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The Power of Cross-Disciplinary Teams for Developing First Responder Training in TBI

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Abstract

Misunderstanding of the symptoms of traumatic brain injury (TBI) often leaves first responders ill-equipped to handle encounters involving subjects with brain injury. This paper details a cross-disciplinary project to develop and disseminate a training curriculum designed to increase first responders' knowledge of and skills with TBI survivors. The article aims to assist other professionals in understanding the process of working within a cross-disciplinary team to develop and disseminate a training curriculum. Lessons learned based on the development of such a curriculum for first responders working with persons with TBI will be valuable to training coordinators and serve as best practices for implementing similar training programs for specialized learner groups.

Résumé

L'incompréhension des symptômes du traumatisme crânien laisse souvent les premiers répondants mal équipés pour gérer des interventions auprès de traumatisés crâniens. Cet article expose les détails d'un projet interdisciplinaire visant à créer et à faire connaître un programme de formation conçu pour hausser le niveau de connaissances des premiers répondants envers les traumatisés crâniens, et pour améliorer leurs aptitudes à leur venir en aide. Il vise aussi à aider d'autres professionnels à comprendre le processus de travail d'une équipe multidisciplinaire pour créer un programme de formation et le partager. Les leçons apprises par la création d'un tel programme pour premiers répondants travaillant auprès de traumatisés crâniens seront précieuses pour les coordonnateurs de

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formation et serviront de meilleures pratiques dans la mise en œuvre de programmes de formation similaires pour groupes d'apprenants d'une discipline spécialisée.

Introduction

Traumatic brain injury (TBI) is the leading cause of death, permanent disability, and seizures worldwide (International Brain Injury Association, 2016). TBI is broadly defined as any head injury that disrupts normal brain functioning (Center for Disease Control, 2016). Such injury can occur from any external "bump, blow or jolt" or from a head injury that penetrates into the brain (CDC, 2016, para. 2). International data on TBI are inadequate due to lack of worldwide standardization regarding TBI definitions and treatment (Roozenbeek, Maas, & Menon, 2013). Researchers suggest that standardization will increase with the release of the World Health Organization's International Statistical Classification of Diseases and Related Health Problems, ICD-10, which offers clinically based definitions of TBI.

While statistics, causes, and reporting of TBI differ, signs of impairment from TBI are consistent worldwide. The TBI level of severity may be mild, moderate, or severe, depending on the force of the external trauma to the brain, the number of previous TBI incidents, and the location of damage in the brain. Survivors' impairments may include changes in physical ability, thinking, learning, vision, hearing, smell, taste, social skills, behaviour, and communication (Bryant, 2011). Neurocognitive deficits include impairments with spatial awareness, attention, and executive functioning. Difficulties with self-regulation and impulsivity are common, and approximately 70% of TBI survivors develop major depressive disorder (Roozenbeek et al., 2013).

While these symptoms can be identified through clinical evaluation, first responders worldwide are required to make rapid assessments when encountering TBI survivors in the community. In pressured situations, misunderstanding of the symptoms of TBI may complicate differentiation of TBI from other conditions, such as substance use (e.g., alcohol, illegal drugs, and prescription medications), post-traumatic stress disorder (PTSD), personality disorders, and difficulty with anger management.

This paper describes the development and dissemination of a training curriculum to support law enforcement officers who come in contact with TBI survivors; in the United States, these include metropolitan police officers, county sheriff's deputies, paramedics, firefighters, and other rescue personnel. Particular attention is provided to how training coordinators build a team, prepare a curriculum, and disseminate the training program.

Literature Review

Traumatic brain injury and the European Union

Approximately 100,000 hospitalizations per year in the European Union are due to TBI (International Brain Injury Association, 2016), with as many as 7.7 million people listed as having a TBI disability (Roozenbeek et al., 2013). Standardized reporting is difficult since there is no centralized agency overseeing this specialized issue. Close to 50% of these hospitalizations are due to motor vehicle accidents, the second leading cause being sports-related incidents (International Brain Injury Association, 2016).

