor for chronic migraines.

Primary headache disorders and depression are shown to be linked in previous research. Rozen & Fishman (2012) surveyed 1134 individuals, 816 men and 318 women to better understand cluster headache. They found that 55% reported suicidal ideation and 2% reported a previous attempt. Romano et al. (2020) 475 children, 290 being males and 185 females between the ages of 4 to 14. They found a significant association between headache and anxiety and depression. 27% of children with headache reported anxious and depressive symptoms in comparison to 8.3% of children without headache.

Lipton et al. (2020) surveyed 16,788 migraine patients. 74.4% of the participants were female, 84.0% were Caucasian, and the average age was 41. Chronic migraine participants reported depression of a rate of 56% in contrast to episodic migraine participants who reported 30%. 48.4% of chronic migraine and 28.1% of episodic migraine patients reported anxiety. 42.0% of chronic migraine and 20.0% of episodic migraine participants reported both depression and anxiety. They found that those who have a history of both anxiety and depression reported increased risk of moderate to severe disability of 79%.

McMurtay et al. (2013) assessed depression in both chronic primary headache and chronic post-traumatic headache patients. They studied 83 patients from a community-based general neurology clinic over 2 years. Of the 83 patients, 45 of which were diagnosed with chronic primary headaches (24 with chronic migraine headaches and 21 with chronic tension headaches), 24 with chronic post-traumatic headaches, and 14 with traumatic brain injury

(TBI) without headaches. They found that depression occurred in 33% of chronic post-traumatic headaches patients, 66.7% of chronic migraine patients, and 52.4% of chronic tension headache patients. They found that these findings did not significantly differ within the TBI without headache group. The model supported co-morbid depression in 74.7% of the studied cases.

Research has shown that primary headache disorders have been linked to psychiatric conditions. A history of trauma is a risk factor in developing comorbid headache disorders and mental health concerns. The abundance of the literature has studied women because they are the most commonly affected by headache. Although literature has pointed towards a link to mental health concerns specifically trauma and headache, there is still little research on why others do not develop these symptoms. There is little research on the impact of protective factors like social and familial support.

Klonowski et al. (2021) assessed psychological factors that are associated with headache frequency, intensity, and headache-related disability. They assessed 279 migraine patients during their initial visit at a tertiary headache center. The collected data measuring headache frequency, pain intensity and administered the Migraine Disability Assessment Scale (MIDAS), the Pain Disability Index (PDI), Hospital Anxiety and Depression Scale (HADS), the Pain Catastrophizing Scale (PCS), Pain-Related Control Scale (PRCS), and Avoidance Endurance Questionnaire (AEQ). The studied found a strong relationship between psychological factors and headache-related disability. They found depression, pain catastrophizing, and social avoidance to be strongly related to headache-related disability. Although anxiety was found more to be more prevalent (52%) within the sample, depression

was more strongly associated with headache-related disability and severity of migraine. The prevalence of anxiety within the study may be indicative of a risk factor for migraine.

Headache and Quality of Life

Pediatric Headache. Headaches are common amongst 60% of children or adolescents (Abu-Arafeh 2014). Headaches are amongst the top five health problems experienced in childhood (Dooley 2009). The most common of headache disorders being tension-type headache and migraine. By the age of 15, nearly 75% of youth report experiencing a headache and 25%

report experiencing chronic headaches (Dooley 2009). Recurrent headaches during youth are associated with an increased likelihood of psychological and physical concerns such as anxiety, depression, obesity, and sleep disorder (Ung et al. 2019). Children with migraine have an increased risk of developing major depressive disorder (Faedda et al. 2018).

Ung et al. (2019) studied the association between quality of life and pediatric headache. They surveyed 92 youths between the ages of 7 and 17 and their caregivers. They found that a child's quality of life was negatively correlated with anger, anxiety, depressive symptoms, catastrophizing, sleep disturbance, and missed school days. It was also found that quality of life was positively correlated with social roles. Pediatric headaches may make it difficult to engage in social and after-school activities. They may avoid participating in physical activities and due to missing school, may have difficulty engaging with their peers. Pediatric headache impacts children's overall day-to-day functioning and development. Due to headache, children may restructure their activities and may avoid events that may be potentially triggering. Children with pediatric headache may avoid social gatherings, playing on team sports, lights, and other potential headache triggers. It may in turn affect their overall

social life and may make it difficult to engage with their peers due to potentially missing school days and not engaging in other gatherings. A decreased quality of life in children is associated with anger, anxiety, and depressive symptoms that can continue into adulthood.

Employment. Headache disorders can impact daily functioning. The pain that headache sufferers can make it difficult to participate in social and work activities. In previous studies, it has been shown that 30% of patients experienced absenteeism due to cluster headache (Jensen et al. 2007). 20% of cluster headache patients reported job loss and 8% reported unemployment or being on disability (Rozen et al. 2011). In a study Schwartz, Stewart, and Lipton (1997) found

that 31% of participants reported that their work level was reduced by over 50% due to headaches.

Choi et al. (2018) assessed the impact of cluster headache on employment status and job burden in Korea. They studied 143 patients with cluster headache, 38 patients with other types of headache, and 52 headache-free participants from 2016 to 2018 from 15 headache clinics. They

found that only 67.6% of cluster headache patients were employed at the time of the study in

contrast to 84.2% of other headache disorder patients and 96.2% of headache-free participants. 84.8% of cluster headache patients experienced difficulties at work and required sick leave in comparison to 63.9% of other headache disorder patients and 36.5% of headache-free participants. Sick leave was found to be associated with younger age of onset within cluster headache participants.

Van der Doef and Schelvis (2018) assessed the relationship between job characteristics and work ability in employees with chronic headache. They collected data from 593 employees with chronic headache and 13,742 employees without chronic headaches. These patients were identified from The Netherlands Working Conditions Survey that was previously conducted in 2013. Work ability factors included, sick leave, employability, work engagement, and emotional exhaustion. Higher quantitative and emotional demands was found to be associated with higher emotional exhaustion in employees with chronic headaches. It is interesting to note that higher cognitive demands were associated with higher work engagement as well. Higher emotional demand was associated with higher sick leave. Higher autonomy and higher supervisor/colleague support were associated with higher employability and lower emotional exhaustion. Higher supervisor and colleague support was found to have a positive relationship with higher engagement. Supervisor support was negatively associated with sick leave. It was found that supervisor support was an indicator of emotional exhaustion in employees with chronic headaches. This study shows the impact specifically of supervisor support and how it is a protective factor within employees with chronic headaches. It also shows the importance of job characteristics in relation to employability and emotional exhaustion.

In a study, Stewart et al. (2003) sampled 28,902 working adults in the United States. They found that 13% of participants reported a loss of time at work during a 2-week period due to a pain condition. 5.4% reported headache, 3.2% reported back pain, 2.0% reported arthritis pain, and 2.0% reported other musculoskeletal pain. Participants reported missing approximately 4.2 days of work within a year due to headaches. $61.2 billion is lost per year due to common pain conditions. It was found that headache and level of education were

linked. This was because higher education level was shown to be associated with less physically demanding jobs. Also, higher education level was linked to better access to headache treatment.

Research has shown how individuals may make accommodations due to their headache pain. Headache pain is linked to absenteeism and may make it difficult to complete and concentrate on tasks. Further research is needed to assess whether the impact of headache affected career choice. Lower level of education has been shown to impact career options and with that, individuals are more likely to experience headaches due to the nature of careers available. Headache patients may choose careers that they may allow for more sick days to accommodate their headache.

Socioeconomic Status. Previous research has shown that low socioeconomic status is linked to increased headache severity and frequency. Hagen et al. (2002) in Norway surveyed 22,718 adults assessed the association between socioeconomic status and frequency of headache. Socioeconomic status was defined by education level, occupation, and income. They found that those with lower socioeconomic status had increased risk for frequent and chronic headache.

Decreased frequency and chronicity of headache was found to be associated with increased income amongst men.

Socioeconomic status is directly associated with access to care. Having a higher socioeconomic status allows an individual to be able to obtain the treatment they may need for both mental and physical concerns. With this in mind, their symptoms may be less severe or significantly improved. Also, stress has been shown to have a link to headache, instability regarding finances, housing, food, and other necessities may trigger more frequent

headaches. They also may be in careers that are more physically-tasking.

Trauma and Headache Disorders

Childhood Trauma. The American Migraine Foundation states that migraines/headaches come from stress. A stressful childhood could lead to physical and mental health symptoms. It is discussed how maltreatment is related to post-traumatic disorder and migraine due to the child never being able to feel safe. Research shows that those who have experienced childhood abuse are considerably more likely to experience headaches in adulthood than those who had "carefree" childhoods. The more severe the abuse is the higher the likelihood of developing headaches in addition to other pain conditions (2013).

Anda et al. (2010) studied how childhood maltreatment is correlated with chronic headache disorders. The study looked to specify and further study the different types of childhood maltreatment. They wanted to discover if different forms of childhood maltreatment had different effects or outcomes. The study incorporated data from the Adverse Childhood Experiences Study. The study included a large sample size of 17,337 adult members of the Kaiser Health Plan located in San Diego, California. The study measured eight adverse childhood experiences, which included "emotional, physical, and sexual abuse, witness domestic violence, growing up with mentally ill, substance-abusing, or criminal household members, and parents separation or divorce." In the study, it was found that in each of the eight adverse childhood experiences studied there was an increased risk of frequent headaches. There was no difference amongst the different types of adverse childhood experiences. All adverse childhood experiences concluded with the same effect.

The higher the Adverse Childhood Experiences score, the higher the risk of frequent headaches.

