

Needs and concerns of male combat Veterans with mild traumatic brain injury

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Abstract—Traumatic brain injury (TBI) has emerged as a major cause of morbidity among U.S. servicemembers who have served in Iraq and Afghanistan. Even mild TBI (mTBI) can result in cognitive impairments that can affect the community reintegration of Veterans postdeployment. The purpose of this study was to explore the needs and concerns of combat Veterans with mTBI to provide support for an mTBI-specific conceptual model (Conceptual Model in the Context of mTBI) derived from Ferrans et al.'s health-related quality of life model and the TBI literature. Content analysis of qualitative interview data was conducted using a thematic matrix with a predetermined code list. Data saturation was achieved after interviews with eight male Veterans. Six key categories and predominant themes emerged: cognitive impairments, physical symptoms, emotions and behaviors, instrumental activities of daily living, interpersonal interactions, and community reintegration. Findings provide preliminary support for a new, context-specific conceptual model that has the potential to identify areas for future interventions to enhance community reintegration of combat Veterans with mTBI.

Key words: activities of daily living, adaptation, Afghanistan, behavioral symptoms, cognitive symptoms, environment, Iraq, interpersonal interactions, needs, theoretical model, traumatic brain injury, Veterans.

INTRODUCTION

Over the past decade, the number of U.S. servicemembers deployed to Iraq and Afghanistan has surpassed

2.0 million [1]. Traumatic brain injury (TBI) subsequent to blast injuries from exposure to improvised explosive devices, rocket-propelled grenades, and mines has emerged as a major morbidity among U.S. servicemembers who have served in these conflicts and has been acknowledged by military healthcare providers as the “signature wound” of Operation Iraqi Freedom [2].*

Blast injuries have been identified as one of the primary causes of mild TBI (mTBI) in servicemembers who

*Zoroya G. Brain injuries range from loss of coordination to loss of self [Internet]. McLean (VA): USA Today; 2005 Mar 3 [cited 2007 Mar 12]. Available from: http://www.usatoday.com/news/nation/2005-03-03-brain-injuries-inside_x.htm

Abbreviations: HRQOL = health-related quality of life, IADL = instrumental activity of daily living, MMSE = Mini-Mental State Examination, mTBI = mild traumatic brain injury, PTSD = posttraumatic stress disorder, TBI = traumatic brain injury, VA = Department of Veterans Affairs.

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return from combat [3–4]. According to the Department of Veterans Affairs (VA) and the Department of Defense, the criteria for an mTBI are—

A physiological disruption of brain function as a result of a traumatic event as manifested by at least one of the following: alteration of mental state, loss of consciousness (LOC), loss of memory or focal neurological deficit, that may or may not be transient; but where the severity of the injury does not exceed the following: post-traumatic amnesia (PTA) for greater than 24 hours, after the first 30 minutes Glasgow Coma Score (GCS) 13–15, and loss of consciousness is less than 30 minutes. [5]

While penetrating TBI events are apparent immediately, mTBIs often go unrecognized [6]. As a result, many Veterans with mTBI go without timely diagnosis, evaluation, or treatment; the injuries are not discovered until years later when the Veterans have difficulty reintegrating into the community. Most often, mTBI is not diagnosed in these servicemembers until they have returned home and experienced deficits in functioning [6]. The accurate proportion of mTBI among injured servicemembers is in all probability higher than reported because closed TBIs are not diagnosed in a prompt manner [7]. The incidence of TBI among Iraq and Afghanistan Veterans is approximately 15 to 20 percent, with research demonstrating that mTBI is the most common form of TBI among this Veteran cohort [2,8–14]. Because of multiple deployments and exposures to blasts, some of these Veterans have sustained repeated mTBIs [13]. The cognitive difficulties resulting from TBI include attention deficits, lack of concentration, impaired learning, executive control dysfunctions, and memory loss [3–5,15–17]. These cognitive difficulties are likely to hamper successful reintegration of Veterans with TBI. To make matters worse, the VA faces challenges in screening and evaluating servicemembers for mTBI because the symptoms of mTBI often mirror those of other disorders such as post-traumatic stress disorder (PTSD), depression, anxiety disorder, and adjustment disorder, all of which can also exist within the context of TBI [5,7,15,18–21]. Even Veterans with mTBI can experience cognitive difficulties compounded by other disorders that can hamper successful reintegration into society after combat [22–26].