Traumatic brain injury and North America

In Canada, approximately 165,000 people per year acquire a brain injury (Northern Brain Injury Association, 2014). The total number of Canadians living with TBI is estimated to be as high as 1.5 million. Canadian experts note a high link between TBI and risk for mental health conditions such as substance abuse, PTSD, and major depressive disorder. Reported causes of TBI are motor vehicle collisions (30%) followed by sports (20%) and cycling (15%) (Brain Injury Association of Waterloo-Wellington, n.d.)

In the United States, TBI data collection is managed by the Center for Disease Control (Roozenbeek et al., 2013). A centralized capture point allows for a consistent definition and means of data collection. It is estimated that 5.3 million TBI survivors currently live in the United States (International Brain Injury Association, 2016). In recent years, the United States has seen a significant increase in research on combat-related TBI among the veteran population, as an estimated 16–20% of returning service members suffer from this specific injury (de Riesthal, 2009).

Need for Training

Misunderstandings between first responders and TBI survivors have resulted in confrontations between law enforcement and TBI survivors exhibiting suspicious behaviours (Baker, 2012; DeCesare, 2011; Longa, 2013). The Louisville Metro Police Department in the state of Kentucky reported an incident in which an officer handcuffed a man who did not comply with requests. The man was a lieutenant colonel in the US Army who had memory and speaking difficulties due to a TBI incurred during combat (Baker, 2012). The *Wounded Times* reported an incident in which police tasered a military veteran with PTSD (DeCesare, 2001). The *Daytona Beach News-Journal* published a story in which a resident who had served three tours of duty in Iraq and Afghanistan had his firearms confiscated because of concerns about his mental health and safety (Longa, 2013). All three occurrences resulted in lawsuits.

The challenge for first responders is especially difficult when TBI survivors are service members (i.e., veterans or active military personnel) attempting to reintegrate into the community

after deployments (National Center on Family Homelessness, 2010). This population is less likely to report signs and symptoms for fear of negative impacts on job responsibilities and status. Without training, professionals do not understand the specialized needs of TBI survivors. Worldwide, attempts at specialized training are beginning to emerge. An analysis of current training offerings is important to understand ways to improve training curricula focused on TBI survivors. These offerings are discussed in the following section.

Current Training

In 2011, the International Federation of Red Cross and Red Crescent Societies released international guidelines for resuscitation and first aid that include a portion on head and spinal injuries as well as psychosocial support for mental health. The 11th World Congress on Brain Injury, held in March 2016 at The Hague, in the Netherlands, focused on neuro-rehabilitation, neuro-trauma, and technology (International Brain Injury Association, 2016).

In the United States, some jurisdictions have begun to require mandatory training in TBI, and a number of states and metropolitan agencies have instituted optional or mandatory TBI training for law enforcement officers (National Conference of State Legislatures, 2015). The United States Federal Bureau of Investigation supports law enforcement officer training in crisis intervention, which typically includes information on mental illness, substance abuse, suicide prevention, TBI, personality disorders, and de-escalation techniques (Jines, 2013). Many municipal programs, however, tend to be optional rather than mandatory (Department of Criminal Justice Training, 2015). Municipal programs also tend to be proprietary, making them inaccessible for evaluation by researchers and unavailable to first responders outside the municipality.

Training Effectiveness

Law enforcement training on interacting with TBI survivors has been shown to be effective in improving communication between the two parties (Togher, McDonald, Code, & Grant, 2004) and their interactions in general (Weaver, Joseph, Dongon, Fairweather, & Ruzik, 2013). Training in crisis intervention has been shown to be effective when it involves consultation with mental health professionals and community service providers (Steadman et al., 2001).

Crisis intervention training (CIT) (Watson, Morabito, Draine, & Ottati, 2008) is a model that trains selected officers within an agency to manage encounters with individuals with mental illness. The goals are to improve safety during encounters, to divert those with mental illness away from the criminal justice system, and to improve access and referrals to mental health services. Studies have begun to demonstrate the effectiveness of this model (Compton, Bahora, Watson, & Oliva, 2008; Watson, Ottati, Draine, & Morabito, 2011). One limitation of this model is that only select officers receive training, and not all agencies opt to participate (Shackelford & Nale, 2016).