Research shows that the formative years are the most vital and impactful. They are a major factor or predictor of how someone will grow as an adult. If during those formative years that child experiences some form of trauma, that will impact them for years to come. According to Tietjen, Buse, & Collins (2016), “maltreatment during childhood increases vulnerability to a host of health disorders, including migraine.”

Tietjen et al. (2007) studied the correlation amongst trauma, migraine, and depression. Within this study, 949 women from six specialty headache clinics completed a survey assessing a history of maltreatment, headache characteristics, current depression, and somatic symptoms. Of the 949 participants, 40% had chronic headache, which would be defined as having greater than or equal to 15 headaches per month and 72% had "very severe headache-related disability"(Tietjen et al 2007). 18% were diagnosed with major depression. In the context of abuse, 38% reported physical or sexual abuse, while 12% said both physical and sexual abuse. Out of those diagnosed with major depression, it was found most frequent for them to report instances of abuse. Major depression was more common in women who reported sexual abuse before the age of 12. The study found that within women that childhood maltreatment was more common within those suffering from both migraine and depression than those suffering exclusively from migraine. This article again points to how depression, trauma, and migraine are all associated. An individual with a history of trauma has an increased chance of struggling with depression and with that have an increased chance of suffering from migraines.

Tietjen, Karmaker, and Amialchuk (2016) assessed the role of emotional abuse in

migraine. They analyzed data from 14,356 adults between the ages of 24 to 32. They found that 14% (n = 2,040) of the adults surveyed reported migraine. 60.6% of participants with migraine reported a history of childhood abuse in contrast to 48.9% of participants without migraine.

Consistently participants with migraine reported higher rates of abuse including emotional (57.8% vs. 45.4%), sexual (8.4% vs. 4.6%), and physical abuse (22.4% vs. 17.9%).

Tietjen et al. (2009) evaluated the relationship between childhood maltreatment and comorbid pain condition within patients with migraine. They studied 1,348 patients with migraine. 88% of the patients identified as women and were around 41 years old. 31% of participants were diagnosed with irritable bowel syndrome, 16% chronic fatigue syndrome, 10% fibromyalgia, 6.5% interstitial cystitis, 25% arthritis, and in women, 15% endometriosis, and 14% uterine fibroids. At least 1 comorbid pain condition was reported by 61% of participants, 2 by 18%, and 3 or more by 13%. 58% of participants reported childhood maltreatment. They found that childhood maltreatment may be a risk factor in the development of comorbid pain conditions. Additionally, Tietjen et al. (2010), assessed the 1,348 participants to determine the relationship between childhood abuse and neglect and migraine characteristics. They found that 40% of participants reported migraine with aura and 34% reported chronic headache. 26% of participants reported transformation from episodic to chronic. Participants reported a prevalence rate of depression of 28% and anxiety of 56%. Of the participants that disclosed childhood maltreatment, 21% reported physical abuse, 25% sexual abuse, 38% emotional abuse, 22% physical neglect, and 38% emotional neglect. Researchers found that physical abuse, emotional abuse, and emotional neglect were associated with chronic and transformed migraine. They also found that emotional neglect

was associated with continuous daily headache, severe headache- related disability, and migraine-associated allodynia. Childhood emotional abuse was linked to a younger median age of headache onset.

Military Sexual Trauma. Previous research has shown a link between trauma and chronic pain conditions. Cichowski et al. (2017) assessed the association between specifically military sexual trauma in women and chronic pain conditions. 22.5% of participants reported a history of MST. 28.9% of participants were diagnosed with headaches, 18.3% with chronic pelvic pain, 14.4% chronic back pain, 10.5% nonspecific joint pain, 9% fibromyalgia, 6.2% generalized abdominal pain, 4.2% irritable bowel syndrome, and 3.2% with dyspareunia. They found that women who reported MST were typically younger, heavier, Caucasian, and smoked. Those with a history of MST had typically more chronic pain conditions than those who did not have a history of MST. A positive correlation amongst pain, drug abuse, and drug overdose was found within female Veterans with a history of MST. These results were shown in an additional study. Turner et al. (2020) surveyed 328 Veterans that were seeking care for chronic pain. They

found that 31.4% of Veterans reported a history of MST. There was a significant interaction between MST and age. Younger Veterans with a history of MST reported greater pain disability.

It has been shown that trauma and chronic pain conditions have a relationship. It is of note that within the research potential risk factors for headache such as smoking and obesity have also been linked to mental health concerns. It would be interesting to note whether those potential methods of coping followed the traumatic event and increased their likelihood of headache. It has been shown that counseling can decrease pain symptoms, but little research

has shown the impact on trauma-based therapy on chronic pain conditions.

Coping with Headache

Research has explored the ways that people with chronic pain cope and have assessed the effectiveness of psychological intervention. Chiros and O'Brien (2011) collected data from 74 participants with migraines. The participants completed self report measures that assessed appraisal, coping strategies, acceptance, and pain-related disability. 63 of the participants completed a 28-day diary, which focused on headache activity, catastrophizing, control, acceptance, and coping strategies. The study found that acceptance was negatively associated with catastrophizing and pain-related interference. Acceptance was found to be positively associated with perceived control and level activity. Participants who had higher levels of acceptance also tended to not engage in less coping strategies daily.

Holyroyd and Andrasik (1978) placed 39 participants into one of two self-control treatment groups, headache discussion group, or a symptom-monitoring control group. Participants in the two self-control treatment groups and headache discussion group were taught to monitor their cognitive responses to stressful situations. Additionally, participants in the two self-control treatment groups were taught cognitive or both cognitive and relaxation skills in order to reduce tension headache. Participants in the headache discussion group discussed to the roots of their headache symptoms. Participants who engaged in the self-control group and the headache

discussion group saw marked improvement in the headaches that continued to be shown at a 6-week follow-up. Participants who engaged in the symptom-monitoring control group did not see a difference in their headache symptoms. This research shows the impact of cognitive interventions and how they can help reduce headache symptoms. It also points to the

effectiveness of treatment interventions such as CBT for chronic pain.

Slettbakk et. al. (2006) explored the coping strategies of women with episodic tension-type headaches. They conducted focus-groups with 15 women between the ages of 20 to 60. Participants were recruited into 3 different groups based on age. They found that women endorsed the need for rhythm and balance in their actions. They described experiencing a decrease in severity level of headaches when they engaged in more mindful eating behaviors. They also endorsed the need to drink water and coffee in order to manage headaches. Sleep was also highlighted as essential. Participants reported engaging in thermal modulation in order to manage headache symptoms. Engaging in regular exercise and management of their own health behaviors is important. Acceptance was endorsed citing the need to learn to live with the headaches. They noted the importance of pacing, taking charge of their time and level of commitment. It is important to acknowledge that they may not be able to do everything and that being okay.

Konuk et. al. (2011) assessed 11 patients (9 women, 2 men) with chronic daily headache at a hospital in Turkey. Participants had a history of migraine ranging from 2 to 30 years. Investigators assessed the frequency of headache, duration, intensity, medication intake, emergency room visits, and Symptom Assessment-45 Questionnaire scores. The investigators studied the effectiveness of eye movement desensitization and reprocessing (EMDR) on migraines. They found a decrease in headache frequency and duration following engagement in EMDR. They also found a decrease in the use of pain medication and emergency room visits. They found that these findings were maintained at the 3-month follow-up.

Post-traumatic Stress Disorder and Protective Factors

Men are at a greater risk than women to be exposed to stressful events, however, women are twice as likely to develop PTSD. Women are specifically more likely to experience physical or sexual abuse in comparison to men who are more likely to experience combat, crime victimization, and to witness a killing or injury. As one ages, the more likely they are to experience trauma. Childhood trauma is linked to difficulties in development, attachment, and emotional regulation. African-American individuals are more likely to experience physical assault or robbery, while Caucasian individuals are more likely to experience sexual assault.

Lesbian, gay, bisexual, and transgender are likely to experience emotional abuse associated with sexual orientation, religious abuse, intimate partner violence, hate crimes, and legal bias (Center for Substance Abuse Treatment 2014).

The relationship between post-traumatic stress disorders and protective factors has been well studied. Protective factors can include social support, age, marital status, religion, ethnicity, socioeconomic status, personality traits, as well as a myriad of other variables that benefit an individual's overall well-being. Stanley et. al (2019) studied the role of social support in PTSD amongst firefighters. They surveyed 840 U.S. firefighters, 91.1% being male. They found that greater feelings of belongingness were associated with lower levels of PTSD symptoms. In an additional survey, they studied 200 U.S. women firefighters. They found that social support from their supervisors was strongly associated with lower PTSD symptom severity.

Andu et. al. (2018) studied risk and protective factors of PTSD amongst African-American women with HIV. They examined 239 participants and found that 67% of which

reported PTSD symptoms. It was found that older age, social support, and higher education acted as protective factors and help reduce the risk of PTSD symptoms. Internalized stigma regarding HIV was found to be a risk factor.

In a study with 156 combat-exposed student veterans, Kinney et al. (2020) found that participants with low life meaning reported more severe health-related symptoms than those with high life meaning. Depression was found to be associated with low life meaning. Meaningful activity was found to be associated with life meaning and greater social support was associated with high life meaning. Another study examining veterans examined protective factors and suicidal ideation (Elbogen et. al. 2020). In this study, 1090 veterans were assessed from all 50 states. They found that lower suicidal ideation was associated with protective factors including employment, social support, spirituality, resilience, meeting basic needs, self-care, and self- determination. The study supported that mental health services should also work to improve basic functioning such as living, financial, and vocational. Mental health services should work on increasing social, psychological, and spiritual wellbeing. Research has shown that homelessness and financial concerns have been associated with suicidal ideation and behavior (Tsai & Cao 2019). Perceptions of control over the future have been linked to increased capacity to cope with mental health concerns (Gerstorf 2014).

