Title: Exploring the Lived Experiences of Pain in Military Families: A Qualitative Examination

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Abstract

Chronic pain in Canadian Veterans is twice that of the general population and the prevalence of their related mental health concerns is alarmingly high. This likely puts their children at an increased risk of developing pain and mental health problems that can pervasively impact daily life and persist into adulthood. Pain care and military culture of (acute and chronic) pain has been identified as a top priority of Canadian Veterans. This study aimed to gain an in-depth understanding of the pain experiences of Canadian Armed Forces (CAF) families. Thirty-five semi-structured qualitative interviews were conducted. Demographic information was collected; age, gender, and ethnicity were reported. Twelve CAF members/Veterans, 17 youth, and six spouses were interviewed. Ninety-two percent of Veteran participants reported chronic pain. Reflexive thematic analyses generated four themes: i) Military mindset: herd culture and solider identity, ii) The culture of pain within military families, iii) Inseparability of mental health and pain, iv) Breaking the cycle and shifting the military mindset. Military culture and identity create a unique context within which pain expression and experience is integrally shaped within these families. This study sheds light on how pain is experienced and perceived within military families and can inform research on and efforts to foster resilience in these families.

Perspective: This is the first qualitative study to explore the lived experiences of pain in Canadian military families. Findings underscore the key role that military culture and identity plays in how pain is experienced and perceived in all family members.

Keywords: chronic pain, acute pain, military families, qualitative research, lived experience

Exploring the Lived Experiences of Pain in Military Families: A Qualitative Examination

The prevalence of chronic pain in Canadian Veterans is twice that of the general population [47,50] and the prevalence of related mental health concerns is very high [42,50,51]. Elevated rates of chronic pain are problematic for Veterans themselves but also likely place their children at increased risk of developing pain and mental health problems that may persist into adulthood [21,26,27,29,32]. Evidence shows that parental chronic pain is associated with poorer physical and mental health outcomes in parents and their children [26]. However, only one empirical study based in the United States examined pain in children of Veterans [46], revealing a high risk for headaches that worsened over time, particularly in younger children.

Chronic pain typically clusters in families, with neurobiological and behavioural factors posited to play key roles in its transmission across generations [45]. A conceptual model developed by Stone and Wilson (2016) identified several potential mechanisms that may underlie the transmission of chronic pain from parents to their offspring, including: i) genetics; ii) alterations in early neurobiological development; iii) pain-specific social learning; iv) general parenting/family health; and v) exposure to stressful environments [45]. The model further includes three potential moderators to the intergenerational transmission of pain, including: i) pain presence in both parents; ii) parental pain timing, trajectory, and location on body; iii) child characteristics (e.g., sex, race/ethnicity, temperament, and developmental age). The conceptual model was developed for the general chronic pain population; however, military families are unique as is supported by the current findings. Although child characteristics are described in the model, the culture and identity of military families is especially important to understand within the whole family and their care [48]. The model considers exposure to stressful events; however,

it is not specific to the reoccurring and traumatic events that can be experienced by military families. Military families have been characterised by the unique stressors that they often experience together and throughout the lives of families, presenting a unique triad of mobility, family separation, and risk of injury illness and/or death [20,39]. Military families may demonstrate: i) how military culture surrounding (acute and chronic) pain experiences and injuries may be learned by children (e.g., modelling and reinforcement of stoic behaviours); ii) worsened family physical and mental health; and iii) heightened stress with repeated deployments, relocations, and loss. Thus, to understand the (acute and chronic) pain experiences of military families, we cannot solely rely on general population data or current models [13,36,45] that do not specifically focus on military families and their unique culture and needs.

Military training, identity, and culture play an influential role in the lives of Veterans and their families well beyond active service [6,8]. Improving pain care and the military culture of pain has been identified as a top priority of Canadian Veterans with respect to chronic pain research [31], and is underscored as a key area in the Canadian Pain Task Force Report released by the Government of Canada. While serving in the military, Canadian Armed Forces (CAF) members can be released for revealing their injury/pain; accordingly, CAF members may deny or conceal their disability or pain [2,44]. Upon release, Veterans are required to prove that their injury/disability (i.e., often resulting in chronic pain) stemmed from their service to receive financial support and access to services, thus creating complex challenges for Veterans. The challenges associated with transitioning from military to civilian life have been well documented [18]. This transition for CAF members is one of many critical timepoints in the lives of military families that can contribute to pain and mental health problems.

The current study aimed to qualitatively gain an in-depth understanding of the pain experience of CAF members/Veterans, their children, and their spouses, and how it unfolds within critical timepoints during and following military service. In the face of trauma, adversity, and pain, many youth and their families are resilient, with social support and high family functioning posited as key buffers of poor outcomes [19]. This study aimed to better understand the (acute and chronic) pain experiences of military families to support their resilience and combat mental health concerns. An in-depth qualitative approach was used to grasp the complex and holistic experience of families.

Method

Study Design. This qualitative study explored the lived experiences of military families, positioning the primary researcher in the centre of learning and reflection upon the lived experiences of interviewees. Adopting a social constructivist approach [41], this study provides an ontological understanding of how we can unearth individual experiences within a group, by seeking to understand the experiences of CAF members/veterans, their spouses, and their children within the context of their family. The research design aligns with a qualitative phenomenological approach as it is rooted in social constructivism and allows for the understanding of individual human experience [11], such as military culture. A qualitative semi-structured interview method was used to enable participants to be guided through questions to stay on topic yet allow for flexibility in the description of each person's own individual experience [40,49].