Outcome

This literature review has focused on law enforcement and the need for training on TBI. At the same time, when the authors of this paper presented at The Kentucky LifeSavers Conference, it was quickly apparent that the broader audience of first responders was interested in the topic of TBI. As an outcome, a decision was taken to share information about the development and dissemination of a training curriculum, as doing so would be valuable to diverse first responders, including law enforcement officers, paramedics, firefighters, and other rescue personnel. Lack of training has left first responders ill-equipped for working with TBI survivors.

A model for developing and disseminating training for first responders was designed by this research team to help increase the numbers of first responders trained in understanding individuals with TBI. The purpose of this article is to assist other professionals in understanding the process for working with a cross-disciplinary team to develop and disseminate a training curriculum.

Method

Needs Assessment Development

Ethical approval for this project was obtained from the Western Kentucky University (WKU) Institutional Review Board in accordance with institutional compliance requirements. The Institutional Review Board approved the study procedures, the data collection and analysis processes, and the processes for obtaining participant consent and maintaining participant confidentiality.

The project began with a needs assessment to gather information that would guide team building and curriculum development. A consent form and questions were designed to collect information in four primary areas: (i) participant demographics, (ii) opinions about the need for law enforcement officer training in TBI, (iii) suggestions for team building, and (iv) opinions on curriculum development. Both multiple choice and open-ended questions were used in the needs assessment.

An initial draft of the questions was prepared using social service needs assessment tools as guides. Input on content and wording was provided by four reviewers: two with backgrounds in law enforcement, one with expertise in TBI, and one with expertise in the delivery of educational material. Modifications to content and wording were made based on the reviewers' feedback.

Participants

The needs assessment was sent to regional providers of services for TBI clients, including military/veterans services, community mental health centres, private practitioners, law enforcement agencies, medical professionals, and therapeutic organizations. Snowball sampling was used to identify additional potential participants who would have specific interest and expertise in the intersections of TBI, community reintegration, and education. Due to the very specific nature of the population, the group of experts was small. The experts provided relevant information to guide processes, and the names of other specific state-level experts who contributed substantively to the project.

Potential participants were contacted through an email, which provided a brief summary of the project and a link to an online site. Those who followed the link were given information about the nature and purpose of the project, procedures, possible discomforts and risks, benefits, methods used for maintaining confidentiality, and the right to refuse or withdraw participation at any time. Participants indicated consent by clicking on the Continue button, which took them to the actual needs assessment.

The needs assessment was sent to 34 potential participants. Three follow-up email messages were sent to non-responders. Eleven surveys were initiated and nine were completed, for a return rate of 26%.

Data Analysis

Demographic data were analyzed using descriptive statistics. Content analysis of open-ended responses was performed to identify themes for curriculum development. No inferential analyses were employed due to the small sample size.

Results

Descriptive data analysis generated a participant profile, while participant responses and comments offered insight into team and curriculum development.

Demographic Data

The demographic data (see Table 1) revealed that the majority of participants had a professional rather than personal association with TBI. Eight of nine participants represented military and law enforcement agencies.

The number of responses for this item was larger than the number of participants ($n = 9$), since participants were able to select more than one descriptor of their role. Nine participants

identified a total of 15 roles. These results indicated that the participants represented a wide range of associations with TBI, and a broad range of work experience, education, and geographic location.

Table 1: Demographic Data Derived From Needs Assessment

Characteristic	Frequency	Mean (SD)	Range	N
Relationship to TBI				15
Military	4			
Law enforcement	4			
Political	2			
Healthcare provider	0			
Mental health provider	1			
Educator	3			
Personal	1			
Supervisory role				9
Yes	6			
No	3			
Years of experience		10.88 (9.2)	2–32	9
Geographic setting				9
Rural	2			
Small city	3			
City/metro	4			
Level of education				9
Some high school	0			
High school	1			
Bachelor's degree	3			
Master's degree	3			
Doctoral degree	2			

Needs Assessment: The Issue of Officer Training

Seven of the nine participants indicated that they considered the issue of TBI training for law enforcement officers to be very important. Two of the nine considered it to be somewhat important.

Seven participants reported an increasing need for training in their region, and two reported no change in need. Participants identified a number of factors that they believed affected the availability of TBI training for officers in their region (see Figure 1). The most commonly cited factors were local budgetary constraints, the attitudes of officers, and the financial costs of training.

