Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health

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Abstract

Suicide among first responders, including pre-hospital emergency providers, emergency department staff, and law enforcement, is significantly higher than among the general population. There are various forms of mental health interventions, however, knowledge held by first responders could be a predictor of mental health outcomes. Implementing an educational curriculum enhancement for emergency medical technician (EMT) students may help increase self-efficacy and knowledge of mental health. In a community college in the southwestern United States, an educational intervention was developed to enhance mental health knowledge for EMT students. The intervention was created to include four interactions with students in the classroom setting to implement recruitment, pre and post survey completion, and a 1-hour lecture. The surveys consisted of pre and post student assessment of mental health knowledge and self-efficacy. Results suggested that EMT students increased their knowledge of mental health and personal self-efficacy. This intervention is brief and effortlessly implemented into an existing curriculum to produce strong outcomes. This project demonstrates that a brief educational intervention offers an effective means of knowledge improvement while being cost effective and easily implemented. The use of curriculum enhancement was a novel approach and filled an identified gap in literature and education. Additional research is needed to further explore the effects of mental health knowledge enhancement for first responders.

Keywords: first responder, suicide, education, mental health, trauma

Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health

First responders are most notable for responding to public emergencies such as fires, car accidents, drownings, victims of crime, and serious health events. They include emergency medical services (EMS) personnel which is comprised of emergency medical technicians (EMTs), paramedics, and firefighters who endure the occupational hazard of witnessing traumatic events of others, known as secondary or vicarious trauma, which puts them at risk for suicide. Exposure to secondary traumatic events can lead to development of Post-Traumatic Stress Disorder (PTSD) which can present with depression, substance abuse, and suicidal ideation. Past childhood trauma can predispose a first responder to chronic health and behavioral conditions that may intensify with secondary trauma experienced on duty.

Background and Significance

Problem

Reducing suicide rates nationally is part of Healthy People 2020 objectives (Office of Disease Prevention and Health Promotion [ODPHP], 2019). First responders with a history of childhood trauma, compounded with secondary trauma experienced at work, have an increased risk for the development of these negative mental and physical health outcomes. First responders have an increased risk for developing PTSD and comorbid diagnoses during their lifetime (Armstrong, Shakespeare-Finch, & Schachet, 2014; Fjeldheim et al., 2014; Jahnke, Poston, Haddock, & Murphy, 2016; Martin, Tran, & Buser, 2017). In 2017, among first responders, there were more deaths by suicide than in the line of duty (Heyman, Dill, & Douglas, 2018). A retrospective study conducted in Arizona demonstrated that EMT's have a 39% greater risk of suicide than the general public, with an increase to 61% with exposure to twelve or more suicide calls (Vigil et al., 2018). With increased knowledge of this risk, there remains a lack of

education, awareness, and acceptance among first responders in relation to their own mental health symptomology and needs.

There is minimal education provided to new emergency personnel about the increased risk of suicide associated with the profession. The National Association of Emergency Medical Services Educators (NAEMSE) provides the standards that instructors must meet for educating EMS students (National Association of Emergency Medical Services Educators [NAEMSE], 2019). Curriculums for new EMT students do not include education on risk factors for potential development of PTSD and suicide. Adverse Childhood Experiences (ACEs) include abuse, neglect, and familial challenges, and when experienced by an individual can alter their adult wellbeing and predispose them to health-related issues, including suicide (Centers for Disease Control and Prevention [CDC], 2019). First responder's awareness of ACES as a personal risk factor may impact willingness to seek out mental health services when secondary trauma is experienced on duty.

Purpose and Rationale

To address suicide among first responders it is important to discuss the educational preparation for new EMTs in relation to recognizing how risk factors, including past traumatic experiences can contribute to current vulnerabilities for developing PTSD from secondary trauma. First responders have an important role within society to emergently care for the sick and injured. If a first responder is not aware of personal risk factors and later develop PTSD symptoms, then that first responder may not be able to effectively function on duty as well as have increased potential for suicide. A project was developed to address this emerging concern for negative mental health outcomes among first responders.