To effectively design interventions for Veterans with mTBI, understanding their needs and concerns postinjury is crucial. However, studies regarding needs and con-

cerns post-TBI are limited to civilians with TBI and may not adequately represent the needs and concerns of Veterans with mTBI [27–36]. Civilians with TBI have identified needs and concerns in such areas as anger management; opportunities to socialize; and involvement in school, leisure, and volunteer activities [27–30,32–34]. Civilians with TBI have also reported the need for information about specific community resources related to, for example, adaptive and/or assistive devices, independent living skills, and environmental modifications [26–29,34]. Other needs include such areas as vocational rehabilitation, banking and legal assistance, TBI support groups [27, 31,35], and access and transportation to these services [30,35–36]. While some of these needs and concerns may be applicable to Veterans with mTBI, there may be additional needs and concerns specifically related to combat, such as PTSD, depressive symptoms, anxiety disorders, and additional physical injuries, all within the context of mTBI.

Because the needs and concerns of Veterans with TBI are often complex and multifaceted, a sound context-specific theoretical model is needed to guide the development and testing of interventions for this vulnerable population. Recent TBI reviews recommended Ferrans et al.'s model [37] as encompassing the domains of health-related quality of life (HRQOL) relevant to Veterans with TBI [38–39]. Ferrans et al. [37] derived their model from Wilson and Cleary [40], who connected clinical factors to HRQOL based on a taxonomy of patient outcomes in five domains: biological and physiological factors, symptoms, functioning, general health perceptions, and overall quality of life. Ferrans et al. hypothesized that individual and environmental characteristics influence each of these five domains [37]. Of the five domains represented in Ferrans et al.'s model [37], the symptoms and functioning domains provide the basis for the mTBI-specific conceptual model of quality of life used to guide this study (Conceptual Model in the Context of mTBI) (**Figure 1**). We derived the conceptual model in **Figure 1** from Ferrans et al.'s model [37] and the TBI literature. The model has six key domains within the context of mTBI: cognitive impairments, physical symptoms, emotions and behaviors, instrumental activities of daily living (IADLs), interpersonal interactions, and community reintegration [41]. The model illustrates the theorized relationships among the domains. According to **Figure 1**, cognitive impairments are the most relevant domain because they are highly related to the symptoms and functional status domains. The cognitive impairments are labeled as sub-categories and include memory deficits, concentration,