Nichter et al. (2020) studied risk and protective factors associated with PTSD and depression in military veterans. They assessed 2,732 veterans and found that 4.8% screened positive for PTSD and 1.7% screened positive for PTSD and MDD. Of those screened positive for PTSD, 47.4% met criteria for MDD. It was found that the number of lifetime trauma events was correlated to PTSD/MDD comorbidity. Each reported traumatic event

increased the odds of having comorbid MDD by 33%. In contrast to previous research (Calhoun et al. 2005), it was found that frequent engagement in spiritual or religious activities was associated with increased risk for comorbid PTSD/MDD. This could be due to a "maladaptive interpretation of traumatic events." It could also be that veterans who have comorbid PTSD/MDD are more likely to engage in more spiritual or religious activities as a means to cope and seek support. Optimism and community integration were associated with lower risk for MDD (Nichter et al. 2020).

Protective factors can be inherent traits or achieved. Social support has been consistently shown to be a mediator regarding mental health concerns. This is due in part to mental health concerns can be isolating in nature. A sense of belonging and togetherness can be beneficial to one's overall well-being. Being engaged and taking part in events can help one make meaning. Meaning decreases suicidal ideation and depressive symptoms.

Stress

Stress is a physiological response to a situation or event. Chronic or long-term stress can have negative effects on one's overall health. In chronic stress, one's body has not returned to functioning previous to the stressful event. The body is still signaling to continue the "lifesaving reactions" even though they may not be no longer needed (NIMH 2020). Stress impacts the endocrine, autonomic nervous system, and immune system. Long-term stress has been linked to the loss of hippocampal dendrites or neurons (Sapolsky 1996). Individuals with stress may experience digestive issues, headaches, insomnia, sadness, anger, or irritability. Chronic stress has been associated with high blood pressure, heart disease, diabetes, and other illnesses (NIMH 2020).

Anxious or stressful feelings are prevalent amongst headache sufferers (Martin 2000).

Increased anxiety has been linked to an increase in headache pain intensity (Nicholson et al. 2007). Anxiety within headache sufferers has been associated with greater disability, poorer quality of life, and increased cost of care (Holroyd et al., 2000). Nash and Thebarge (2006) state that stress can be a "(a) predisposing factor that contributes to headache disorder onset, (b) accelerate the progression of the headache disorder into a chronic condition, and (c) precipitate and exacerbate individual headache episodes." In a study, D'Amico (2000) found that within a population of 267 Italian patients with chronic headache that stress acts as a trigger to headache. They found that episodic headache transformed into chronic headache in about 90% of cases.

44.8% of which reported that a stressful event was correlated with the transformation.

Social Support. Social support is a strong protective factor in reference to both mental and physical health. In a study, Wang et al. (2014) assessed 632 undergraduate students in China. The researchers examined the moderator effect of social support on the relationship between stress and depression. They found that students with high stress reported higher levels of depression than those with low stress and lower levels of social support. They found a link between levels of stress, depression, and a low level of social support. They found that social support acted as a regulator for stress and depression levels.

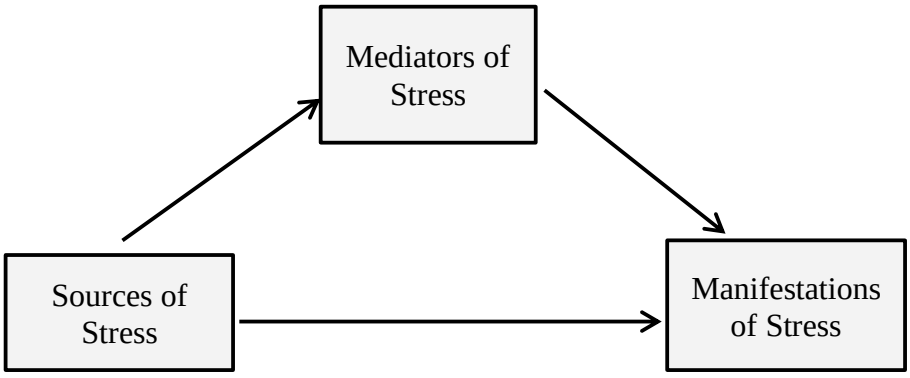
Baqutayan (2011) assessed 120 students to study the role of social support on stress. It was found that social support helps reduce stress, however, high perceived availability of social support could have a negative impact. It was found that students who reported that their friends

were a major source of social support were at risk for poor adjustment. Over-reliance on social support and also inappropriate social support can have a negative impact on an

individual, therefore, social support based on counseling lessons was suggested.

Stress Process Model. The Stress Process Model was developed by Pearlin et al. (1981). The process contains three domains: the sources of stress, the mediators of stress, and the manifestations of stress. The source of stress can be a specific event, general life stressors, or linked to self-concept. A loss of self-esteem or role strains can be incredibly stressful. Mediating resources are behaviors, perceptions, and cognitions, that alter the stressful condition or mediate their impact. Pearlin et al. (1981) cited specifically social support as a potential mediator for stress. They also cited coping as a mediator. Coping functions by modifying contributors to stress, modifying the meaning of the stressors, and managing stress-related symptoms.

Manifestations of stress can be both psychological and physiological. In terms of this study, post- traumatic stress disorder, depression, and headache will be assessed as potential manifestations of stress.



Conclusion

Headache is the most prevalent nervous system disorder. It is in the top 10 causes of disability. Yet, there is still little research on psychological factors that can contribute to it. The research on headache is heavily focused on women specifically Caucasian women, although, ethnic minorities have a higher prevalence of headache disorder. Research on the

link between headache and trauma is sparse. There is still more to be studied.

Trauma and post-traumatic research disorder research are heavily filled with military veterans. Previous research has shown an association between trauma and chronic pain. There has been research on protective factors and trauma, but little research on protective factors and chronic pain disorders specifically with trauma. Addressing the limitations of previous research is essential. It would be of note to study how trauma impacts underrepresented groups.

Protective factors and contextual variables are severely lacking in the literature. There is a lack of sensitivity to different economic groups and environmental factors. This deficit shows that there needs to be future research evaluating how environmental factors such as family support and environment can play an integral role in chronic headache disorders and trauma. The stress process model supports that social support and coping can be potential mediators to stressful events and in turn may reduce manifestations of stress such as headache. This study seeks to explore these relationships.

CHAPTER 3 METHODOLOGY

This chapter addresses the study's research questions and hypotheses, participants, instrumentation, procedures, and data analysis. The study tested a modified version of the stress process model and assessed relationships among background (e.g., demographics), trauma, mediators (e.g., adaptive coping) and related health outcomes (e.g., headache, quality of life).

Participants

Participants were recruited from Mercy Health Center, located in Athens, Georgia. Mercy Health Center is a free primary-care clinic that provides care for uninsured patients. Study recruitment included the use of flyers in the waiting area of the clinic. Participants were also called directly if they had endorsed a history of headache during their initial primary care visit. A total of 151 patients were contacted who met criteria for the study. Of this group, 64 agreed to take part in the study. 34 patients successfully completed the study with a response rate of 53%.

Participant Characteristics

Participants included 34 patients (8 males and 26 females) with a history of headache. Participants were above the age of 18 and were predominately between the ages of 35 to 44 (26%), Caucasian (62%), and single, never married (38%). Participants' highest education level of attainment was a high school diploma/GED (35%) and held an annual income of less than $25,000 (62%). They predominately noted their first troublesome headache to be prior

to the age of 17 (53%) and experiencing weekly headaches (71%) over the past year. Refer to Table 1 for demographic characteristics.

Table 1.

Demographic Characteristics	Frequency	Percentage
Age		
18-24 years old	6	17.6%
25-34 years old	9	26.5%
35-44 years old	6	17.6%
45-54 years old	8	23.5%
55-64 years old	4	11.8%
65+ years old	1	2.9%
Gender		
Male	8	23.5%
Female	26	76.5%
Race/Ethnicity		
White or Caucasian	22	64.7%
Black or African American	10	29.4%
American Indian/Native American or Alaska Native	1	2.9%
Asian	1	2.9%
Prefer not to say	1	2.9%
Native Hawaiian or Other Pacific Islander	0	0.0%
Other	0	0.0%
Marital Status		
Married	5	14.7%
Living with a partner	3	8.8%
Widowed	3	8.8%
Divorced/Separated	10	29.4%
Never been married	13	38.2%
Education		
Some high school or less	6	17.6%
High school diploma or GED	12	35.3%
Some college, but no degree	7	20.6%
Associates or technical degree	5	14.7%
Bachelor's degree	2	5.9%
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)	1	2.9%
Prefer not to say	1	2.9%
Income		

$25,000-$49,999	7	21.2%
Less than $25,000	21	63.6%
$50,000-$74,999	1	3.0%
Prefer not to say	4	12.1%

Procedure

During a patient's initial primary care visit, providers asked if the patient experiences headaches. Patients who responded in the affirmative were notified of the study and asked if they are interested in enrolling. The research staff member then discussed the consent process and obtained the email address of the patient in order to send the Qualtrics survey, which included the consent form and HIPAA authorization form. The consent form that was given to the participant detailed the nature of the study, duration, risks, and benefits. After signing the consent form, the participant was able to continue on to complete the survey.

Participants recruited through use of flyer contacted the investigator at the provided phone number. The investigator asked if the patient has a history of headache and further explained the study. If the patient met the inclusion criteria and agrees to the study, the investigator collected their email address and sent the Qualtrics survey and consent form. After consenting to the study, they were able to continue onto the Qualtrics survey. After completing the survey, participants were sent a $15 e-gift card to Walmart. Upon scoring, participants who displayed high levels of distress were contacted in order to discuss therapeutic options.