Epidemiological Data

Multiple research studies have demonstrated the presence of PTSD among first responders. Firefighters have a greater rate of suicidal ideation and suicide attempts than military personnel and the general public (Martin et al., 2017). As the severity of PTSD symptoms increases, the risk for suicide increases as well (Martin et al., 2017). Within emergency medical organizations, increasing mental health resources and addressing the collective effect of experienced critical incidents and personal trauma of first responders may assist in decreasing rates of PTSD development (Armstrong et al., 2014). Arizona Revised Statute ARS 38-673, passed in April 2018, offers traumatic event counseling for public safety employees, as well as reimbursement for lost time on the job (Arizona State Legislature, 2019). This is beneficial for first responders; however, it is a reactive versus a proactive approach in that the first responder has already developed symptomology from experiencing a secondary traumatic event.

A significant relationship exists between individual ACEs score severity and health outcomes (Felitti et al., 1998). ACE's are formally recognized by the CDC as a preventable public health issue (CDC, 2019). In one study, first year paramedic students reported a high incidence of non-work related trauma experiences including childhood abuse and neglect as well as high rates of physical and mental health symptoms (Fjeldheim et al., 2014). In another study 38.4% of paramedics reported experiencing childhood abuse which was correlated with increased depression and burnout symptoms (Maunder, Halpern, Schwartz, & Gurevich, 2012). Although the prevention component of ACEs is not directly applicable to first responders, the knowledge of the correlation among childhood trauma and adult wellbeing is pertinent for this population, particularly with exposure to secondary trauma and risk for PTSD.

Internal Evidence

The National Registry of Emergency Medical Technicians (NREMT) is the lead agency for standardizing certification testing for EMTs. Required bi-annual recertification contains 0.5 hours of mental health education (NREMT, 2019). There is minimal content that focuses on self-care for the first responder in response to secondary or vicarious trauma. This lack of education in conjunction with the cultural lack of acceptance of mental health for first responders contributes to the overall issue.

Currently, within a community college in the Southwestern United States, EMT students are provided minimal information of their risk for developing mental health issues. Due to the sensitivity of the topic of mental health within the medical first responder field, there is a lack of hard data within this agency. At this community college, each semester there is an average of 100 EMT students preparing for certification to work as first responders. There is soft data in the form of discussion among faculty of an awareness of the issue of PTSD and increased risk for suicide. Students are not taught about how past trauma experiences (ACEs) may be triggered by situations experienced on duty (secondary trauma) or how to seek out mental health services when this occurs.

PICOT Question

This information has led to the development of the PICOT question, “In EMT students (P), how does education on adverse childhood experiences and secondary trauma (I), compared to no education (C), affect awareness of risk factors and willingness to seek mental health treatment (O)?”.

Evidence Synthesis

Search Strategy and Narrative Literature Review

Databases searched for the literature reviewed included PubMed, PsycINFO, Cumulative Index of Nursing and Allied Health Literature (CINAHL), and Cochrane Library. Keywords included *first responder, paramedic, fire fighter, ptsd, post-traumatic stress disorder, secondary trauma, vicarious trauma, aces, adverse childhood experiences* and *childhood trauma*. The initial search of *first responder AND ptsd* yielded 491 results on PubMed, 153 on PsycINFO, 23 on CINAHL, and six on Cochrane Library. Limits were then set to include articles within the last five years, English language, and peer reviewed.

Inclusion criteria included studies that were written in English, peer reviewed, and included first responders, military personnel, and health profession students. Studies conducted outside North America, Europe, and Australia were excluded due to the potential for cultural inapplicability to the population. The one exception included an article conducted in South Africa due to the inclusion of ACEs as a variable in the study.

After review of the titles and abstracts of the articles from the database searches, a total of 20 articles were relevant for further review. Full text copies were utilized to complete rapid critical appraisals. After review, 10 studies were chosen for this literature review based upon their applicability to the specific PICOT components.

Critical Appraisal and Synthesis

Ten studies retained were evaluated for quality utilizing the Melnyk and Fineout-Overholt (2015) rapid critical appraisal. Each study was then individually evaluated (Appendix A). A majority of the studies were high quality midlevel III evidence, with one being high quality level I evidence (Appendix B). Sample demographics were heterogenic with seven studies that included EMS personnel, two included the general population, and one included graduate medical students (Appendix B). A majority of the studies were within the last five

years, with one study from 1998 due to it being the landmark study recognized by the CDC for ACE's (Appendix B).

Evaluation demonstrated heterogeneity of interventions comprised of questionnaires, education, and database review for mental health symptoms including stress, depression, anxiety, substance use, resiliency, mindfulness, exposure to a traumatic event, childhood trauma, and suicidality (Appendix B). A majority of the questionnaires utilized were standardized tools that are valid and reliable (Appendix A). No single questionnaire was implemented in more than two studies (Appendix B).