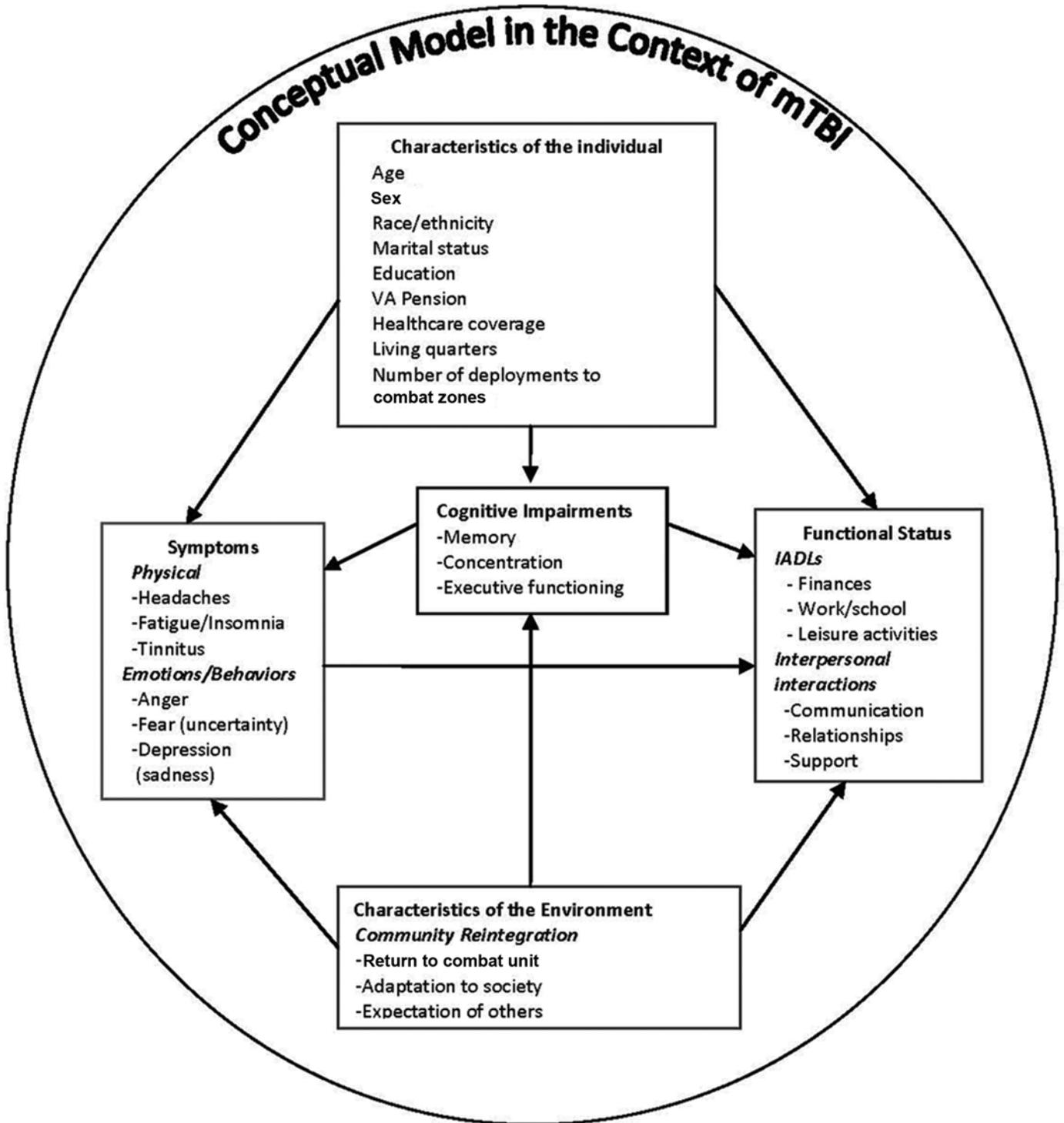


Figure 1.

Conceptual model derived from Ferrans et al.'s health-related quality of life model [37] and traumatic brain injury (TBI) literature. Provides preliminary support by specific needs and concerns mentioned by Veterans with mild TBI (mTBI) in this study. → = direct relationship between two domains, IADL = instrumental activity of daily living, VA = Department of Veterans Affairs.

and executive functioning (**Figure 1**). These cognitive impairments are central to and also directly connected to the remaining domains, characteristics of the individual (demographics) and characteristics of the environment (community reintegration). The symptoms domain includes both physical symptoms (headaches, fatigue and/or insomnia, and tinnitus) and emotions and behaviors (anger, fear, and depression). These symptoms are directly related to the functional status domain. This domain consists of IADLs (finances, work and/or school, and leisure) and interpersonal interactions (communication, relationships, and support). Characteristics of the environment (community reintegration) include such things as return to combat unit, adaptation to society, and expectations of others.

The purpose of this study was to explore the needs and concerns of combat Veterans with mTBI in order to support the mTBI-specific conceptual model derived from Ferrans et al.'s model of HRQOL [37] and the TBI literature. A secondary purpose was to explore strategies that Veterans with mTBI used in response to their needs and concerns as well as their advice for other Veterans with mTBI. Specifically, we asked the Veterans—

- What are your most relevant needs and concerns as a combat Veteran with mTBI?
- What are the strategies you use to cope with these problems and what advice would you give to other combat Veterans with mTBI?

METHODS

Design and Procedures

Using an approach similar to that used by Bakas et al. [42] and a qualitative descriptive design [43–44], we subjectively explored the needs, concerns, strategies used, and advice given by new combat Veterans with mTBI. Qualitative descriptive design is an appropriate method when very little is known about a phenomenon. The end product or outcome of qualitative descriptive method is a data-near summary of the phenomenon [44].

We recruited participants from one VA polytrauma unit in the Midwest. The VA polytrauma TBI care manager mailed study packets to 24 Veterans with mTBI. The study packets contained a brochure signed by the Veteran's physician along with two copies of the informed consent statement. The physician-signed brochure notified Veterans with mTBI that the investigator would be

calling to determine their interest in the study and that the study was completely voluntary. Approximately 1 wk after sending the study packets, Dr. Daggett telephoned each Veteran to assess his or her interest in participation, obtain informed consent from those who agreed to participate, and determine his or her eligibility.

Sample

According to Sandelowski, a sample size cannot be determined a priori in qualitative descriptive research [44]. In this study, we considered the sample size adequate once informational redundancy (data saturation) occurred. Informational redundancy occurred after the eighth interview as evidenced by no new themes or data being elicited during analysis [43]. Other researchers have used qualitative descriptive design with the intent to gain knowledge about perceptions and experiences of specific populations and have also reported informational redundancy (data saturation) with small samples when emerging themes became repetitive [45–51].

To reach the eighth interview, we telephoned a total of 24 Veterans. We included Veterans if they met the following criteria: (1) ≥ 21 years old, (2) actively served in Iraq and/or Afghanistan, (3) sustained an mTBI during Active Duty that was identified using a clinical TBI screening tool and diagnosed by either military or VA providers postdeployment, (4) English-speaking, (5) able to provide written informed consent, and (6) scored ≥ 4 on the 6-item Mini-Mental State Examination (MMSE) [52].