Measures

The following measures were utilized in order to assess headache, quality of life, trauma, and adaptive coping.

Demographic Questionnaire

A demographic questionnaire was used to collect the following: age, gender, household income, highest level of education, ethnicity, where they were recruited, and if they have insurance.

Clinical Headache Questionnaire

Participants completed a 26-page headache questionnaire to assess for characteristics of headache as defined by the International Classification Headache Disorders, Edition 3 (ICHD-3). The questionnaire assessed frequency, severity, and type of primary headache disorder. It assessed potential triggers, risk factors, and previous treatment. The questionnaire asks about severity of headache on a 10-point scale ranging from 1 (no pain) to 10 (worst pain imaginable). The questionnaire assesses both lifetime and headache within the past year. It asks the location of headache pain and symptoms such as dizziness, nausea, and fatigue. It assesses the time frame of headache and if it happens at a certain time of day or season. Additionally, the survey asks within the past 3 months, how many days of work were missed.

The World Health Organization Quality of Life Scale

The WHOQOL-BREF is a subset of 26 items from the original 100 item questionnaire. It is divided into four domains: physical health, psychological health, social relationships, and environment. It has been shown to display good discriminant validity, content validity, and test-retest reliability. Taylor et. al. (2004) assessed the psychometric properties of the WHOQOL-BREF in a study assessing the treatment effectiveness in people with rheumatoid arthritis. They found adequate internal consistency except for within the social relationships domain: physical health (.87), psychological (.82), social relationships (.64), and environment (.82). Test-retest reliability scores were found to be adequate (scores

ranged from .72 to .91). Correlations with the Health Assessment Questionnaire Disability Index indicated a good fit with the WHOQOL-BREF. The current study focused on overall quality of life. The physical health domain of quality of life was also assessed. However, the reliability analysis found it to have poor internal consistency with a Cronbach's alpha of .33 and thus was not utilized. For the purpose of this study, their response on a likert-scale from 1 to 5 was analyzed assessing their overall satisfaction with their current quality of life.

Impact of Events Scale

The Impact of Events Scale-Revised (IES-R) is a 22-item self- report rating inventory that assesses subjective distress caused by traumatic events (Weiss 2007). Respondents identified a specific traumatic or stressful event and report how much they were distressed during the past seven days. It utilizes a 5-point scale ranging from 0 ("not at all") to 4 ("extremely"). A total score can range from 0 to 88 and subscale scores can be determined for the Intrusion, Avoidance, and Hyperarousal subscales. It has reported high internal consistency

subscale scores ranging from 0.84 to0 .85 for the intrusion scale, 0.79 to 0.90 for the avoidance scale, and 0.79 to 0.90 for the hyperarousal scale. It was also found to have a good test-retest correlation coefficient from 0.57 to 0.94 (Weiss & Marmar 1997). Arcaya et al (2017) assessed the association of PTSD with migraine and headache after Hurricane Katrina. They found a strong association between PTSD symptoms and headache. Within the study, the IES-R was used to measure hurricane-induced PTSD Symptoms. In the study, Cronbach's alpha reliability for the IES-R full and subscales were full-scale =0.95, Intrusion = 0.90, Avoidance = 0.84, and Hyperarousal =0.89 displaying good psychometric properties. When assessing the reliability of the IES-R for the present study, it was found to have good

internal consistency with a Cronbach's alpha of .92.

Brief Coping Orientations to Problems Experienced Scale

The Brief COPE is a 28- item self-report measure assessing coping responses to stressors. It utilizes a 4-point Likert scale to assess frequency of coping responses ranging from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot"). The scale contains 14 two-item subscales including, self- distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. Additionally, the scale is devised into Adaptive and Maladaptive Coping subscales. The Adaptive Coping subscale includes active coping, planning, positive reframing, acceptance, humor, religion, use of emotional support, and use of instrumental support. A possible range on the Adaptive Coping subscale is 0 to 48 with higher scores indicating a greater use of adaptive coping. The Maladaptive Coping subscale includes self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame. A possible range on the Maladaptive Coping subscale is 0 to 36 with higher scores indicating greater use of maladaptive coping. A factor-analysis with 273 heart failure patients divided the aforementioned subscales into Avoidant and Approach Coping Composite Score scales. Previous research has supported validity regarding the testing measure (Carver, Scheier, & Weintraub 1989; Carver 1997; Eisenberg et al. 2012). For this study, a reliability analysis was utilized. Adaptive coping was found to have good internal consistency with a Cronbach's alpha of .91.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) was used to conduct the

study's major data analytic activities. Six, direct, non-mediated relationships were quantified using correlation. These include adaptive coping and headache severity, trauma severity and headache severity, trauma and headache symptoms and quality of life, trauma and adaptive coping, and adaptive coping and quality of life. Two mediated relationships were tested using the multiple regression analysis. They assessed the impact of trauma and headache severity on quality of life and the impact of adaptive coping on trauma and headache severity. Additionally, maladaptive coping was assessed in order to determine any other possible findings related to trauma impact, headache severity, and quality of life. These relationships were assessed using Pearson's correlational analysis and a mediational analysis. Hierarchical regression and Pearson correlation coefficients were utilized in order to assess the relationship amongst headache severity, trauma impact, quality of life, and coping. Baron and Kenny's model of mediation was utilized to assess potential mediators. This 4-step approach was utilized due to the limited sample size and in order to assess other potential relationships amongst variables. Baron and Kenny's (1986) model assesses the relationships between the independent and dependent variable, the independent and mediating variable, the mediating variable and the dependent variable. This 4-step approach allows one to fully examine how all variables interact.

Aim 1: To evaluate the relationship between trauma severity and headache severity.

Hypothesis 1: There is a positive relationship between trauma and headache severity.

Aim 2: To evaluate the relationship between adaptive coping and headache severity.

Hypothesis 2: There is a negative relationship between adaptive coping strategies and headache severity.

Aim 3: To evaluate the relationship between trauma and adaptive coping.

Hypothesis 3: Less trauma impact will be associated with more adaptive coping strategies.

Aim 4: To evaluate adaptive coping as a mediator to trauma and headache severity.

Hypothesis 4: Adaptive Coping will be a mediator to trauma impact and headache severity.

Aim 5: To evaluate the role of headache and trauma on quality of life.

Hypothesis 5: Headache and trauma symptoms will be negatively associated with quality of life.

Aim 6: To evaluate the relationship between adaptive coping and quality of life

Hypothesis 6: Adaptive coping will be positively associated with quality of life.

Aim 7: To evaluate the role of adaptive coping as mediator to trauma and quality of life.

Hypothesis 7: Adaptive coping will be a mediator to trauma and quality of life

CHAPTER 4 RESULTS

Of 34 participants, almost all participants reported experiencing chronic or episodic migraines, which are categorized by the sensation of throbbing and pulsating pain. This is consistent with previous literature. Participants also indicated predominately experiencing chronic or episodic tension headaches and to a much lesser degree cluster headaches.

Descriptives

Participants were asked to complete a 45-minute survey that assessed headache severity and characteristics, trauma, coping strategies, and quality of life. Descriptive statistics included calculating the mean, standard deviation, and ranges. Refer to Table 2 for descriptive statistics for trauma impact, headache severity, adaptive coping, maladaptive coping, and quality of life.

Trauma Impact

Overall trauma impact was assessed using the IES-R. Participants with a score greater than or equal to 33 met criteria for a possible PTSD diagnosis. The majority of patients (62%) scores were above the 33 cut-off indicating a severe level of trauma impact (M = 40.68, SD = 18.40). Refer to table 2 for descriptive statistics for all variables assessed. These findings are similar to the literature in that Tietjen, Karmaker, and Amialchuk (2016) found that of 2,040 participants with migraines, 60.6% endorsed a history of trauma.

Quality of Life

Quality of Life was assessed using the WHOQOL-Bref and was assessed across the four domains including physical health, psychological health, environment, and social relationships.

Overall quality of life was rated on a scale asking how would one describe their quality of life from 1 (very poor) to 5 (very good). Participants predominately were in the "neither poor nor good" to "good" range (*M*=3.41, *SD*=0.92).

Headache

Headache severity was rated on a scale from 0 (no pain) to 10 (worst pain imaginable). Participants indicate predominately moderate to severe headache pain (*M* = 7.30, *SD* = 1.66). Previous research has focused on participants with chronic migraine and chronic tension headache (McMurtay et al. 2013). Prior research participants were predominately recruited from neurology clinics and endorsed moderate to severe headache symptoms (Lipton et al 2020).

Coping

Coping was assessed using the Brief COPE, which included adaptive and maladaptive coping strategies. Participants indicated a high use of adaptive coping strategies, which included active coping, acceptance, humor, positive reframing, use of emotional support, use of instrumental support, religion, and planning (*M* = 38.44, *SD* = 10.33). Participants indicated a moderate amount of maladaptive coping strategies, which include self-distraction, denial, substance use, behavioral disengagement, venting, and self-blame (*M*=22.76, *SD*=6.45).

Table 2.

Total Sample (*N*=34)	Min.	Max.	*M*	*SD*
Trauma	0	70	40.68	18.40
Headache Severity	3	10	7.29	1.66
Adaptive Coping	18	63	38.44	10.33
Maladaptive Coping	9	40	22.76	6.45
Quality of Life	2	5	3.41	0.93

Table 3.