Evidence for Synthesis as a Foundation for Project

Findings demonstrated the presence of all mental health symptoms being assessed (Appendix B). Five studies showed occurrences of stress, PTSD, depression, anxiety, and exposure to a traumatic event, four studies showed occurrences of substance use, resiliency, mindfulness, suicidality, and past childhood trauma, and three studies showed presence of negative physical health symptoms (Appendix B). No studies found an absence of the mental health symptoms measured (Appendix B).

EMS personnel present with multiple mental health symptoms. Despite the existence of resiliency and mindfulness skills there remains a presence of stress, PTSD, depression, anxiety, substance use, and suicidality. The presence of these symptoms among EMS personnel, as well as a history of childhood trauma significantly contribute to the development of a diagnosable mental illness. Evidence has demonstrated that risk factors for suicide are present among EMS personnel, yet research lacks interventions to educate EMS personnel on these risk factors, and further, to observe probable solutions for combating the development of mental health

symptoms. The goal is to educate EMS personnel to increase awareness of risk factors for the development of PTSD and mental health symptoms that can affect suicidality.

Theoretical and Implementation Framework

The ACE Pyramid

The ACE Pyramid was developed during the original ACE study to evaluate how childhood trauma influences health throughout life resulting in early death (Felitti et al., 1998). The model suggests that as an individual develops and advances up the pyramid there is a correlation with early death (Appendix C). The ACE Pyramid has since been modified and expanded to eight levels including: (1) general embodiment, historical trauma; (2) social conditions, local context; (3) adverse childhood experiences; (4) disrupted neurodevelopment; (5) social, emotional, and cognitive impairment; (6) adoption of health risk behavior; (7) disease, disability, and social problems; and (8) early death (Appendix C). The ACE pyramid was chosen as the conceptual framework due to its applicability as an overall trauma risk assessment for early death as well as its correlation to negative effects on mental health when secondary trauma is experienced.

ACE Star Model of Knowledge

The Academic Center for Evidence (ACE) Based Practice Star Model of Knowledge Transformation was chosen to help guide the process of evidence-based project development, implementation, and (Stevens, 2012) . The ACE Star model was selected due to its circular depiction of implementing evidence-based practice (EBP) through discovery, summary, translation, integration, and evaluation (Appendix D). This model allows for translation of current evidence into practice within a formal educational setting as well as cyclic application of

up to date EBP research (Stevens, 2012). The logic model developed demonstrates the cyclical curriculum knowledge evaluation and subsequent alterations as needed (Appendix E).

Applicability to Project

Internal and external evidence suggests that there is an increased risk for suicide among first responders. Evidence based research supports the presence of mental health symptomology among current EMS personnel, yet there is a lack of education regarding risk factors for the development of mental health symptoms for EMT students before entering the field. The exposure to secondary trauma coupled with a history of childhood trauma may compound this issue. Therefore, utilizing the ACE Pyramid as a framework for understanding the effects of trauma on mental health outcomes, as well as the ACE Star Model for project design allows for a robust foundation for educational change.

Methods

Ethical Considerations

Prior to initiation of this quality improvement project, exempt approval was obtained from the Arizona State University IRB on July 26, 2019 (Appendix F). There were no identified risks for participants.

Population and Setting

Adult students enrolled in an Emergency Medical Technician (EMT) course were recruited with flyers on the first day of class at a community college in the southwestern United States. Inclusion criteria consisted of: 18 years of age or older, English speaking, able to read and write, and current enrollment in an EMT class. The participants were not compensated for their participation. The setting was an Emergency Medical Technician and Fire Science Department community college in the southwestern United States.

Systems Change and Impact

A system change, through implementation of a curriculum to include education on optimal mental health and role performance will address the gap in the current education provided. The expected impact is an increase in EMT student's awareness of optimal mental health and role performance as well as mental health resources.

Intervention

An educational intervention was developed to inform EMT students on optimal mental health and role performance. The intervention occurred over four separate class interactions during a16-week semester (Appendix G). The first interaction consisted of distributing a recruitment flyer and explaining the project to the students. The second interaction consisted of distribution of a consent form (Appendix H) and mental health resources handout, as well as completion of a Demographic Survey (Appendix I), Fire Fighter Self Efficacy Scale (Appendix J), and Mental Health Knowledge Questionnaire (Appendix K). The third interaction consisted of the delivery of the educational enhancement. This enhancement was a one-hour educational Power Point and lecture covering the topics of mental health, risk factors and resiliency, secondary trauma, PTSD, ACEs, health outcomes, and role performance. The fourth interaction consisted of a fifteen-minute review, distribution of mental health resources, and completion of the Fire Fighter Self Efficacy Scale and Mental Health Knowledge Questionnaire. The opportunity for students to ask questions was provided during all four interactions.