According to Callahan et al., the 6-item MMSE was purposely designed to screen potential clinical research subjects who have cognitive impairments in studies that require a level of cognitive ability to participate and/or provide self-report [52]. This assessment was designed to balance diagnostic properties that could be easily and efficiently administered over 1 to 2 min, yet maintain validity comparable with the full MMSE. This screener is easily scored by summing the errors and can be easily administered over the telephone. This 6-item screener has demonstrated reliability, with a sensitivity of 88.7 and specificity of 88.0, in patients with dementia [52].

Of the 24 Veterans, we were unable to contact 10, 4 refused to participate due to lack of interest, 1 refused because he was enrolled in another VA research study, and 1 did not provide a written informed consent. The remaining eight combat Veterans with mTBI met the eligibility criteria and were enrolled in the study. We started

this study with this initial group of Veterans with plans to recruit more if we did not obtain data saturation.

Data Collection

The interview guides were approved by the university and VA review boards and designed to be completed in 1 h so as not to burden the subjects (**Figure 2**). We conducted audiotaped telephone interviews with eligible participants at a mutually agreed time, asking questions using an approved interview guide that also contained a demographic form. Dr. Daggett conducted all of the interviews, each of which averaged 1 h in length.

Data Analysis

We used descriptive statistics to summarize the sample of eight Veterans, who were all in their first year of follow-up in the VA healthcare system. Demographic data included age, sex, race, ethnicity, marital status, highest level of education, VA pension, number of combat deployments, living arrangements, adequacy of household income, and employment status. We also calculated frequencies on clinical data related to comorbidities and symptoms related to mTBI. We based clinical data on participant self-report. The time since injury and time since diagnosis were uncertain for a few of the Veterans; therefore, we did not include them in the analysis.

We conducted content analysis using a thematic matrix based on a conceptual model [53] derived from Ferrans et al.'s HRQOL model [37] and the TBI literature to categorize the needs, concerns, strategies used, and advice given for the Veterans with mTBI. According to Sandelowski [54] and Miles and Huberman [53], an a priori framework (i.e., conceptual model derived from Ferrans et al.'s model and the TBI literature) can be used not only to systematically organize data based on key concepts of the framework but also for data reduction. **Figure 1** depicts the conceptual model used to guide and organize the content analysis in this study.

We audiotaped each interview and labeled it with a de-identifiable study number. A VA Research and Development-approved transcription service then transcribed the audiotapes. We cleaned all personal health identifiers from each transcript before we conducted the data analyses. We conducted deep reads and created thematic matrix tables to organize data. Drs. Daggett and Bakas independently categorized the themes for each transcript and aggregated the emerging themes for all eight interviews. Subsequently, they met to compare findings and reach agreement. We categorized the data into six key themes based on the derived model: cognitive impairment, physical symptoms, emotions and behaviors, IADLs, interpersonal interactions, and community reintegration. Throughout the data analysis, Dr. Daggett maintained an audit trail that Dr. Bakas verified for accuracy. The audit document consisted of a table linking each quote to each key theme derived from the predetermined code list. Three additional researchers (Drs. Murray, Buelow, and Habermann) then employed this audit document to attain consensus about the representativeness of quotes about the Veterans' needs, concerns, strategies used, and advice given relative to each of these key themes [53]. Using a response scale that ranged from 0 (not at all) to 4 (extremely), the rating forms specifically requested that the researchers rate the degree of representativeness of each quote to each of the six themes. Quotes were retained in the analysis if they received average ratings of ≥ 3.0 .

RESULTS

Characteristics of Individuals (Demographics)

The Veterans' 6-item MMSE scores ranged from 4 to 6 with a mean score of 5.5. The eight Veterans were all non-Hispanic, Caucasian males. They ranged from 24 to 36 years old with a mean age of 32. All eight Veterans deployed once to Iraq. Among the eight Veterans, only

1. Describe a normal day in providing care for yourself.
2. What have been your greatest concerns or problems since you have been diagnosed with an mTBI sustained in combat?
3. What has helped you cope with these concerns or problems?
4. What advice would you give a fellow comrade once he or she has been diagnosed with an mTBI?

Figure 2.

Combat veteran with mild traumatic brain injury (mTBI) needs and concerns interview.

one had been deployed twice, and his second deployment was to Afghanistan. Four of the Veterans were married, and four lived with their parents or friends. All had graduated from high school, and four had received some college education. Four of the Veterans reported having “just enough” household income and four of the Veterans reported living dependently with their parents. Though all of the Veterans received healthcare coverage through the VA, only two received the benefit of a combat-related VA disability pension. Seven reported a new onset of headaches post-TBI, and one reported more severe headaches post-TBI than those experienced prior to deployment. Other comorbidities reported postinjury included musculoskeletal conditions, hypertension, PTSD, and gastroesophageal reflux disorder.