Participants. Thirty-five individual participants were recruited and participated in this

study. Participants were family members of CAF members or CAF Veterans and will be referred to as “military families”. Military families included participants who identified as CAF serving members (active), Veterans, spouses, and children. Military families can also include ex-spouses. One family involved in this study identified as being separated. Twelve CAF members/Veterans (92% living with chronic pain), 6 spouses, and 17 children/youth participated in qualitative interviews. Thirty-five participants were included in the study to provide a sufficiently diverse sample of military families. Fitting with Braun & Clarke’s ideas around provisionally estimating sample size in thematic analysis studies (Braun & Clarke, 2021), we sought to recruit a minimum of ~10 participants for each category of veterans and children as the study initially aimed to explore this dyad specifically. However, spouses who were interested in being involved were welcomed and included in the interviews. The sample is considered sufficiently large for in-depth analyses [55] and is congruent with other thematic analysis studies which adopt a Braun and Clarke approach [1,16,30].

Participants were eligible to participate if the CAF member/Veteran had served during or after 1975, and their child/youth was between 10-40 years old. This criterion was selected to consider the age of offspring who could be involved (between 10-40 years old). CAF member/Veteran and child/youth dyads were only eligible if both were willing to participate. Spouse participation was encouraged but not required. Families who participated could involve more than one child/youth. All participants were required to speak and understand English and have access to the internet or phone given that all interviews were conducted online via Zoom for Healthcare or via phone.

Procedure. All study procedures were approved by the institutional research ethics board**.**

Recruitment for this study was concurrent with the larger quantitative study of this project which recruited participants through social media, snowball sampling, connecting with community partners, accessing the participant list of two organizations (who provide mental health and/or chronic pain care) we work closely with who provided consent to be contacted for study participation. Upon being recruited for participation in the quantitative study, participants were asked if they wished to take part in this study. Phone call consent was established by the research coordinator prior to all interviews. Semi-structured interviews were conducted, one-on-one with each individual participant and the primary author. Interviews were audio-recorded and transcribed. Interviews ranged from 15-93 minutes (M = 46.7; SD = 21.4). Generally, Veterans and spouses shared more in-depth responses to questions prompted. Shorter interviews were typically conducted with younger children. Further, some individuals were more willing to provide in-depth responses and were more reflective in nature, which resulted in longer interviews. Upon transcription of interviews, all names and identifiable information (i.e., hometowns etc.) were removed to maintain anonymity. Each interviewee received a $25 gift card of their choosing of either Amazon, Indigo, or iTunes.

Measures. Demographic information was collected. Age, gender, and ethnicity were reported by family members.

Interview Guide. The interview guides were developed alongside lived experience experts on the research team, ensuring questions were appropriate and relevant to military families. The guide was piloted with a Veteran and their spouse and child. Three members of the research team met with the family to discuss and review the introduction and questions involved in the guide. Prior to initiating interview questions during interviews, the primary author provided information about the purpose of the interview. Following this, three focus areas were

prompted, each had underlying sub-questions that could be prompted. Each focus area and sub-questions were adapted to the interviewee who was participating (i.e., CAF member/Veteran, spouse, or child) and referred to their own pain experiences. The following examples of each focus area are based on the CAF member/Veteran version. The first section focused on understanding the individual's narrative of their pain experience broadly: *"Can you tell me about your experiences of pain? This can include injuries, procedural pain, and chronic pain such as headaches and back pain"*. The second section focused on how the interviewee understood or experienced a family member's pain (i.e., CAF members/Veterans and spouses were asked about their child's pain and children were asked about both of their parents' pain): *"Can you tell me about your child's/parent's pain?"*. The final section focused on understanding pain in the family context: *"Can you tell me about how pain impacts or is experienced within your family?"*. The interview introduction and all sections with their underlying sub-questions are provided in Appendix A.

Data Analysis. Data analyses involved an inductive reflexive thematic analysis approach grounded in the guidelines developed by Braun and Clarke [9]. The six suggested phases of analyses were followed: i) familiarising oneself with the data; ii) generating initial codes; iii) generating themes; iv) developing and reviewing of potential themes; v) refining, defining, and naming themes; vi) producing the report. The primary author conducted all interviews, listened/reviewed audio-recordings of each interview several times, and immersed herself in reading the transcribed interviews [9,10,12]. Transcripts were coded by initially labelling concepts and ideas that generated from the interviews. Codes were compared to one another to consider if they could be combined or classified as overarching themes or sub-themes [11]. As part of the wider analytical process, these discussions also took place within the wider research

team to ensure that analyses were grounded in the data and that all authors agreed with the interpretation of the data. NVivo12 software [35] was used to generate initial codes and create themes.

Quality in Qualitative Research and Reflexivity

To establish quality, the primary author reviewed a subset of the initial codes with the secondary author to ensure credibility [23]. This approach enabled opportunities for the primary researcher to make sense of their interpretations and become grounded in the data. Additionally, the primary author met with two senior researchers on the team and persons with lived experience to review themes and develop appropriate language representative of persons with lived experience. The persons with lived experience included three veterans, two spouses and one child (young adult), all were compensated as per best practices to reflect their contributions, time, and expertise [38]. Three of the persons with lived experience were full collaborators and are listed accordingly, as authors on the manuscript [7,34]. Through iterative discussion, defining and naming themes occurred. The primary author was rooted in the work at all stages and practiced reflexivity throughout by constantly making notes and reflecting on how her own experience and insights changed [9,11] throughout the study and learning from persons with lived experience. Rigour was incorporated throughout the study having the primary researcher present themes and interpretations to other team members, describing the process and approach to interpretation. Rigour was further established through ascertaining credibility, the primary author diligently recorded field notes, constantly made reflections/journaling, and kept an audit trail [53]. Dependability was applied through conducting a systematic approach to reviewing codes and themes with multiple members of the research team including lived experience

experts, the researchers attempted to strive for a clear process which could be repeated by future researchers [43].