Correlations

	Adaptive Coping	Maladaptive Coping	Impact of Events	Quality of Life
Adaptive Coping	--			
Maladaptive Coping	.360*	--		
Impact of Events	.097	.662**	--	
Overall Quality of Life	.212	-.420*	-.384*	--
Headache Severity	.194	.176	.256	-.259

Hypotheses

Hypothesis 1: There is a positive relationship between trauma and headache severity

Trauma was assessed using the Impact of Events-Revised Scale. Headache severity was assessed on a likert scale from 1 to 10. A Pearson correlation coefficient was computed to assess the linear relationship between trauma and headache severity. A relationship was not found between the two variables, $r(34) = .26$, $p=.14$.

Hypothesis 2: There is a negative relationship between adaptive coping strategies and headache severity

Hypothesis 2a: Adaptive Coping. A Pearson correlation coefficient was computed to

assess the linear relationship between adaptive coping strategies and headache severity. There was no relationship between the two variables, r(34) = .19, *p*=.27.

Hypothesis 2b: Maladaptive Coping. Additionally a correlational relationship between maladaptive coping and headache severity was assessed. There was no relationship found between the two variables r(34) = .17, *p*=.32.

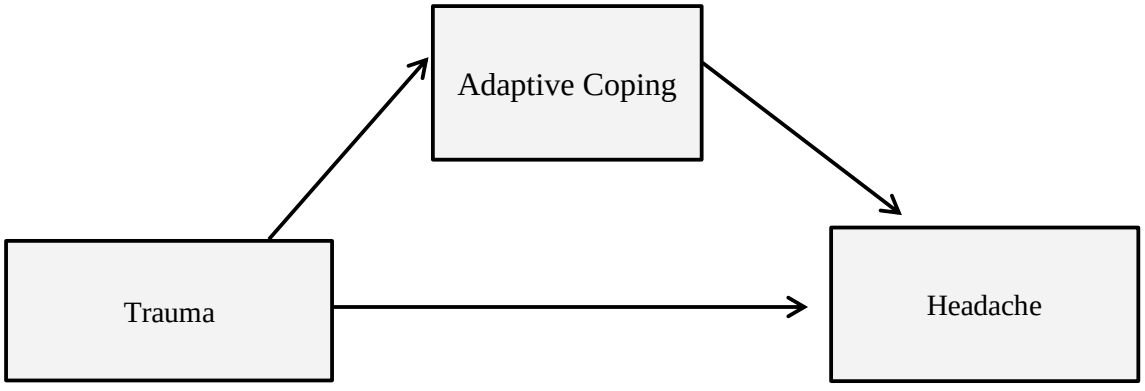
Hypothesis 3: Less trauma impact will be associated with more adaptive coping strategies.

Hypothesis 3a: Adaptive Coping. A Pearson correlation coefficient was computed to assess the linear relationship between trauma impact and adaptive coping. There was no relationship found between the two variables, r(34) = .10, *p*=.58.

Hypothesis 3b: Maladaptive Coping. However, there was a relationship found between trauma impact and maladaptive coping, r(34) = .66, p<.01. It was found that a higher level of trauma impact was significantly correlated with a higher level of maladaptive coping strategies.

Hypothesis 4: Adaptive Coping will be a mediator to trauma impact and headache.

Table 4.



Hypothesis 4a: Adaptive Coping. Baron and Kenny's model of mediational analysis was utilized in order to assess this relationship. Adaptive coping was not found to be a mediator to trauma impact and headache severity.

Hypothesis 4b: Maladaptive Coping. Maladaptive coping was also assessed as a potential mediator to trauma impact and headache severity. Trauma impact was not found to be significant relationship with headache severity, $r(34) = .26$, $p=.07$. Trauma impact was shown to have a positive relationship with maladaptive coping, $r(34) = .66$, $p<.01$. Maladaptive coping was not found to have a relationship with headache severity, $r(34) = .18$, $p=.16$. As only a statistically significant relationship was found in one relationship, the overall model was not significant, $R^2 = .07$, $F(2,31) = 1.09$, $p=.35$. Refer below for tables concerning the model.

Table 5a.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.26[a]	.07	.04	1.63	.07	2.24	1
2	.2[b]	.07	.01	1.66	.000	.003	1

a. Predictors: (Constant), Impact of Events

b. Predictors: (Constant), Impact of Events, Maladaptive Coping

Table 5b.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.971	1	5.971	2.246	.144[b]
	Residual	85.087	32	2.659		
	Total	91.059	33			
2	Regression	5.979	2	2.990	1.089	.349[c]
	Residual	85.080	31	2.745		
	Total	91.059	33			

a. Dependent Variable: Headache Severity

b. Predictors: (Constant), Impact of Events

c. Predictors: (Constant), Impact of Events, Maladaptive Coping

Table 5c.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	6.354	.687		9.246	.000
	Impact of Events	.023	.015	.256	1.499	.144
2	(Constant)	6.311	1.058		5.965	.000
	Impact of Events	.022	.021	.248	1.071	.293
	Maladaptive Coping	.003	.060	.012	.053	.958

a. Dependent Variable: Headache Severity

Hypothesis 5: Headache and trauma symptoms will be negatively associated with quality of life.

Hypothesis 5a: Headache. A Pearson correlation coefficient was computed to assess the linear relationship between headache severity and quality of life. The relationship was not found to be statistically significant between headache severity and quality of life, r(34) = -.256, p=.14.

Hypothesis 5b: Trauma. The relationship between trauma and quality of life was assessed. There was a negative relationship between the two variables, r(34) = -.38, p=.03. This indicates that a higher level of trauma impact is associated with a decreased quality of life.

Hypothesis 6: Adaptive coping will be positively associated with quality of life.

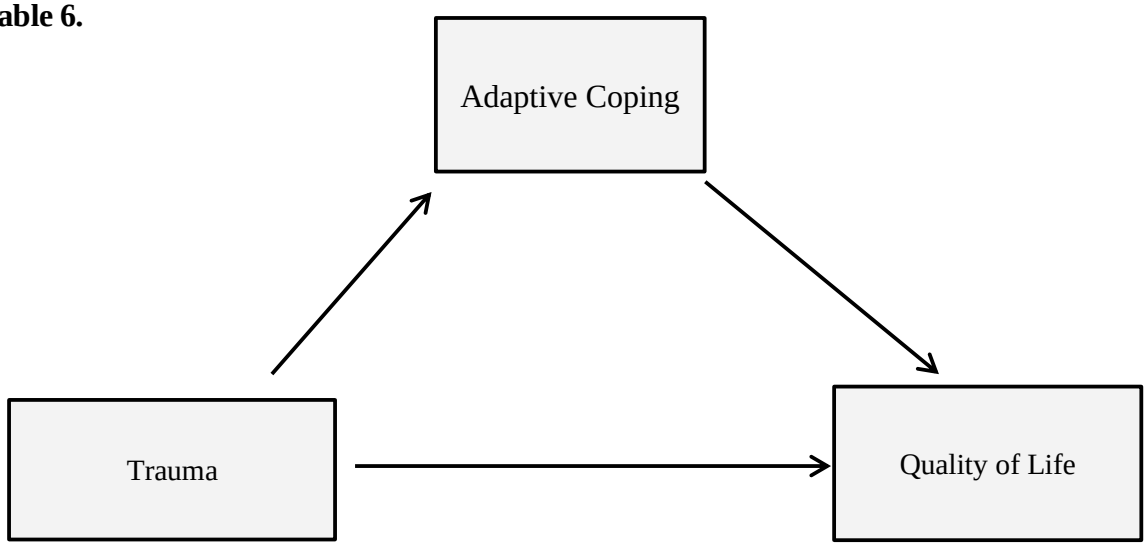
Hypothesis 6a: Adaptive Coping. A Pearson correlation coefficient was computed to assess the linear relationship between adaptive coping strategies and quality of life. Quality of life was assessed on a likert scale ranging from 1 to 5. There was no relationship found between the two variables, r(34) = .21, p=.23.

Hypothesis 6b: Maladaptive Coping. The relationship between maladaptive coping

strategies and quality of life, however, produced statistically significant results. There was a negative correlation between the two variables, r(34) = -.42, p=.01. This indicates that the use of more maladaptive coping strategies is associated with a decreased quality of life.

Hypothesis 7: Adaptive coping will be a mediator to trauma and quality of life.

Table 6.



Hypothesis 7a: Adaptive Coping. Baron and Kenny's model of mediational analysis was utilized to assess this relationship. It was found that adaptive coping was not found to be a mediator to trauma impact and overall quality of life.

Hypothesis 7b: Maladaptive Coping. Due to maladaptive coping having statistically significant relationships with trauma impact and quality of life, it was further assessed as a potential mediator. It was found that trauma impact was a significant predictor of quality of life, R^2 = .15, $F(1,32)$ = 5.53, p=.03. Trauma impact was found to be a significantly correlated to quality of life, r(34) = .66, p<.01. Maladaptive coping and overall quality of life were found to

have a negative relationship, r(34) = .01, p<.01. Although significant relationships were found amongst the variables, maladaptive coping, trauma impact, and quality, maladaptive coping was not found to be a mediator, β= -.30, *p*=.18. Refer below for the tables concerning the model.