Veterans with Traumatic Brain Injuries’ Needs, Concerns, Strategies, and Advice

The Veterans identified specific needs and concerns across domains as they were reintegrating with their families, friends, and communities (**Figure 1**). Additionally, they shared strategies that they had adopted to address their individual needs and concerns and advice that they would share with other Veterans with mTBI who were returning home. The **Appendix** (available online only) categorizes their needs and concerns by domain and subcategory and links the strategies and advice to each corresponding need and/or concern. The **Appendix** (available online only) also illustrates specific domains and subcategories in which the Veterans did not report strategies or advice.

Cognitive Impairments

Needs and Concerns

The eight Veterans with mTBI reported a variety of cognitive impairments that included memory deficits, concentration (attention) deficits, and/or difficulties with executive functioning. They all described needs and concerns related to memory, ranging from short- to long-term memory loss and difficulty retrieving information. One Veteran explained how his memory and attention deficits had affected his daily life:

My memory is not that sharp anymore I mean, I just can’t remember things that I have done. I lose stuff I’ve lost big chunks of time. I don’t remember things that happen Somebody can tell me that I did this or that and

I’ll have no memory of it I can sit here and have an entire conversation and forget it.

Another Veteran described his concerns related to the effects of memory loss:

I have short-term and long-term memory loss. I have trouble remembering people, places, things . . . anything before the explosion . . . dates . . . childhood memories in general I’d run into people after I got out and I didn’t know who they were and I was friends with them at school, but I didn’t know them anymore. When I talked about my past, I didn’t remember events didn’t remember childhood memories. And then short-term, I have trouble remembering times, dates, appointments.

Strategies and Advice

Each Veteran had developed strategies to compensate for his memory deficits, such as utilizing a PDA (personal digital assistant) supplied by the VA to remind him of work commitments and appointments. Additionally, some of the Veterans had a spouse or parents accompany them to medical appointments. Other strategies included making lists, keeping notebooks, and using visual prompts. One Veteran stated, “[I] write myself notes all the time . . . so when I wake up in the morning or I come home from work, I know exactly what I’ve got to do.”

The Veterans did not report any strategies for addressing their concentration and/or executive functioning deficits or offer any advice for other Veterans returning with mTBI (**Appendix**, available online only).

Physical Symptoms

Needs and Concerns

Veterans with mTBI experienced distinct physical symptoms of TBI, including headaches, insomnia, fatigue, imbalance, and tinnitus. Some of the Veterans reported chronic pain from blast injuries, musculoskeletal injuries from combat, or PTSD. One Veteran described his needs in managing his headache symptoms and his concerns associated with his headaches:

I was told they’re a little more severe than a migraine like I can’t get out of a bed, can’t focus, can’t open [my] eyes, sunlight hurts. I take some pretty strong doses of headache medicine for them. I really can’t function. Then eventually, they go away and I will be “back in the saddle.”

Another Veteran who was recently employed expressed concerns related to his symptoms of fatigue and insomnia:

I'm trying to keep up . . . but if I have to work past my normal time When I come home at the end of the day, I usually take an hour's nap . . . you know, then I'm okay, and then I go to bed between 9 and 10. And I'm usually up by 1:30, 2:00 every day because I can't sleep.

Strategies and Advice

The Veterans did not elaborate on strategies used or offer advice for managing symptoms of fatigue and/or insomnia or tinnitus ([Appendix](#), available online only). They did not specify whether they were able to manage these symptoms. The Veterans did share the need for prescribed medications to manage their headaches. However, one Veteran explained his hesitancy to take prescription medication because of side effects he experienced and his consequent decision to use milder over-the-counter medications:

Oh, basically I take my different meds, and sometimes I won't take them because the side effects Usually, if I had a bad headache, I'll just take a couple of aspirin or something like that to try and make it go away Sometimes I just have to ride it through.

Emotions and Behaviors

Needs and Concerns

Each Veteran had his own set of emotions and behaviors that he was enduring. Though two Veterans attributed their emotions and behaviors of anger to PTSD, emotions of uncertainty and depression were also experienced by some of the Veterans. This statement shows one Veteran's experience with anger: "I didn't notice the dilemma. A friend did. I'm more harsh, as they call it. I'm more blunt." The same Veteran shared his feelings of uncertainty regarding his future health and potential disabilities:

What are the long-term effects going to be . . . later on down the road, you know, health problems If that's going to affect anything. As I age, yeah . . . after I get into the fear area of life and stuff after. Is it going to lead to Alzheimer's, always going to have to have medical assistance and stuff like that?