The experiences and education of the primary author shaped how interpretations were developed and the overall research approach. The primary author has a PhD in Rehabilitation Science, which focuses on the biopsychosocial approach to understanding disability, health, and overall functioning. As such, they may approach the concept and experiences of pain more holistically with components rooted in biology, psychology, and sociology. The primary author is not a clinician and prior to conducting this work had not personally known a Veteran/CAF serving member. They were minimally aware of the norms, values, and complexities of Veteran culture, providing a blank slate for interpreting interview transcripts. It was a priority of the primary author to establish trust with participants and ensure that they felt comfortable participating in the research project. Other members of the research team include pediatric psychologists, nurses, Veterans, Veteran family members, students, and academic professors. All team members brought their own insights and individual perspective to this paper through diversity in experiences, culture, geographical location, sexual orientation, gender, and education.

The positionality of the primary author aligns with a social constructivist ontological position. This establishes that reality is socially constructed by individuals and social groups. As such, the experiences of individuals require at least some level of interpretation as multiple perspectives and understandings of an experience exist. The primary author's epistemological position is made up of interpretivist views in which experiences must be interpreted, and how we can go about determining or understanding the interpretation of experience can be accomplished in realistic attempts to gain the desired knowledge. The ontological and epistemological

positions have influenced choices in the development of this manuscript to conduct a qualitative interview design study, using reflexive thematic analysis, which aligns with social constructivism.

Results

Demographic information is provided in Appendix B. The mean age of Veteran children/youth/young adults was 19.5 years and ranged from 10 to 36 years. All individuals identified as white, and three participants identified as both white and Indigenous. Veteran children consisted of four boys/men and 13 girls/women; one participant identified as genderqueer/gender non-confirming. The mean age of CAF members/Veterans was 52.8 years; the age range was 39-64 years old. As specified previously, 92% of CAF members/Veterans reported living with chronic pain. The CAF members/Veterans sample consisted of 9 men and 3 women, one individual identified as Indigenous, 10 individuals identified as white, and one individual identified as both white and Indigenous.

Four main themes were generated from qualitative interview data, which weaves together a narrative about the pain experiences of military families. All four themes are representative of the perspectives of the three groups (Veterans, spouses, youth); however, CAF members/Veterans were more elaborative in terms of describing their experiences in the military which is comprised in Theme 1: “Military Mindset”. Further, younger children (i.e., 10-12 years old) less often provided expansive narratives about the inseparability of mental health and pain described in Theme 3, which was predominantly shared by youth and young adult children. Each theme is described and supporting quotations are provided that were drawn directly from the

qualitative interviews. Veteran, spouse, and child/youth/young adult quotations are presented below.

Theme 1. "Military mindset" – herd culture and solider identity. This theme addresses the military culture and identity that is engrained into the minds of those who served in the Canadian Armed Forces. Central to this culture is their ideology of pain. One veteran described how they were trained to perceive pain. They also expressed their current perception that, upon reflection, this was not wise.

> *"We have a saying: pain is weakness leaving the body, and I was even dumb enough to repeat that numerous times to my recruits as an instructor, so yeah… At the time I really believed it, that pain is weakness leaving the body, so, I pushed through it". (V1 Male Veteran, 43 years old)*

Veteran participants described how the military intentionally aimed to systematically change their thinking and mindset. Indeed, being "broken" was a barrier to entering and a key reason for being forced to exit the military. Veteran children were well aware of this, as one young adult describes below:

> *"Uh the way we put it, with- among my friends that are military is they want you to not be broken when you join so that they can break you and they can go - ah it's fine, we'll just give you meds or maybe benefits, but not make it easy". (Y5 Youth, Female, 32 years old)*

The quotations above further describe how "broken" soldiers are medically released from service (i.e., they are no longer able to serve) and responsibility for their care is transferred to Veteran Affairs Canada, a government agency that oversees services, resources, and benefits for Veterans. Yet, medical release has serious physical, emotional, and social repercussions. From the interviews it was apparent that the military mindset involves the concept of herd culture (being a tight-knit "pack"); however, once a member of the herd is broken, they are perceived as being weak and inferior to the pack and subsequently released and cast away from their social network. A Veteran describes this in the quotation below, while also describing how herd mentality can be both positive and negative.

> *"They are the tightest-knit pack I've ever seen. But even the comradery with other ex-veterans… But there's a pack and... uh there's a group, right? And it is a herd, right? And it's a good thing. … I'll keep this analogy going with the herd mentality or animal mentality, once you're the weak link, you go by and that's what gets attacked, right? So... That's where I do know I was broken, and I was, in the military, if you're not, you're out. Right now... we're trying to keep them in, but yeah, so I was that broken herd. The herd kept on going, my regiment. My buddies, everyone I trained. My troops, right? Which were my other family and they kept on going. So... Um, so that's what I mean by that, and I also mean that... as a positive thing, but it's also. It's a very negative thing, right?" (V1 Male Veteran, 43 years old)*

Once CAF members are too "broken" to serve, they face not only physical hardships leaving the military but also mental health issues and a loss of comradery. Being broken may

suggest no longer being able to fit the mold of how the CAF expects one to be, with regards to physical and mental functioning; it may also suggest being in a state that can never be "fixed" back to that mold. There is a loss of brother- / sister- hood and their *other* family. Even as a serving member leaves the military, they struggle to erase the military mindset ingrained into their thinking during training, which focused on the hierarchy of "*mission, men, and then self*". This hierarchy positions the *self*-last, which is how CAF serving members are trained to think - of themselves as last. However, upon release, Veterans no longer have the *mission* or *men* to focus on while integrating back into civilian life. As such, social and mental issues often arise during this transition, and the ability to engage in "self-care" is both angering and difficult, accompanied by a loss of one's "pack". Below, a Veteran shared his hardships and understanding of how different his paradigms were from civilians, leading him to be unable to even express himself and subsequently experiencing both anger and distress.