Table 7a.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.384[a]	.147	.121	.86743	.147	5.525	1	32	.025
2	.443[b]	.196	.145	.85552	.049	1.897	1	31	.178

Table 7b.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.157	1	4.157	5.525	.025[b]
	Residual	24.078	32	.752		
	Total	28.235	33			
2	Regression	5.546	2	2.773	3.789	.034[c]
	Residual	22.689	31	.732		
	Total	28.235	33			

a. Dependent Variable: Overall Quality of Life
b. Predictors: (Constant), Impact of Events
c. Predictors: (Constant), Impact of Events, Maladaptive Coping

Table 7c.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.197	.366		11.481	.000
	Impact of Events	-.019	.008	-.384	-2.351	.025
2	(Constant)	4.762	.546		8.715	.000
	Impact of Events	-.009	.011	-.188	-.875	.388
	Maladaptive Coping	-.042	.031	-.296	-1.377	.178

a. Dependent Variable: Overall Quality of Life

Other Findings

Headache Characteristics

Patients reported that they predominately experience headache weekly ranging from 1 to 6 times per week. They noted first experiencing troublesome headaches between the ages of 2 to 40 with most noting prior to the age of 17. Most patients described feeling as though over the last year the severity and frequency of their headaches as staying the same or worsening.

The headaches that participants can be debilitating, however, they did not endorse a lower quality of life. This is of note as participants reported headaches to impact their ability to attend to social, leisure, and family activities. Only 3 of the 34 participants denied headaches impacting their social lives. Participants predominantly indicated that headaches prevented them from attending events between 1 to 40 times over the last 3 months. They also reported that headaches impact their productivity in completing household work ranging from 1 to 80 days over the last 3 months with participants typically reporting 10. Participants

described headaches impacting their work with one patient stating that they have missed 15 to 17 days of works over the last 3 months. One patient reported that they "push through the pain." Overall, participants acknowledged the severity of the pain and how it impacts their ability to engage in daily tasks, but they continue to try to complete those tasks. They continue despite the associated symptoms of headache that were reported. Refer to Table 8 for additional headache characteristics.

Table 8.

Headache Characteristics	Never	Rare	Often	Always
Scalp tenderness	24.1%	27.6%	37.9%	10.3%
Neck stiffness/tenderness	13.8%	17.2%	48.3%	20.7%
Shoulder stiffness	20.7%	13.8%	41.4%	24.1%
Aching spine	37.9%	31.0%	20.7%	10.3%
Swollen breasts	83.3%	13.3%	3.3%	0.0%
Fever	43.8%	37.5%	12.5%	6.3%
Chills	50.0%	26.7%	20.0%	3.3%
Flushing	53.3%	26.7%	16.7%	3.3%
Night sweats	32.3%	22.6%	41.9%	3.2%
Dizziness	16.7%	30.0%	36.7%	16.7%
Faintness	36.7%	23.3%	36.7%	3.3%
Weakness	25.8%	22.6%	45.2%	6.5%
Insomnia	9.4%	28.1%	43.8%	18.8%
Fatigue	3.3%	23.3%	56.7%	16.7%
Irritability	3.2%	19.4%	61.3%	16.1%
Mood change	15.2%	33.3%	36.4%	15.2%
Personality change	35.5%	32.3%	16.1%	16.1%
Mental exhaustion	12.9%	16.1%	38.7%	32.3%
Physical exhaustion	13.3%	23.3%	33.3%	30.0%
Loss of appetite	12.9%	19.4%	54.8%	12.9%
Nausea	25.0%	12.5%	40.6%	21.9%
Vomiting	48.4%	29.0%	12.9%	9.7%
Diarrhea	37.5%	37.5%	21.9%	3.1%
Constipation	41.9%	29.0%	22.6%	6.5%
Stomach ache	35.5%	35.5%	25.8%	3.2%
Sensitivity to odor	28.1%	28.1%	25.0%	18.8%
Nasal congestion	38.7%	29.0%	25.8%	6.5%
Nose bleed	66.7%	30.0%	3.3%	0.0%
Excessive urination	61.3%	16.1%	19.4%	3.2%
Redness/tearing of eyes	50.0%	23.3%	16.7%	10.0%
Sensitivity to light	6.3%	12.5%	56.3%	25.0%
Double vision	48.4%	25.8%	19.4%	6.5%
Visual changes	37.5%	31.3%	25.0%	6.3%
Sensitivity to sound	6.1%	27.3%	42.4%	24.2%
Ringing in ears	23.3%	30.0%	36.7%	10.0%
Hearing problems	70.0%	20.0%	10.0%	0.0%

Drainage in ear(s)	66.7%	23.3%	6.7%	3.3%
Speech changes	64.5%	25.8%	9.7%	0.0%
Aching jaw or facial pain	33.3%	23.3%	26.7%	16.7%
Teeth grinding	38.7%	9.7%	32.3%	19.4%
Sensory changes	41.9%	22.6%	19.4%	16.1%

CHAPTER 5 DISCUSSION

Summary

The purpose of the present study is to assess the relationship between headache and trauma. The study explored potential protective factors in relation to trauma impact and headache severity such as, quality of life and coping strategies. Prior research has not focused on the integration of headache severity and trauma impact on overall quality of life. Historically, there has been little focus on coping and what types of coping (adaptive and maladaptive) can reduce headache severity and trauma impact. This study focused on understanding the relationship between mental and physical health and how they both affect quality of life. It also focused on the effectiveness of types of coping strategies in order to decrease the impact of trauma and headache severity.

The study sought to explain the relationship between headache and trauma by collecting data from 34 patients at a primary care clinic with a history of headache. The study aimed [1]to evaluate the relationship between trauma severity and headache severity, [2] to evaluate the relationship between adaptive coping and headache severity, [3] to evaluation the relationship between trauma and adaptive coping, [4] to evaluate adaptive coping as a mediator to trauma and headache severity, [5] to evaluate the role of headache and trauma on quality of life, [6]to evaluate the relationship between adaptive coping and quality of life, and [7]to evaluate the role of adaptive coping as mediator to trauma and quality of life. The present research was successful

in its endeavor and also produced results that differ from past research.

The role of specifically adaptive coping on headache severity, trauma impact, and quality

of life was assessed. As the foundation of counseling psychology is strength-based, a strength-based approach was utilized in order to create the study. The focus on a patient's own strengths and resourcefulness was integral to the research framework and is the reason as to why adaptive coping was such an important factor. However, adaptive coping was not found to be a predictor in any models conducted. Maladaptive coping was found to be associated with trauma impact and quality of life. Holyroyd and Andrasik (1978) found that participants that engaged in more cognitive approaches noticed a reduction in headache symptoms. Chiros and O'Brien (2011) also found that acceptance was negatively associated with pain-related interference.

Although the results differed from prior research (Peterlin et al. 2007). It still showed that 62% of participants with a history of headache meet criteria for a possible PTSD diagnosis. Previous research has found similar numbers of patients have a history of trauma (Tietjin et al. 2016). This further supports a relationship between headache and trauma even though the model was not found to be statistically significant. The setting of the study may have contributed to the overall results as it was conducted in a primary care setting. As prior research has been done with patient's who have a more severe level of headache pain and possible chronicity. Prior research has also been conducted at facilities specializing in headache disorders. Although all patients indicated experiencing headaches, patients were not screened based on associated

pain on frequency, which may have impacted results.

Stewart (2003) found that headaches have been found to impact quality of life. Although, headaches were not found to be related to quality of life as discussed in the previous study. It was found that patient's indicated that headaches did impact their ability to take part in daily activities and ability to complete daily tasks. The present study used a subjective measure in order to assess quality of life on a likert-scale. It was found that trauma impact and the use of maladaptive coping strategies were more closely related to quality of life and more significant predictors. The high use of maladaptive coping strategies was found to be associated with trauma impact. Due to the high level of trauma impact within the study, this may be due in part to the setting in that patients from a marginalized status are more likely to experience something traumatic.

Limitations

Results of the present study are limited due to the sample size, which was heavily impacted by the COVID-19 pandemic as clinical work became remote. Future research should be aimed at broadening the present population to include patients with more access to resources including financial and insurance. It would also be a benefit to study populations in more urban areas, where a more diverse sample is possible. Previous research found has been heavily focused on Caucasian females, which is the predominate demographic of the current study. By recruiting from more urban areas, researchers may be able to explore other contextual factors that may impact headache severity and quality of life. It is possible that different types of coping may be more associated with participants with different sociocultural backgrounds. Prior research has explored the effects of the impact of sociocultural factors on physical and mental health. Due to the sample size of the present

study, this was unable to be explored with gravity.

The COVID-19 pandemic also may have impacted how participants responded to various items in the survey. As living during a pandemic can be rather stressful, it may impact quality of life and headache severity. It can be traumatic as well. One patient noted she had COVID at the time she completed the study. The study did not account for the time of trauma or if the participants had previously engaged in mental health resources. Due to not accounting for time of trauma, it is difficult to state whether or not the trauma preceded the headache or if trauma potentially exacerbated symptoms.

Implementation and Future Research

Future research should continue to be aimed at intervention implementation as a way to pain associated with headache and also symptoms of trauma. This research indicates how trauma impacts one's overall quality of life including their physical health. The results indicate that by reducing one's trauma symptoms then physical health could possibly be improved.

Ways to decrease issues related to limited access to resources is important as patients endorsed substantial trauma impact and headache severity and may be limited in terms of ways that they can seek aid. Methods psychologists have explored in order to aid patients include telemedicine and the usage of phone applications in order to teach coping skills.

It would also be of interest to explore sociocultural factors in relation to types of coping strategies i.e. adaptive versus maladaptive coping strategies. Adaptive coping strategies may in fact be linked to individuals who have more resources and in turn it should be studied if adaptive coping could act as a potential mediator to trauma and headache severity and trauma and quality of life within individuals from a higher socioeconomic class.

Conclusions

Mental and physical health continue to show a positive relationship. It is interesting to note how participants did not indicate an overall lower quality of life, but described experiences of having a lower quality of life i.e. inability to attend events, decrease in sleep, and absenteeism. This may be better explained by the need to "push through the pain" as one participant suggested. Participants may possibly endorse an overall life satisfaction because they are able to continue despite their pain and because this is their norm.