Another described his feelings of failure as he attempted to obtain meaningful employment:

I wound up settling. I wound up going to a trailer factory. I said okay, I won't be able to finish school. I guess I'll just do . . . something I told myself I would never do. So I settled. And I went and did something like that. It was really a disappointing feeling . . . like I was a failure.

Strategies and Advice

The Veterans who experienced symptoms of anger had developed a few strategies to cope with their anger ([Appendix](#), available online only). One Marine Veteran shared how his mother helped him cope with such episodes:

Surround yourself with people who can tell you things and be there for you and cope with you and help you through it There's days where I'm not pleasant to be around and she always reminds me that this is not the Marine Corps. You can't treat your employees like the Marine Corps. She's usually the only one that can settle me down and makes me understand that civilians do make mistakes.

This Veteran described how his family and friends supported him with anger management and this advice:

Don't get frustrated. I mean, I was getting frustrated for a little bit and then friends and family helped out with that, so . . . emotional and physical stuff like that, you know . . . they're there for you if you forget something, you know. They'll remind you and stuff like that, so you know . . . you're not alone in this.

Another stated:

I like the silent method, where I just walk away, go do my own thing I go to the basement, work in my shop . . . separation . . . from whatever is bothering me I bought an old house and I've been remodeling it. And I found some old dressers from an old house, I've been refinishing those.

Instrumental Activities of Daily Living

Needs and Concerns

Employment, school, finances, and leisure activities were the key IADLs that the Veterans discussed. For example, one Veteran stated—

We get two weeks of classes on jobs that we can't even get . . . like jobs they were telling us

about, I couldn't apply for and they taught me how to write a resume. Well, my resume is pretty short. Who wants to hire someone who's trying to kill people?

Another Veteran shared his concerns about increasing his educational qualifications:

If I go to school, am I going to be able to, you know, to make it? Am I going to with my memory and everything like that? . . . I mean, what I remember of being in school was a lot of tests, a lot of stuff, you know . . . I don't know if I could do it or not.

Yet another explained his frustration with obtaining regular employment:

I think the hardest thing for me is just getting back . . . the job thing . . . holding down a job now is much harder than it used to be and it's not just my brain injury stopping me from . . . having gainful employment. I've got more than one problem, so I don't know what to attribute to the brain injury . . . I just do not have a steady job. I do cash work, odds and ends.

Additionally, the Veterans shared some changes in participation in leisure activities. One Veteran stated, for example, "I used to love to work out, and for some reason, I don't . . . I have plenty of time to." Another Veteran discussed his decreased physical ability to participate in golf and perform at the level he had before his combat injuries:

I like sports and that . . . When I first got back, I tried to play some golf, but my shoulder just bugged me too much and it just took away a lot from me . . . I would screw up a shot and get upset, so I would walk off the golf course with friends. So, I basically put my clubs up until I start feeling better.

Strategies and Advice

The Veterans disclosed only a handful of strategies and advice that could assist new combat Veterans with mTBI returning home with their IADLs ([Appendix](#), available online only). One recommended—

I would tell them not to settle . . . Take a little breather. I'd tell them to start off slow. Don't start off where they had been . . . I tried to jump back into school and do everything I was doing before I left . . . and it all just didn't work out.

Interpersonal Interactions

Needs and Concerns

The Veterans reported needs and concerns in three areas of interpersonal interactions: communication, relationships, and support. Even though some of the Veterans discussed their combat experiences with spouses and with Veterans at Veteran service organizations, they reported being selective about what they shared and with whom they shared their experiences. They discussed postdeployment relationships and how they perceived their personal support and access to community support such as VA healthcare services. Regarding sharing combat experiences, one Veteran said, "The biggest thing . . . Veterans do not open up to people that do not relate to them because they don't feel that they know what . . . they've been through." Another said, "There are some guys out there that they kind of bottle themselves up and they do not tell their wives anything. I do not know if that is good or bad." A third Veteran reflected on a change in relationship with friends since he had returned from deployment: "I really had a lot of friends before I left . . . I don't go out and hang out with my friends anymore . . . It doesn't bother me either. Is that weird?"

Though changes in relationships occurred with some of the Veterans in pre- and postdeployment friendships, changes also occurred within families. One Veteran said, "I get irritable real quick. That's my biggest problem between my wife and I right now . . . I don't have no patience with her or the kids . . . especially my youngest . . . It just seems like we have drifted apart because of patience."

Another Veteran described his concerns related to the lack of community support at the time of transition into the community in this way:

All they told me when I got out was to go to a service organization and they'll help you . . . They'll square you away . . . But the numbers of people that are going to service organizations are . . . more than they've had in years . . . Hundreds of people are coming back, and they've only got two or three counselors. So they're swamped.