> *"For me, it's always mission men and then self, so I don't think about it, I don't make a conscious decision to put whatever I'm trying to accomplish first that's just how it is, there isn't another way to look at it for me, so then when I see other people putting themselves first I really struggle with that - that like that's maybe another angering trigger point for me. Rationally I wouldn't say self-care is bad it's just like my paradigm is so different from the people I interact with on a daily basis and so I find myself struggling to explain myself why it's upsetting for me". (V9, Veteran, Male, 39 years old)*

Overall, this theme underscores the high stakes of being injured and expressing pain while serving in the military and the dire consequences of expressing pain. As a result, admitting

to or being identified as having an injury/pain can result in loss of identity and social community, the latter of which is positioned even higher than the self. Military culture and identity are unique and important to consider in the context of understanding Veterans' pain experiences. Further, the critical importance of military culture and identity to Veterans' experiences of pain and injury can be understood and validated by family members. Military families may develop their own military mindset by proxy of the CAF serving member, which can impact the entire family's pain experiences. This is exemplified in the next theme.

Theme 2. The culture of pain within military families. This theme describes how the hierarchy of "*mission, men, and then self*" that was adopted during military training and service can extend into the transition back to civilian life and translate to family experiences. This could unfold as Veterans continue to focus on, and prioritize, everyday experiences and tasks as "missions", rather than being primarily focused on their family's immediate needs. This is exemplified in the below quotations by a spouse sharing her experience of a family vacation, during which the Veteran prioritized the *mission* of returning a rental car above addressing the child's immediate illness.

> *"There is a constant triage in his mind… your pain (my own pain) may not be the priority...We were in line for rental cars, and my daughter… was so nauseous due to lack of sleep and emotions etc. and when we got to the rental car place – this is still a bone of contention between him and I. When she got there, she was like mom I'm gonna throw up, and I was like I'm coming and he was like no you're not we have to get the rental car, we're next in line and I*

was like but she's throwing up! He was like we need your signature". (S4, Spouse, Female,41 years old)

Military training could also impact what parents perceive as being deserving of "treatment" in instances of children experiencing injury and pain. The *parents'* perception of the severity of the child's pain was often prioritised over the child's own perception of their pain severity. Below, a Veteran shared how only fractures or tearing something were situations that warranted assistance from others. This view (and [lack of] response) was adopted by the spouse, and both the Veteran and spouse modelled this to their children.

"Unless you really fracture yourself, and like [spouse's name] says, "unless you've got a bone protruding, you know? Or- or you tear something, you know you tear something- your neck and your knees, your shoulders or whatever- you deal with it." (V10, Veteran, Male, 56 years old)

This quotation and perception reflect how within these military families, the anchors of pain experiences (i.e., what was perceived as no pain versus worse pain), and determination of which experiences did and did not warrant intervention, was altered for the entire family. Below, a spouse described that their experiences of witnessing and/or being more privy to life-threatening situations invariably influenced how they responded to their child's injury/pain. They valued and expressed honesty about these difficult experiences and losses to their families and were similarly honest about their perception that only severe injuries and pain warranted attention.

"Um, again, things will vary from Veteran to Veteran, but we look at pain in the big scope of things a lot in our family. So, um, we've gone through Afghanistan where we've lost multiple guys and, um- ugh, sometimes they die… And so, we're very, very open with our kids about that. Um, maybe to a fault, but we share that with them because we're dealing with it too… We had learned already from Afghanistan, and we carried it on through, that you just don't hide things. Cause the kids can see it on you anyway. So, if you're just pretending it's not happening, it's not helping them process it themselves… this is one of the reasons why we're really blunt about everything. Like your cut is not that big a deal. If it's a big deal, we'll let you know cause we do this consistently with anything that's big". (S4, Spouse, Female, 41 years old)

Consistent across interviews, children of Veterans described how they adopted a stoicism about their pain and often concealed their pain unless it was severe enough to warrant expression to others. Below, a spouse describes how her child had broken their arm, experienced severe pain and distress, and continued walking home despite this. The spouse expressed that their child believed that this was what they had to do. The mentality of "*pushing through the pain*", which is inherent in military culture, was adopted by not only Veterans, but also their spouses and children.