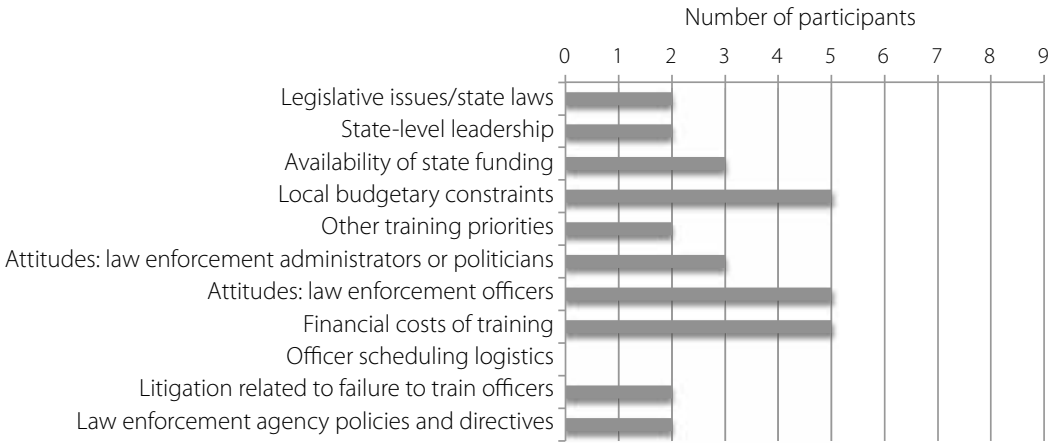

Figure 1

Factors that impact availability of TBI training.
No participants selected "officer scheduling logistics" as a factor.

Needs Assessment: The Team

In the third section of the needs assessment, participants were asked who should have a voice in the development of a TBI training curriculum. Twelve specific categories were suggested. Participants were encouraged to offer the names of specific persons who could provide input on the different categories. Participants most frequently recommended the inclusion of law enforcement agency administrators, military veterans, TBI survivors and caregivers, and advocacy groups. Also provided were the names of six state-level experts in related fields, one TBI survivor with a military background, one state department, and one state non-profit agency.

Needs Assessment: The Curriculum

In the fourth section of the needs assessment, participants were asked to share their thoughts on the design of a curriculum. They answered questions related to content, cultural factors, format, accreditation, length, audience, presenters, and endurance of training. Each content topic listed in the needs assessment received wide support.

The question about the culture involving military veterans and law enforcement personnel drew the highest number of comments from participants. The four suggested areas of consideration were: (i) importance of chain of command, (ii) prior training, (iii) typical personal characteristics, and (iv) environmental factors such as other responsibilities, schedule demands, and the availability of technology. Each of these areas was chosen as important by more than half of the participants.

Comments made by the participants pointed to the complexity of the issues surrounding this topic. One participant with a law enforcement background stated: "Training in dealing with emotionally or mentally disturbed will track similar issues with TBI." This opinion was also held by representatives of the state-level agencies contacted about the project and reflects the belief that the currently available training through the Department of Criminal Justice adequately covers the topic of TBI. This viewpoint may be due to the concern that should every special interest group request specialized training for first responders, the demand on time and resources would become unmanageable.

The participant statement that "sometimes inexperienced (young and strong) law enforcement will lack empathy for TBI vets" was significant. Crisis intervention training (Watson et al., 2008) reveals that not all law enforcement officers are equally well suited to crisis intervention, and that attempts to identify and train those who have a suitable attitude and mature approach to law enforcement are important.

When asked about recommended formats for training, participants reported preferences for slide presentations with audio, live classroom presentations, short videos displaying TBI signs, and/or a combination of online and live presentations. They unanimously supported the ideas of accreditation and continuing education hours being awarded to first responders for completion of the training. The majority of participants indicated that training should be between three and six hours.

Seven of nine participants indicated that training should be offered to all law enforcement personnel rather than to select officers. They also indicated support for training regional professionals who would then offer the training once they had returned to their regions.

Opinions about who should offer the training were solicited, and results were mixed: six participants identified law enforcement personnel, five identified military personnel or a combination of relevant personnel, four identified educators trained in the topic, and two identified community professionals skilled in relevant areas.