Strategies and Advice

None of the eight Veterans shared strategies for improving interpersonal interactions. Nor did any of them share advice in this area to assist other combat Veterans with mTBI returning home ([Appendix](#), available online only).

Community Reintegration

Needs and Concerns

These Veterans discussed difficulties they encountered as they attempted to reintegrate into their communities. Concerns centered on their desires to return to a combat unit in Iraq, on their adaptation to society, and on the expectations of others. One Veteran said that he “just really could not function I just wanted back in the Army, and I didn’t want to be out here.” One Veteran contrasted the recruitment “courting” processes to his transition into the community:

The transition could be better When you are recruited in the service . . . you get calls nonstop. You have to go and meet with them once a week. You have to go to all these little events. You have to do this. You’ve got to do that . . . getting you prepped to go to boot camp. Coming home, there is no one . . . There’s no transition or recruiters when you come out to guide you and make sure everything is in line. It’s all on you. Well, if you don’t know where to look, how the hell are you going to get it? You see this stuff on the news . . . ex-service . . . goes crazy . . . He’s mentally f— up in the head Their theory is that he slipped through the cracks of the system He didn’t slip through nothing.

Yet another Veteran described his transition as, “When you come home, you get tossed back into your setting . . . your family expects you . . . everyone expects you to be who you were.”

Strategies and Advice

Strategies used and advice offered to returning Veterans for their community reintegration included advice to be patient during this phase, taking one step at a time ([Appendix](#), available online only). Related to that, they stressed that returning Veterans should accept that they may not be able to immediately participate in all of their predeployment activities. Most importantly, the Veterans acknowledged the importance of allowing oneself time to reintegrate.

DISCUSSION

Needs and Concerns

This qualitative descriptive study explored the needs and concerns of eight combat Veterans with mTBI during

the first year of their enrollment in VA healthcare services, as well as the strategies they used and advice they would give to other returning Veterans dealing with these same problems. Based on the conceptual model in [Figure 1](#), we categorized the findings into six major themes: cognitive impairment, physical symptoms, emotions and behaviors, IADLs, interpersonal interactions, and community reintegration.

Consistent with findings by Heinemann et al. [27] and Corrigan [31], the Veterans in this study had needs and concerns related to cognitive impairments post-TBI, with memory loss being the most frequent problem. In Corrigan et al.’s study [32], almost 75 percent of the study participants exhibited symptoms of mTBI at the time of hospital admission.

Comparable with Lefebvre et al.’s findings [28], combat Veterans in this study also emphasized needs and concerns in managing multiple physical symptoms post-TBI, the most frequent being headaches, fatigue and/or insomnia, and tinnitus. Lefebvre et al. identified the management of fatigue and headaches as unmet needs in people with TBI, who viewed these symptoms as barriers to their adaptation postinjury [28]. Interestingly, we found no studies that emphasized the management of tinnitus as an unmet need. However, tinnitus has been demonstrated as a physical symptom commonly experienced by people with TBI [55–59]. Lew et al. suggested that people with TBI manage their tinnitus by seeking education and/or through cognitive-behavioral therapy and various self-management skills [58].

Managing emotions and behaviors in this study was also consistent with previous studies that identified stress, emotional upsets, and moodiness as frequent needs and concerns of people with TBI [27–28,30,32,34]. Lefebvre et al. was the only study mentioned previously that reported needs and concerns related to people with TBI’s uncertainty about the future of their disabilities [28]. These needs and concerns were also expressed by the Veterans in this study.

Consistent with the current results, other studies have found that obtaining employment, improving job skills, and increasing educational qualifications were relevant needs and concerns reported by people with TBI [27,30,34]. Financial challenges, managing money, and paying bills are common needs and concerns reported in the literature of people with TBI [27,29–30,32,35]. For example, people with TBI have reported the need for professional services to claim injury-related reimbursements

and in-service training [29]. Findings were similar among the Veterans in this study. They reported concerns about the limited number of Veterans service organization staff and their level of training to efficiently process and submit new Veterans' claims.

Comparable with previous studies [28–29,33], Veterans in this study reported decreased participation in leisure activities, concerns related to work and school, and the need for community support. In addition, Veterans with mTBI reported needs and concerns related to communication and relationships. These findings were consistent with earlier reports in which people with TBI expressed the need to foster social relationships [28–29,33]. We found a need for seamless transition from one setting to another setting in this study, as did earlier TBI studies [28–29,33].