"And my son- he broke his arm coming down the sidewalk near our house and yeah, he like, you know, he was crying, but he held his arm and like walked home so... you know… like instead of just sitting on the side of the road and waiting for someone to come to him, right, like he was just like "alright", like,

"I'm gonna pick myself up and get home cause what else am I supposed to-like I have to do that". (S1, Female, years old, 41 years old)

One child described another common thread that children of Veterans become problem-solvers, independently attempting to deal with things on their own and without parental assistance, unless it was absolutely unbearable/impossible. This translated to their approach to managing their own pain. While this may in part have been an aspect of military culture, they also expressed this independence because they did not want to burden their parents given that they had "*too much going on".*

"Umm so I almost feel like I wouldn't instinctually like let her [spouse of Veteran] know like if I had pain or you know anything like that, I think I'd probably try and figure it out like the best of my ability, before like letting her know because I knew she was like busy and had her own things to deal with, so I think yeah even if I did have pain, I'd probably try to, try to not necessarily like hide it, but like figure it out for myself, like I would have to deal with it on my own for a while until I, I just couldn't anymore". (Y15, Female, 34 years old)

The quotations above exemplify how youth can detect the added stress that spouses of military serving members and Veterans face. Supressing emotions is a core feature of military culture and identity, leading many to have difficulty with emotional processing, and spouses were often relied upon for tuning into and translating the Veteran's physical and emotional needs. Below, a Veteran shared how their spouse provided them with such critical emotional support.

"Uh. She [spouse of Veteran] knows when I'm in pain before I am, she knows how I feel before I know, because I just don't know how to process my emotions that well, I just suppress them with whatever". (V1 Male Veteran, 43 years old)

Theme 2 highlights the impact that military training has on not only Veterans but also on their entire families, both during and well-beyond military service. The military culture of stoicism, independence, and concealment of pain and injury, was often adopted by all family members and impacted how pain was experienced, expressed, managed, and responded to. Expression of emotional experiences was difficult for Veterans, and many relied on spouses to do this for them. The next theme addresses how mental health and physical pain are integrally intertwined in the pain experiences of military families.

Theme 3. Inseparability of mental health and pain. This theme acknowledges how mental health and pain were inherently interconnected among military families. The following quotation was provided by a Veteran who in response to being asked about their pain, expressed how his suicide attempts inflicted "mental pain" on his spouse and child, which then manifested as physical pain. For them, the root and origin of physical pain was emotional. Several Veterans endorsed suicidal ideation and/or suicide attempts in these interviews that were intended to focus on physical pain experiences.

"I tried to commit suicide three times – when we talk about pain, I think about the pain that I inflicted on my wife and daughter, and in my daughter's case her whole life, which is mental pain that evolves into physical pain…It pains

me to know what I did to them – the mental pain". (V8, Veteran, Male, 60 years old)

It is evident that many of the children of Veterans were facing mental health issues as adults, which may have been previously overlooked because they were not considered to be "*bad enough*". Some children (mostly youth and young adults) considered their pain problems to be a result of them not addressing their mental health issues. CAF member/Veterans, spouses, and children concealed both their mental health issues and their pain. Below, a child describes how she did not realize that the discomfort in her shoulders was attributed to her anxiety, which she did not understand, name, or address, until later in life.

"What comes to mind for pain for me, is actually… a lot of it is mental illness, I would say. Um, like, a lot of the trouble sleeping, or- or tension, just like really- not realizing I was feeling anxiety. Not being able to name anxiety for a really long time because I just associated it with like a tightness and a discomfort in my shoulders and especially like realizing I'm not taking full breaths and things like that". (Y7, Youth, Female, 36 years old)

In addition to suicidality and anxiety, youth also expressed how their pain was connected to traumatic experiences that they had endured earlier in life. The relationship between their trauma and physical symptoms (including pain) was reciprocal and mutually maintaining. This is exemplified in the quotation below, where a youth described how her experiences of weekly stomach aches/nausea was integrally tied to her anxiety, PTSD symptoms, and childhood trauma.

"Alright. Um, I get stomach, um, pains and headaches, uh- often… I'm pretty sure it started when my biological father started to just end our relationship. And I guess it's probably like tied in with anxiety… Um, my biological dad was very abusive. So, I guess I have- I have the trauma from that. And, um, working in customer service, I see a lot of people that act like him. So, it brings up memories. And then that gives me anxiety and sometimes I'll get flashbacks and that gives me anxiety too which triggers the nausea". (Y3, Youth, 15 years old).

This theme illuminates the importance of understanding how military families perceive physical pain as being synonymous with, and integrally tied to, their mental health. This had a profound impact on all family members. The suffering of military families was evident, and many youths expressed how the concealment of their emotional and pain experiences from their parents had transmitted from childhood to adulthood.

Theme 4. Breaking the cycle and shifting the military mindset. This theme suggests that the entire family needs to be able to recognize that change is needed in order to enable them to engage in opportunities to address their pain and mental health and support all family members in this process. All CAF members/Veterans were able to reflect on their own experiences of pain as well as how it may have influenced their family's pain (and emotional) experiences. One Veteran reflected on how they previously responded to their child's pain in a harsh way and acknowledged a tension between validating their pain (something that they are currently trying to increasingly do) and not socializing them to be weak. The reflexivity and

empathy inherent in their statement indicates a strong desire to improve their relationship with their child.

> *"In the past my own attitude has always been okay I get it you're in pain, but that doesn't change anything so let's go do the thing we're gonna do. I'm trying to get better at validating their concerns, but it's a balance. I don't want my kids to be whiny victims, I know people like that and for them they can't do anything, "life is too hard". My kids when they were little they would scrape their knee and come in crying and I would say hey stop crying, crying is not okay it's just a scraped knee and I look back and say oh that wasn't very nice".* (V9, Veteran, Male, 39 years old)

When Veterans seek help for their mental and physical health issues, this can serve as powerful and positive role modelling for their spouses and children. When children observed their parents seeking such support, they often also began to express (versus conceal) their suffering and seek help. This, in turn, can break the military mindset of "*mission, men, then self"*, which prioritizes the "self" last. This demonstrates that not only can military mindset be de-programmed in Veterans, but it can also be changed in the entire family. Below, a child shared her recognition that her father (Veteran) was able to engage in health seeking behaviours (accessing mental and physical support).