Based on the idea that the literature review indicated that knowledge and skills gained in training are not always maintained over time, participants were asked for their thoughts on how to maximize maintenance after training. Participants suggested reviews provided online or by regionally based personnel, conducted either annually or every other year.

Developing the Team

Another primary goal was establishing a cross-disciplinary team with substantial expertise in first responder training related to TBI, including issues related to returning military veterans. Snowball sampling was used to identify a pool of interested participants with relevant expertise. Discussions by email and telephone determined individuals' availability and desire to attend planning meetings.

Team members who committed to and followed through on the project brought a rich knowledge to it and represented a broad range of experience and expertise. They included the following:

- The Principal Investigator: A licensed and certified speech-language pathologist who represented the university and brought expertise in educational methods and TBI.
- The Co-investigator: A licensed social worker who represented the university and brought expertise in educational methods, PTSD, and de-escalation techniques.
- A representative from the Office of Highway Safety: The mission of this organization is to reduce the number of serious injuries and fatal vehicle accidents in the US state of Kentucky.
- A Veterans Outreach Coordinator for the Brain Injury Alliance of Kentucky, who was also a former sergeant in the United States Marine Corps.
- A TBI survivor who had completed three tours of duty in Iraq and Afghanistan and was also a trained paramedic.
- A licensed social worker who had extensive experience working with military veterans with TBI and PTSD.

Developing the Training

Once the team had been formed, face-to-face meetings were held at a central location to begin developing the curriculum, format, and timeline. Topics were selected through collaborative discussion and assigned to those with relevant expertise. A timeline was set for completion of specific tasks, taking into account the unique nature of each team member's job requirements. The team attended the Kentucky LifeSavers Conference to present as an expert panel. Based on the conference experience, the decision was taken to broaden the focus from law enforcement personnel to all first responders. Curricular drafts were prepared, reviewed, and edited for accuracy and consistency.

Once content was developed, team members captured their presentations using professional-quality video equipment at the Western Kentucky University Technology Resource Center (TRC). Multiple-choice quizzes of five questions each were developed for all content areas. The

quizzes were developed to assess for sufficient mastery before subsequent modules were made available.

Course designers at the WKU Office of Distance Learning assisted in developing the structure of the course. They created objectives for each module, descriptive sections, a Meet the Speakers sidebar, and links to technology and educational support services for learners.

Evaluation of Training Effectiveness

The content of the online training experience was provided in a live presentation on two occasions during Summer 2015. The first presentation was made to first responders at the Kentucky LifeSavers Conference; the second presentation was made to an audience of military cadre who work with active military personnel and veterans who live with TBI. On both occasions, session evaluations were strongly positive and indicated that the content was relevant and useful. Participants who completed the post-session evaluation at the military presentation ($n = 29$) reported the following (10 indicated strong agreement and 1 indicated strong disagreement):

- Presenters were knowledgeable about the subject. ($M = 9.59$, $SD = .73$)
- The information provided will be helpful in my future work. ($M = 8.79$, $SD = 1.52$)
- I would recommend this workshop to others. ($M = 8.86$, $SD = 1.46$)

Lessons Learned: Meeting the Needs of First Responders

First responders are scheduled in shifts that span day, evening, and night-time hours. As a result, it is challenging and expensive for agencies to bring all employees together for a scheduled training. First responders also have unpredictable schedules, with periods of calm interrupted by the need to respond to calls for service. Consequently, training was conceptualized as an online course composed of modules that participants can enter and exit at will, choosing days and times of completion over a period that works with their schedules.

This learner group may not be familiar with course management systems and distance learning technologies. Thus, an effort was made to create a streamlined user experience. Additionally, a number of features were built into the training to support the learning experience for this group of adult learners. Video and audio were used to share most of the content, to enhance learner attention, and to provide visual impact for concepts. Short five-question quizzes were presented at the end of most modules, and a passing score of 80% was required. This requirement was intended to ensure that the learner had acquired understanding of concepts and content, such as TBI symptoms, before progressing to application-focused content, such as de-escalation techniques.