Participants in this study had concerns related to returning to their combat unit and to expectations of others. Some experienced transition difficulties from Active Duty to civilian life and desired to return to a unit in Iraq. Others expressed concerns about redeployment, although these findings may also be true of many servicemembers without mTBI returning home from combat and deployment. Regardless of whether or not these findings are unique to Veterans with mTBI, these factors may increase the challenges they face upon their return, hampering community reintegration.

Strategies and Advice

Although Veterans with TBI expressed many needs and concerns in this study, their strategies and advice were limited. These findings are consistent with a previous needs and concerns TBI study [28]. In general, the strategies and advice offered were categorized in the three subcategories of memory, anger, and adaptation ([Appendix](#), available online only). Perhaps the Veterans had yet to adopt or develop strategies themselves in the other key domains and subcategories.

Strategy development and implementation requires planning, self-monitoring, problem solving, and memory abilities. Given the study participants' mTBI diagnoses and their reported needs and cognitive deficits, it is possible that their cognitive deficits are limiting their development and use of strategies (**Figure 1**) [3,5,17–19]. It is possible that the lack of spontaneous suggestions from the participants might be a result of the mental status at the time they were interviewed. Future longitudinal research may uncover strategies and advice as they

emerge over time. This also underscores the need for strategies and advice to address the many unmet needs and concerns that these Veterans with mTBI have. Further research as to what strategies and advice would be most helpful across all six domains in the proposed model is warranted and may lead to the development of future interventions.

Research Implications

The specific needs and concerns of Veterans with mTBI who returned from combat in Iraq and Afghanistan have not been previously reported in the literature. Even though we achieved data saturation with a small sample of eight Veterans, the emerging themes were consistent among the Veterans. The themes demonstrate how mTBI affects multiple domains of the Veterans' lives and, thus, their overall quality of life. This research facilitates the next steps of research, which are to explore the specific domains of HRQOL (i.e., cognitive impairments, symptoms, functional status, characteristics of the environment) and the overall HRQOL of Veterans with mTBI.

Theoretical models are essential for interventional healthcare researchers. Health professionals can adapt existing conceptual models, such as Ferrans et al.'s model of HRQOL [37], for diverse health conditions such as TBI [38–39]. We derived the model for this study a priori to the study in order to categorize and organize the identified needs and concerns of Veterans with mTBI so that effective interventions can be developed. The quotes and themes that emerged from the data provided preliminary support for the conceptual model derived from Ferrans et al.'s model of HRQOL and the TBI literature.

Department of Veterans Affairs Clinical Relevance

The findings of this study have the potential to directly affect clinical practice. Our results are not only consistent with the TBI literature, but they are also consistent with the *Clinical Practice Guideline for Management of Concussion/Mild Traumatic Brain Injury* [5]. If validated in a larger, more diverse sample of Veterans with mTBI and across different sites, the Conceptual Model in the Context of mTBI could provide a framework for healthcare providers, especially nurse care managers, to deliver comprehensive care to Veterans with mTBI. This model could potentially be used to develop assessment protocols, develop areas for priority interventions based on individual assessments, and help establish comprehensive programs to assist Veterans with mTBI, and if validated,

also among Veterans with TBI of greater severity. The results presented in this study provide initial data upon which future research can be built.

Limitations

This study had limitations. Even though there was a 30 percent response rate in this study, we were unable to contact approximately 10 percent of potential participants. There were multiple challenges in contacting and recruiting Veterans because they were reintegrating in work, school, and family activities. Because we used only one VA site, the sample was not diverse because it consisted of only non-Hispanic, Caucasian males. Although there are many women deployed to Iraq and Afghanistan participating in combat, some of whom have mTBI, their needs and concerns have not been represented in the findings from this study. Female combat Veterans with mTBI may have unique needs and concerns because of sex differences [60]. Another limitation was that we excluded Veterans that had hearing or speech impairments preventing them from normal telephone conversations. Hearing impairments have been noted in new combat Veterans with TBI who have experienced blast injuries [5]. Despite these limitations, this study provided valuable information in this understudied group of Veterans with mTBI, which was consistent with the proposed conceptual model in the context of mTBI derived from Ferrans et al.'s HRQOL model [37] and the TBI literature.

CONCLUSIONS

Successful community reintegration of combat Veterans with mTBI is likely to be compromised by mTBI-associated long-term cognitive deficits. Conceptual models developed in the context of mTBI are needed to organize the wide variety of needs and concerns experienced by these Veterans. This qualitative study provided preliminary support for a new context-specific conceptual model (**Figure 1**) derived from Ferrans et al.'s HRQOL model [37] and the TBI literature. This model has the potential to guide the future development of interventions to meet the individualized needs and concerns of Veterans with mTBI returning from combat. Further research to provide support for the model as a guide for assessment and intervention development in Veterans with mTBI is warranted.

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