> *"I think for my dad and–and he did a lot of emotional work and–and healing through like therapy, he ended up getting a service dog and just recognizing that he had PT– or getting diagnosed for PTSD and anxiety and–and all of that*

and then making the steps to–to help those thing". (Y10, Youth, Female, 27 years old)

Throughout the interviews, it was clear that military culture and identity was also perceived in a positive way, such as in developing comradery and showing support for others. Indeed, siblings of military families may experience an enhanced closeness due to enduring relocating homes, deployment of parents, and other hardships together. Below, a child described how the military culture of supporting one's troops, was similar to how they and their sibling supported each other. This social support could be particularly protective against the development and maintenance of pain and mental health issues within families.

"Umm and if you're not by yourself, then you handle it together as best as you can, you just, you just keep it together and don't leave each other behind. It's probably why my brother and I get along so well, we've moved around so much and he's, he's probably my first best friend and then we've stayed close even, even now. I mean we don't talk all the time, but it's very easy for us to pick up from where we left off". (Y5, Youth, Female, 32)

Military families were perceived as being exceptionally resilient. Families believed that their experiences navigating intense hardships led to an enhanced ability to deal with difficult situations. Just as the anchors of pain had been altered as a result of enduring hardships, which resulted in an increased ability to endure pain, so too did their capacity for resilience. Below, a Veteran described how resilience can be harnessed by reflecting on what his family had already

overcome, engaging in comparative suffering with other military families (i.e., recognizing that it could be worse), and considering the positives in their lives. This resilience was seen as extending to every area of their lives, including their pain experiences.

> *"So, my kids are very resilient. So, you know, maybe not directly with pain but they have learned to go with the flow, to go where they've been told etc. So, I think they have developed resiliency that–and as a family we have developed some resiliency that is reflected in anything we do. So, including pain, including saying, "You know what, things could be worse" or "we've seen where in others" or "we're not that bad" and "we're pretty fortunate with all that we have so if we just have a little bit of pain then we should deal with it and because other people are much worse than ours". (V5, Veteran, Male, 53 years old)*

Theme 4 underscores that change is possible, and military families are able, willing, and eager to foster resilience in how their families experience and cope with painful and emotionally distressing experiences. Although the culture of pain in military families is unique due to military training, culture, and mindset, inherent in this culture is also strength, resilience, and the desire and ability to change.

Discussion

This qualitative study is the first to explore how pain is understood and experienced within Canadian military families from the perspectives of Veterans/CAF members, the majority of whom had chronic pain, their spouses, and their children. The findings provide novel

contributions to the understanding of pain in military families, which establish how culture and identity of Veteran families influences their mental health and pain experiences. Although a conceptual framework was not developed for use with this population, the insights from qualitative analyses identify a better understanding of pain in military families, which can be considered within the context of intergenerational pain models such as Stone and Wilson's conceptual model [45]. We argue that any conceptualization of military families consider and incorporate the uniqueness and critical influence of military culture and identity on pain experiences within these families. The knowledge gained can help to inform early intervention for pain and mental health concerns in military families and the development of culturally relevant programs.

Qualitative findings consist of four themes: i) "Military mindset": herd culture and solider identity; ii) How military culture impacts the family unit; iii) Inseparability of mental health and pain; and iv) Breaking the cycle and shifting the mindset. Together, these themes underscore the critical roles that military training, culture, and identity play in the entire military family's pain experiences. Theme 1 provides insight into how CAF members are engrained to "push through the pain" and care for themselves last, as exemplified in the "mission, men, self" mentality. Theme 2 encompasses how the military mindset can be adopted by the entire family and influence how pain is experienced, expressed, and responded to. Theme 3 describes the close interconnection between pain and mental health; young adults reflected on the changes in their mental and physical health from childhood to their current state, and their new recognition that trauma and anxiety influenced their pain. Lastly, theme 4 provides underscore the abilities and desires of families to harness resilience to foster optimal coping with pain and distress in their families. CAF members/Veterans reflected on their modified perspectives about pain, and

spouses and children described noticing changes in the CAF members/Veterans' mentalities, or specific efforts being made by the family, to change patterns of how they interacted around pain and distress. Understanding the multifaceted and culturally embedded nature of pain experiences in military families can contribute to efforts to better support these families.

Accepting Veteran identity and culture is inherent to the understanding of a Veteran's own pain experience and their families' pain experiences, which was a central finding of this work. Distinguishing oneself as a Veteran has a clear component of identity that places great value on accomplishment and respect[14]. However, if a Veteran does not identify as a Veteran they will also not identify as a Veteran/military family, which limits not only their own access to services but also opportunities and support for the family. It may be challenging for CAF members to define themselves as Veterans when comparing themselves to other country's definitions and society's general idea of a Veteran as one who served in a World War [14]. In a sample of 202 ex-military members, only half considered themselves Veterans although all met the country's definition of a Veteran [14]. Taken together, it is critical for Veterans to identify as Veterans, to understand the influence that military identity and culture has had on their pain experiences (i.e., learned mentalities such as "push through the pain"), and to appropriately access services for themselves and their families. Veteran identity and culture are critical to incorporate into the delivery of pain care and family programs intended to support mental health and pain problems in military families.