As part of the team-building and curriculum-planning process, state-level officials were consulted to determine whether an avenue existed to offer accredited continuing education hours to participants. This effort was not productive. A certificate of completion is, therefore, provided to participants who pass the training. The certificate can be printed and placed in a personnel file as evidence that an agency has educated its employees about TBI.

Cost was also an important consideration, since the training needs to be accessible to agencies with limited budgets as well as large numbers of personnel in need of training. A balance was established, with the WKU Division of Extended Learning and Outreach covering the university costs associated with registration and marketing.

Lessons Learned: The Collaborative Process

This section is intended to guide training coordinators in best practices for working across disciplines to develop and implement training. As a starting place, it is important to involve diverse team members from various disciplines to ensure different perspectives on working with TBI survivors. Within each discipline, making contact with a professional responsible for continuing education can be very helpful. This individual will have an education focus and an interest in being part of the team. While it is considered a strength for any training situation to have multidisciplinary team involvement, cultural differences among the disciplines will require consideration. In addition to these professionals, training developers should strongly consider including TBI survivors as team members because of their unique perspectives.

It is helpful to have a facilitator for the team who will note commonalities and mediate about divisive issues. The facilitator must also recognize issues that might arise when working with geographically diverse team members. Careful consideration of communication across different time zones is important. Online meetings may be used to decrease travel time and costs.

Conclusions, Limitations, and Future Directions

This project brought together professionals with widely different backgrounds and experiences to work collaboratively on the creation of a training program. The expertise provided by team members was extensive and rich, enabling the development of a curriculum that was far more comprehensive than any member could have created alone.

Conclusions

Creating a training curriculum for a specialized audience requires careful attention to the nature and culture of the learning group. The needs of adult learners also require specific attention. Generally, adults need a streamlined experience that reflects the professional and life demands of adult professionals.

The cross-disciplinary makeup of the development team was both the greatest strength and the greatest challenge in this work. Each team member brought unique priorities and varied perspectives, which could have resulted in a project without cohesion or consistent direction. The presence of a facilitator with educational expertise bridged the divide between these cultures and priorities and led the team to create a focused, cohesive learning experience that stayed true to its objectives. The facilitator was also important in keeping the project moving forward and enforcing deadlines.

Identification of training coordinators within cooperating organizations was likewise important to the project. These individuals made time to complete project tasks, since the goals of their primary employment were consistent with the goals of the project.

Limitations

One limitation of this study is the small sample size used in the needs assessment portion of the project. The combination of a limited number of individuals with relevant expertise and a low return rate for the surveys resulted in a sample size that prevents generalization of the results beyond the initiative. The specific information gained through the survey met the needs of the project. However, greater data from a much larger sample would be required for similar projects outside the immediate geographic region.

An evaluation of the effectiveness of the online training curriculum has not yet been completed. While evaluations of the live presentations of the curricular materials were positive, the next step for this project is in-depth evaluation of the effectiveness of the actual training experience.

A further limitation is that the online training does not provide the opportunity for learners to apply their new knowledge through hands-on practice. Knowledge gained without an experiential component may not be as deeply learned and may not endure as long as knowledge that is applied in real-life or even role-playing situations. This realization is especially important in disciplines that work in clinical settings or face-to-face contexts with challenging clientele (Sand, Elison-Bowers, Wing, & Kendrick, 2014).

Future Directions

Once the effectiveness of the training has been evaluated and necessary revisions implemented, marketing of the training curriculum will be the next step. This step will involve identifying contact persons at appropriate agencies and in first-responder training programs, supplying descriptions of the training opportunity, and providing motivation for agencies and programs to direct a portion of their time and training budget to the issue of TBI.

Additional future directions for this initiative include exploring external funding opportunities. Further funding could be used to support marketing and expansion of the TBI training to include on-site educational sessions. The inclusion of (i) role-playing of encounters between first responders and TBI survivors and (ii) evaluation of knowledge and skills maintenance over time are important objectives.

Increased knowledge regarding the ways that TBI manifests will assist in decreasing the number of misunderstandings between first responders and TBI survivors. Sharing the processes of team development and curriculum development may also contribute to replication of this initiative in other geographic areas, which will, in turn, increase training options for first responders. Finally, the availability of education related to TBI presentation will lessen the burden of community reintegration for returning military service members.

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