The rejecting of the hypotheses suggesting that adaptive coping having a negative relationship with trauma impact and headache severity may indicate that participants with higher levels of trauma impact and headache severity may rely more on coping strategies. Participants with higher need may ask for more help or utilize more methods of coping in order to continue through the pain. Patient's ability to utilize emotional support, humor, religion, acceptance, reframing, and other modes of adaptive coping allow for them to continue to complete daily tasks. It also acts as a protective factor and explains the overall high quality of life.

This study was able to explore the impact of coping on quality of life. It showed how despite experiencing physical and mental health concerns that one may still have overall life satisfaction. Future directions of research should be aimed at exploring ways to decrease the impact of trauma and the experience of headache through the integration of psychotherapy. The present study supports that mental and physical health are closely related as most patients endorsed a level of trauma consistent with a possible PTSD diagnosis. It would be of interest to replicate this study in a post- pandemic environment in order to assess any differences as living in a pandemic can be a chronic stressor.

Participants of this study have an increased level of stress relative to the normal environment as participants fall under a lower socioeconomic class. This too impacts chronic stress as they experience financial distress and may have less resources than those who are more affluent. Lower socioeconomic class has been associated with increase in physical and mental health needs, which can explain the higher rates of PTSD and headache severity.

Continued work aimed at providing additional resources is paramount as there are clear health disparities. Ability to gain much needed assistance is greatly impacted by one's financial understanding. Maladaptive coping skills are innate and it is possible that participants have a higher rate of engaging in these skills due to their lack of resources. With this in mind, it forces the participant to learn how to "adapt" to their stressors as their options may be limited.

Overall, this study examines the relationship between trauma and headache severity and how they impact quality of life. It was able to show how they affect aspects of daily living and at times they can be debilitating. Participants in this study display a sense of resilience as they continue despite their pain and other health conditions. Although, this should not be their only choice. This study shows there is continued work to be done.

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APPENDIX A

IMPACT OF EVENT SCALE-REVISED

Daniel S. Weiss, PhD & Charles R. Marmar, MD

Instructions: Below is a list of difficulties people sometimes have after stressful life events. Please read each item and then indicate how distressing each difficulty has been for you DURING THE

PAST SEVEN DAYS with respect to_____,

how much

were you distressed or bothered by these difficulties?

Not at all=0, Little bit =1, Moderately=2, Quite a bit = 3, Extremely= 4

Sr.No Statement 0 1 2 3 4

1. Any reminder brought back feelings about it

2. I had trouble staying asleep.

3. Other things kept making me think about it.

4. I felt irritable and angry.

5. I avoided letting myself get upset when I thought about it or

was reminded of it.

6. I thought about it when I didn't mean to

7. I felt as if it hadn't happened or wasn't real

8. I stayed away from reminders about it.

9. Pictures about it popped into my mind.

10. I was jumpy and easily startled.

11. I tried not to think about it.

12. I was aware that I still had a lot of feelings about it, but I didn't deal with them.

13. My feelings about it were kind of numb.

14. I found myself acting or feeling like I was back at that time.

15. I had trouble falling asleep.

16. I had waves of strong feelings about it.

17. I tried to remove it from my memory.

18. I had trouble concentrating.

19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing.

20. I had dreams about it.

21. I felt watchful and on-guard.

22. I tried not to talk about it.

Avoidance Subscale = mean of items 5, 7, 8, 11, 12, 13, 17, 22

Intrusion Subscale = mean of items 1, 2, 3, 6, 9, 16, 20

Hyper arousal Subscale = mean of items 4, 10, 14, 15, 18, 19, 21

Appendix B

WHOQOL-BREF

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

		Very poor	Poor	Neither poor	Good	Very good
L	**How would you rate your** quality of life?		2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	**How satisfied are you with your** health?		2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	
	How much do you enjoy life?	1	2	3	4	5
	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	**1**	2	3	4	5
9.	How healthy is your physical environment?	**1**	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?		2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

	Very poor	Poor	Neither poor nor good	Good	Very good
How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?		2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5

20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?		2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

Never Seldom Quite often Very often Always

26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

Do you have any comments about the assessment?

_____

_____

[The following table should be completed after the interview is finished]

		Equations for computing domain scores	Raw score	Transformed scores*	
				4-20	0-100
27.	**Domain 1**	(6-Q3) + (6-Q4) + QlO + Q15 + Q16 + Ql 7 + Q18 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	a. =	b:	c:
28.	**Domain 2**	Q5 + Q6 + Q7 + Ql 1 + Q19 + (6-Q26) ☐+ ☐+ ☐+ ☐ + ☐ + ☐	a.=	b:	c:
29.	**Domain 3**	Q20 + Q21 + Q22 ☐ + ☐ + ☐	a.=	b:	c:
30.	**Domain 4**	Q8 + Q9 + Ql2 + Ql3 + Ql4 + Q23 + Q24 + Q25 ☐+ ☐+ ☐ + ☐ + ☐ + ☐ + ☐ + ☐	a.=	b:	c:

* See Procedures Manual, pages 13-15

APPENDIX C

Brief-COPE (Brief-COPE)

Instructions:

The following questions ask how you have sought to cope with a hardship in your life. Read the statements and indicate how much you have been using each coping style.

NovoPsych

		I haven't been doing this at all	A little bit	A medium amount	I've been doing this a lot
1	I've been turning to work or other activities to take my mind off things.	1	2	3	4
2	I've been concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
3	I've been saying to myself "this isn't real".	1	2	3	4
4	I've been using alcohol or other drugs to make myself feel better	1	2	3	4
5	I've been getting emotional support from others.	1	2	3	4
6	I've been giving up trying to deal with it.	1	2	3	4
7	I've been taking action to try to make the situation better.	1	2	3	4
8	I've been refusing to believe that it has happened.	1	2	3	4
9	I've been saying things to let my unpleasant feelings escape.	1	2	3	4
10	I've been getting help and advice from other people.	1	2	3	4
11	I've been using alcohol or other drugs to help me get through it.	1	2	3	4
12	I've been trying to see it in adifferent light, to make it seem more positive.	1	2	3	4
13	I've been criticizing myself.	1	2	3	4
14	I've been trying to come up with a strategy about what to do.	1	2	3	4
15	I've been getting comfort and understanding from someone.	1	2	3	4
	I've been giving up the attempt to cope.	1	2	3	4

	I haven't been doing this at all	A little bit	A medium amount	I've been doing this a lot
I've been looking for something good in what is happening.	**1**	**2**	**3**	**4**
I've been making jokes about it.	**1**	**2**	**3**	**4**
I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	**1**	**2**	**3**	**4**
I've been accepting the reality of the fact that it has happened.	**1**	**2**	**3**	**4**
I've been expressing my negative feelings.	**1**	**2**	**3**	**4**
I've been trying to find comfort in my religion or spiritual beliefs.	**1**	**2**	**3**	**4**
I've been trying to get advice or help from other people about what	**1**	**2**	**3**	**4**
I've been learning to live with it.	**1**	**2**	**3**	**4**
I've been thinking hard about what steps to take.	**1**	**2**	**3**	**4**
I've been blaming myself for things that happened	**1**	**2**	**3**	**4**
I've been praying or meditating	**1**	**2**	**3**	**4**
I've been making fun of the	**1**	**2**	**3**	**4**

Appendix D

Print Last Name:
Print First Name:
Date of Birth:
Today's Date:
Appointment Date

Initial Screening Questions for Headache Patients

Do you EVER have headaches as a result of:

1. Skipped meals or overeating?	☐ Yes	No ☐	☐ Don't know
2. Too much or too little fluid intake?	☐ Yes	No ☐	☐ Don't know
3. Alcoholic beverage ingestion?	☐ Yes	No ☐	☐ Don't know
4. Too much or too little caffeine?	Yes	No	Don't know
5. Too much or too little sleep?	Yes	No	Don't know
6. Infections (including flu, cold, fever, etc.)	Yes	No	Don't know
7. Stress or relief from stress?	Yes	No	Don't know
8. Allergies?	Yes	No	Don't know
9. Menstrual cycle?	Yes	No	Don't know
10. High Altitude?	Yes	No	Don't know
11. Medications (including OTC, supplements)	Yes	No	Don't know
	Yes	No	Don't know

12. Head Injury?

13. Bright lights, loud sounds, strong smells?	Yes	No	Don’t know
14. Driving at night?	Yes	No	Don’t know

Print Last Name:
Print First Name:
Date of Birth:
Today's Date:
Appointment Date:

Headache Questionnaire

How old were you when you remember having your first troublesome headache?

Do you think you have more than one type of headache? Yes ☐ Maybe ☐ No ☒

If so, how many different kinds of headaches do you have?

Please think about your *most troublesome* headaches when answering all of the following questions:

I. *Past Year* Headache Information

a. Over the past year, what would you estimate to be the average frequency of these headaches?
headaches per week / month / year (circle one)

b. Over the past year, on a scale of 0 to 10, with 0 meaning "no pain" and 10 meaning "the worst pain imaginable," what would you estimate to have been the average severity of your headaches?

No pain								Worst pain imaginable
1	2	3	4	5	6	7	89	10

c. Over the past year, what has been the average duration of your headaches?
Minutes / Hours / Days (circle one)

II. *Lifetime* Headache Information

a. What would you estimate to have been the average frequency of your headaches since they began?
headach week/month/year (circle one)

b. Has the frequency of your headache changed over the years? ☐ Yes ☐ No
If yes, please give details regarding periods of remission or increased frequency, severity etc.)

c. Over the years since your headaches began, what would you estimate to have been their average severity on a scale of 0 to 10, with 0 meaning "no pain" and 10 meaning "the worst pain imaginable"?