Theme 1 specifically highlighted the common term and hierarchy used across interviews and taught/adopted within military culture: "Mission, men, self". However, this statement embodies the masculinity attached to the military experience, diminishing the female experience

in the military. Although three female Veterans were interviewed in this study, there is more to explore and understand regarding the association between gender and pain, within the context of the military. An American based study [25] explored gender differences in healthcare needs of Veterans returning from Iraq and Afghanistan. Findings showed no significant gender differences in clinically significant pain scores; however, female veterans were more likely to screen positive for military sexual trauma and depression. A scoping review conducted by Eichler et el. (2016) identified 14 articles focused on gender and Veterans' transition from military to civilian life, which primarily incorporated gender into studies as a research category equating gender with sex [22]. The review emphasizes how feminist social theory can lend insight into how to consider gender analytically in terms of military and civilian gender norms. Understanding the experiences of pain in Veterans should use an intersectional lens that recognizes the influences of gender, sexual orientation, race, ethnicity, socioeconomic and disability status, etc.

Veterans and their families are unique in terms of their beliefs, daily experiences, and family norms. This is shaped by the military mindset adopted during training, service, and into civilian life, which critically influences the entire family's pain experiences. This was underscored in both Themes 1 and 2 in the current study. Previous work has identified that Veterans want health care providers to recognize them as a distinct group with a unique culture, identity, personal history, and experiences [15]. However, research has revealed an overall lack of military cultural competency domains and cultural skills among Canadian health care providers [48]. This aligns with narratives from the current study, which described the lack of trust and connection Veterans had with providers, mentioning contributing factors such as providers being late for appointments, which did not align with Veteran values. Mental health

care can be especially vulnerable for Veterans who are accustomed to concealing their emotions and pain. Weiss et al. (2011) described how the worldviews and values associated with military culture such as the "warrior ethos" are necessary to understanding Veterans' mental health service seeking behaviours [52]. The "warrior ethos" describes stoicism and bonding with fellow warriors, consistent with Theme 1 ("Military mindset: herd culture and soldier identity"). Research to develop appropriate pain care for certain Indigenous communities has been conducted, which could inform an approach for how culturally-relevant pain care could be developed for Veterans[24]. A culturally sensitive and trauma informed understanding of pain and approach to pain care is essential to address pain in military families and is necessary to consider in early intervention.

Theme 2 identified how the experiences of CAF members and Veterans can impact the entire family; Theme 4 described how the family needs to de-program their military mindset to help mitigate the transmission of engrained attitudes of stoicism and repression towards pain. There are treatments that exist specifically for Combat Veterans with PTSD and their families, such as the Internal Family Systems Theory Treatment [33], but no such family programs have been developed to address chronic pain. Continued research is critical to establish evidence-based programs to address pain in the entire family, while considering adaptations to address the needs of diverse families (e.g., divorced, dual household, etc.). Given that more optimal attitudes and approaches towards acute pain and injury could be fostered before the development of *chronic* pain, preventative educational approaches targeting responses to children before adolescence (i.e., when chronic pain typically first emerges), should be considered, developed, and examined. This study sample of military families included predominantly married families; future research should explore Veteran/military families that extend beyond cis-gender, non-

divorced, child-bearing families and how pain is experienced within these families. To our knowledge, there are currently no treatments for pain and co-occurring mental health issues that have been specifically developed for Veteran families. Given that pain and co-occurring mental health issues confer risk for several issues in children, a transdiagnostic approach is warranted. Elements of any intervention program would differ based on the nature/type, as well as intensity and timing of onset of symptoms. Early interventions aiming to prevent pain in youth, could focus on education and fostering optimal communication (e.g., validation, less protection) and open expression of pain within families which could be adjunctive to pain-specific interventions delivered to Veterans and spouses themselves. Acquisition of skills included in a variety of evidence-based interventions for pain and mental health issues could be considered at various stages of pain and childhood (e.g., deep breathing, muscle relaxation, mindfulness, emotion regulation, distress tolerance, behavioral activation). We contend that it is critical to involve Veteran families in the development and co-design of family programs addressing pain and mental health to ensure that their unique needs are met [48]. This future work will inform the content, format, and mode of delivery. Integration of information and education about military culture and identity and how that unfolds within Veteran families and influences their pain experiences will be a key element of any culturally-relevant intervention.

The current study embedded lived experience experts at all phases of the research, including in the development of the research question, creating the interview guide, interpreting the results, and contributing to the writing of the manuscript. The qualitative interviews introduced the opportunity to involve spouses' voices in the understanding of pain in the context of military families, given their critical role and influence in parenting and family cohesion. Further, spouses of Veterans carry added stress and emotional turmoil, which is necessary to

understand in the context of pain in military families. The study must be contextualized within the sample, given that the vast majority (92%) of Veterans lived with chronic pain. Moreover, the study was limited in its inclusion of diverse perspectives and the sample included a predominantly white group of male Veterans. No specific questions were asked about gender in the context of pain within the interview guide. Future research should attempt to include a more diverse sample, particularly along the lines of race, gender, and sexual orientation, and reach often underrepresented persons in the military and in pain research. This is especially important as heteronormativity, homophobia, and racism have previously been found to be common within the military [5,28,37].

There is ample opportunity to advance interventional work aimed at involving military families and addressing the individual and intersecting needs of Veterans/serving members, spouses, and children. Further, efforts to intervene to prevent the transmission of pain in Veteran families should also emphasize early, culturally- and trauma-informed interventions for mitigating pain and mental health issues in Veterans themselves. This brings forth the gap in research about understanding the intention to serve in the CAF, pre-military identity, and how this can influence post-service outcomes, including chronic pain. Research has found that individuals more likely to enlist in the military include those with lower educational attainment aspirations, lower grades, fewer parents living at home, and individuals who come from low socio-economic families [3,17]. Among CAF members and Veterans, significant relationships have been found between childhood emotional abuse and the presence of moral injury in adulthood [4]. These factors may influence the adoption of military culture, its persistence into civilian life, and its influence on pain and mental health in Veterans and their families.

In conclusion, military culture and identity create a unique and critical context within which pain expression and experiences are integrally shaped within military families. This study provides deep insights into how (acute and chronic) pain and injuries are experienced within military families, from the lived experiences of Veterans/serving members, spouses, and youth. This work can inform future research with more diverse perspectives and experiences as well as culturally-sensitive approaches aimed at building family resiliency to foster physical and mental health in these families.

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Appendix A – Interview Guides

Introduction for all interview participants:

We know that chronic pain is an issue for many veterans and serving members. We also know that pain can run in families, a lot of parents with chronic pain also have children with chronic pain, but we don't know a lot about what this looks like in veteran families. Surprisingly, there's very little research on this topic in veteran populations, and we know that veteran culture and veteran families are unique. So, we want to hear from you about how pain was experienced in your family. We are interested in different kinds of pain such as from injuries, minor pains, major pains, etc., and how these were experienced and responded to in your family. Of course, we're also interested in chronic pains (i.e., pain lasting three months or more) like headaches, stomach aches, musculoskeletal pain.
We know you have filled out lots of questionnaires online to help us understand your experiences. During this conversation, we want to get at information that could not be answered in questionnaires but is so important to explore.

Interview Questions

Veterans/serving members:

1. Can you tell me about your experiences of pain? This can include injuries, procedural pain, chronic pain such as headaches and back pain.
    - How do you think your **experiences and training** in the military have influenced your pain or how you think about pain / manage pain?
    - What were your pain experiences like **while serving/being deployed**?
    - What were your pain experiences like while **being home** between service or after you completed your time in the military?
2. Can you tell me about your child's pain?
    - What was your child's pain experiences like when they were **young** versus **now**?
    - How do you think your experiences and training in the military have influenced your child's pain?
3. Can you tell me about how pain impacts or is experienced within your family?
    - How is pain handled in your family
    - How do you think your experience and training in the military has influenced how you respond or react to your child's pain
    - How do you think your experience and training in the military has influenced how you **respond or react** to your spouse's pain
    - What was it like when your family was **relocated, together, and separated**?

Youth/young adults:

1. Can you tell me about your experiences of pain? This can include injuries, procedural pain, chronic pain such as headaches and back pain.
    - How do you think your experiences as a child of a military family has influenced your pain or how you think about pain and manage pain?
    - What were your pain experiences like when your parent (veteran/serving member) was deployed and not home?
    - What were your pain experiences like when your parent (veteran/serving member) was home? After their service?
2. Can you tell me about your parent's (veteran/serving member) pain? What was that like? What did you see?
    - What was that like for you when **you were young** versus now?
    - How do you think this impacted your own pain?
3. Can you tell me about how pain impacts or is experienced within your family?
    - How is pain handled in your family? When you got hurt what did your parents do? How did they respond to you?
    - How do you think your parent's experience and training in the military has influenced how you respond to pain?
    - What was it like when your family was **relocated, together, and separated**?

Spouse:

1. Can you tell me about your experiences of pain? This can include injuries, procedural pain, chronic pain such as headaches and back pain.
    - How do you think your experiences as a spouse of a veteran/serving member has influenced your pain or how you think about pain and manage pain?
    - What were yours and your child's pain experience while your spouse (veteran/serving member) was **not home** (during deployment).
    - What were yours and your child's pain experience while your spouse (veteran/serving member) **was home** (between missions versus after serving).
2. Can you tell me about your spouse (veteran/serving member) pain? What was that like? What did you see?
    - What was this like when your spouse was **early on** in their military service versus now?
3. Can you tell me about how pain impacts or is experienced within your family?
    - how is pain handled in your family? When your child was in pain what did your spouse (veteran/serving member) do? How did you respond?
    - How do you think your spouses experience and training in the military has influenced how pain is managed in your family?
    - What was it like when your family was **relocated, together, and separated**?

Appendix B – Demographic Information

Table 1. Demographic Information of Military Family Members

Participants	Age (years)	Gender	Ethnicity
Youth/Young Adult			
Y1	13	male	White
Y2	12	female	White
Y3	15	female	White (“Canadian”)
Y4	16	male	White and Indigenous
Y5	32	genderqueer/gender nonconforming	White
Y6	20	female	White
Y7	36	female	White
Y8	34	female	White
Y9	21	male	White and Indigenous
Y10	27	female	White and Indigenous
Y11	10	female	White
Y12	11	female	White
Y13	12	female	White
Y14	14	male	White
Y15	34	female	White
Y16	14	female	White
Y17	11	female	White
Parent/Veteran			
V1 – Y1,Y2	43	male	White
V2 – Y3	56	male	White
V3 – Y4	59	male	White
V4 – Y5	64	female	White
V5- Y6	53	male	White
V6 – Y7, Y8	60	male	White and Indigenous
V7 – Y9	55	male	White
V8 – Y10	60	male	Indigenous
V9 – Y11-Y14	39	male	White
V10 – Y15	56	male	White
V11 – Y16	43	female	White
V12 – Y17	46	female	White
Spouse of Veteran			
S1 – V1	41	female	White
S2 – V2	53	female	White
S3 – V3	51	female	White
S4 – V9	41	female	White
S5 – V10	61	female	White
S6 – V11	42	male	White

Note. Veterans are listed by number with their children listed beside to distinguish the number of youths that were involved from each family. Spouses are listed with the Veteran beside to distinguish relationships.