No pain								Worst pain imaginable
1	2	3	4	5	6	7	89	10

d. Throughout the years you have had these headaches, what has been their overall average duration?

Minutes / Hours / Days (circle one)

III. Qualitative Characteristics of Headache

a. Which of these phrases best describes the pain of these headaches?

☐ Worst pain possible
Very severe pain ☐ Severe pain
Moderate pain ☐ Mild pain
No pain ☐

b. Which of these words best describe the sensation of pain during this type of headache? (Check all that apply)

☐ Throbbing	☐ Stabbing	☐ Stinging
☐ Sharp	☐ Pounding	☐ Tingling
☐ Pressure	☐ Pinching	☐ Burning
☐ Heavy	☐ Dull	☐ Cramping
☐ Sore	☐ Aching	☐ Piercing
☐ Pulsating	☐ Splitting	☐ Tender
☐ Shooting	☐ Tight	☐ Other

c. Does your headache pain typically begin on one side of your head?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

d. In the midst of your headache, do you feel pain on one side or both sides of your head?

One side ☐ ☐ Both sides ☐ Variable ☐ Don't Know

e. If you feel pain on one side of your head, which of these best describes its location?

☐ Usually left side ☐ Usually right side
Always left side ☐ Always right side
Can be either side ☐ Other

f. Where do you typically feel the worst of your headache pain?

☐ Temple(s) ☐ Base of neck
Back of head ☐ Front of head
Behind the eye(s) ☐ Top of head
Don't Know ☐ Other

g. Does routine physical activity, such as walking up stairs, make your headache worse?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

h. Is your headache affected by sexual activity?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

i. Which of the following symptoms do you experience with your most troublesome headaches?

Symptom	Frequency (circle one)				Impact on your lifestyle (circle one)			
Scalp tenderness	Never	Rare	Often	Always	None	Minor	Moderate	Major
Neck stiffness/tenderness	Never	Rare	Often	Always	None	Minor	Moderate	Major
Shoulder stiffness	Never	Rare	Often	Always	None	Minor	Moderate	Major
Aching spine	Never	Rare	Often	Always	None	Minor	Moderate	Major
Swollen breasts	Never	Rare	Often	Always	None	Minor	Moderate	Major
Fever	Never	Rare	Often	Always	None	Minor	Moderate	Major
Chills	Never	Rare	Often	Always	None	Minor	Moderate	Major
Flushing	Never	Rare	Often	Always	None	Minor	Moderate	Major
Night sweats	Never	Rare	Often	Always	None	Minor	Moderate	Major
Dizziness	Never	Rare	Often	Always	None	Minor	Moderate	Major
Faintness	Never	Rare	Often	Always	None	Minor	Moderate	Major
Weakness	Never	Rare	Often	Always	None	Minor	Moderate	Major
Insomnia	Never	Rare	Often	Always	None	Minor	Moderate	Major
Fatigue	Never	Rare	Often	Always	None	Minor	Moderate	Major
Irritability	Never	Rare	Often	Always	None	Minor	Moderate	Major
Mood change	Never	Rare	Often	Always	None	Minor	Moderate	Major
Personality change	Never	Rare	Often	Always	None	Minor	Moderate	Major
Mental exhaustion	Never	Rare	Often	Always	None	Minor	Moderate	Major
Physical exhaustion	Never	Rare	Often	Always	None	Minor	Moderate	Major
Loss of appetite	Never	Rare	Often	Always	None	Minor	Moderate	Major
Nausea	Never	Rare	Often	Always	None	Minor	Moderate	Major
Vomiting	Never	Rare	Often	Always	None	Minor	Moderate	Major
Diarrhea	Never	Rare	Often	Always	None	Minor	Moderate	Major
Constipation	Never	Rare	Often	Always	None	Minor	Moderate	Major
Stomach ache	Never	Rare	Often	Always	None	Minor	Moderate	Major
Sensitivity to odor	Never	Rare	Often	Always	None	Minor	Moderate	Major
Nasal congestion	Never	Rare	Often	Always	None	Minor	Moderate	Major
Nose bleed	Never	Rare	Often	Always	None	Minor	Moderate	Major
Excessive urination	Never	Rare	Often	Always	None	Minor	Moderate	Major
Redness/ tearing of eyes	Never	Rare	Often	Always	None	Minor	Moderate	Major
Sensitivity to light	Never	Rare	Often	Always	None	Minor	Moderate	Major
Double vision	Never	Rare	Often	Always	None	Minor	Moderate	Major
Visual changes	Never	Rare	Often	Always	None	Minor	Moderate	Major
Sensitivity to sound	Never	Rare	Often	Always	None	Minor	Moderate	Major
Ringing in ears	Never	Rare	Often	Always	None	Minor	Moderate	Major
Hearing problems	Never	Rare	Often	Always	None	Minor	Moderate	Major
Drainage in ear(s)	Never	Rare	Often	Always	None	Minor	Moderate	Major
Speech changes	Never	Rare	Often	Always	None	Minor	Moderate	Major
Aching jaw or facial pain	Never	Rare	Often	Always	None	Minor	Moderate	Major
Teeth grinding	Never	Rare	Often	Always	None	Minor	Moderate	Major
Sensory changes	Never	Rare	Often	Always	None	Minor	Moderate	Major
Other:	Never	Rare	Often	Always	None	Minor	Moderate	Major
Other:	Never	Rare	Often	Always	None	Minor	Moderate	Major
Other:	Never	Rare	Often	Always	None	Minor	Moderate	Major
Other:	Never	Rare	Often	Always	None	Minor	Moderate	Major

j. If sensitivity to light and sound are both checked in the symptom table, do they occur at:

☒ The same time ☐ Different times ☐ Variable ☐ Don't know

k. If weakness and/or numbness are checked in the symptom table, do they occur on:

☐ The same side as your headache ☐ The side opposite your headache
☐ Both sides ☐ Other

l. If you have tearing or nasal congestion checked in the symptom table, does this occur on:

☐ The same side as your headache ☐ The side opposite your headache
☒ Both sides ☐ Other

IV. Quantitative Characteristics of Headache

a. Does your headache typically occur multiple times a day?

☐ Yes ☐ No ☐ Don't Know

b. How long do your headaches typically last?

☐ Less than 5 minutes ☐ 5 – 15 minutes ☐ 15 - 60 minutes
☒ 1 – 3 hours ☐ 4 – 72 hours ☐ Over 72 hours

c. At what time of day do you most often experience this headache?

☐ Morning ☐ Middle of the night
☐ Afternoon ☐ Anytime (no specific time)
☐ Evening ☐ Other

d. Do these headaches occur at a particular time of the year?

☐ Spring ☐ Summer ☐ Fall ☐ Winter
☒ Any season (year round) ☐ Other

e. What is the average number of headache-free days you experience each month?

f. How long ago did you have your last problematic headache?

g. When did you last take medication for your headache?

h. What medication did you last take (and how much)?
Medication: Amount:

V. Impact of Headache

a. On how many days in the last 3 months did you miss work or school because of your headaches? (If you do not attend work or school enter zero.)

b. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include days you counted in question 1 where you missed work or school. If you do not attend school or work enter zero.)

c. On how many days in the last 3 months did you not do household work because of your headaches?

How many days in the last 3 months was your productivity in household work reduced by half or more because of your headaches? (Do not include days counted in the above question, where you did not do any household work.)

d. On how many days in the last 3 months did you miss family, social, or leisure activities because of your headaches?

e. Is the possibility of a headache a significant factor when you make plans?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

f. Do you feel your headaches have changed the way you're viewed or treated by others?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

g. Do these headaches disrupt your sleep?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

h. Do your headaches awaken you from sleep?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

i. Are your headaches often present upon awakening in the morning?

☐ Yes ☐ No ☐ Sometimes ☐ Don't Know

VI. Precursors of Headache

a. Do you have changes in your vision before these headaches?

Yes ☐ ☐ No ☐ Sometimes ☐ Don't Know

If so, how long before the headache do your visual changes occur?

Are these visual changes present only BEFORE your headache or do they CONTINUE throughout the duration of your headache?

Only before the headache ☐ ☐ Continue throughout the headache

Other ☐

How long do these visual disturbances last?

Less than 4 minutes ☐ ☐ 4 – 15 minutes ☐ 15 – 60 min ☐ Over 60 minutes

Please describe these visual changes:

b. Have you noticed significant changes in your appetite before your headaches?

☐ Yes ☐ No ☐ Sometimes ☐ Don't Know

If so, how long before the headache?

c. Have you noticed significant changes in your thirst before your headaches?

☐ Yes ☐ No ☐ Sometimes ☐ Don't Know

If so, how long before the headache?

Do you feel burning or prickling on your skin before your headache occurs? Yes ☐ No ☐ Sometimes ☐
Don't Know
If so, how long before the headache?

d. Do you experience significant mood swings before your headache occurs? Yes ☐ No ☐
Sometimes D
If so, how long before the headache?
Please describe:

e. Do you experience any personality change before your headache occurs? Yes ☐ No ☐
Sometimes D
If so, how long before the headache?
Please describe:

f. Do you experience any other symptoms before your headache starts? Yes ☐ No ☐
Sometimes Don't Know
If so, please describe:

How long before the headache do these symptoms occur?

g. Do you drink coffee or other caffeinated drinks? Yes ☐
No
Sometimes
If so, how many per day?

h. Do you notice a change in your caffeine consumption prior to your headache? Yes ☐ No ☐
Sometimes D
If so, how long before the headache?