Instrumentation, Data Collection, and Data Analysis Plan

The pre and post education self-efficacy of EMT students was assessed using the Firefighter Coping Self-Efficacy Scale (FFCSE) developed by Lambert et al. (2012). This 20-item questionnaire assesses efficacy of managing reminders of difficult calls, feelings related to

injury and death, and the overall stress associated with being a fire fighter (Lambert et al., 2012). The FFCSE utilizes a 7-point Likert-type scale to measure first responders perceived capabilities to manage work related demands associated with being a fire fighter with answers ranging from 1 (*not capable*) to 7 (*very capable*) (Lambert et al., 2012). The range of the total possible score is 20-140 with higher scores reflecting higher perceptions of one's self-efficacy. The FFCSE has established reliability and validity. The reliability tested at two time points were $\alpha = 0.90$ (N=277) and $\alpha = 0.92$ (N=304), with a test-retest coefficient of 0.48 (N=184) (Lambert et al, 2012).

Mental health knowledge data was collected utilizing a form created by the author. Data gathered included familiarity (*unfamiliar, somewhat familiar, extremely familiar*) with risk factors and resiliency, adverse childhood experiences (ACEs), and post-traumatic stress disorder (PTSD) and secondary trauma; how likely to recognize own mental health symptoms and seek services (*unlikely, somewhat likely, extremely likely*); and comfort knowing resources available for mental health (*uncomfortable, somewhat comfortable, extremely comfortable*). This data was gathered to assess effectiveness of the educational presentation.

Demographic data was collected utilizing a form created by the author. Sociodemographic data gathered included gender, age, race or ethnicity, marital status, and highest level of education. Also gathered was veteran status and intended role in which the student plans to utilize their EMT certification. This data was gathered to provide a demographic representation of the participants.

Descriptive statistics was used to describe the sample and outcome variable. To evaluate the FFSES responses a two-tailed paired samples *t*-test was conducted to examine whether the mean difference of pre-total and post-total was significantly different from zero. An assumption,

homogeneity of variance, was violated, therefore, a two-tailed Wilcoxon signed rank test was conducted to examine whether there was a significant difference between pre-total and post-total scores.

Results

The data was gathered from all pre and post surveys, validated, and then inputted into Intellectus Statistics™ for statistical analysis. The first step in analysis was verification and validation of results to ensure any submissions with missing data were excluded. Data analysis was then completed to include demographics, pre and post survey mental health knowledge responses, and Fire Fighter Self Efficacy Scale scores for pre survey versus post survey. The demographic data compiled included 9 females and 41 males with a participant age range from 18-34 years with an average of 21.98 (*SD* = 4.35, Min = 18.00, Max = 34.00) (Appendix L).

Pre and post survey Firefighter Self Efficacy Scale scores were entered into Intellectus Statistics™ for each question as the numerical response written by the participant. Total pre and post scores were then calculated and entered with a possible range of 20-140. Descriptive statistics were conducted for pre and post test scores. Pre total scores had an average of 111.16 (*SD* = 16.65, Min = 68.00, Max = 140.00). Post total scores had an average of 116.96 (*SD* = 12.74, Min = 92.00, Max = 140.00). A two-tailed Wilcoxon signed rank test was conducted to examine whether there was a significant difference between pre total and post total scores. The results of the two-tailed Wilcoxon signed rank test were significant based on an alpha value of 0.05, $V = 324.50$, $z = -3.02$, $p = .002$. This indicates that the differences between pre total and post total scores are not likely due to random variation. The median of pre total (*Mdn* = 112.50) was significantly lower than the median of post total (*Mdn* = 117.00). Self-efficacy scores improved between pre and post survey collection (Appendix M).

Descriptive statistics were conducted for the frequencies and percentages for responses on the mental health knowledge survey. The most frequently observed category of Pre risk factor familiarity was Somewhat Familiar (*n* = 24, 48%) and post risk factor familiarity was Extremely Familiar (*n* = 27, 54%). The most frequently observed category of Pre ACEs familiarity was Unfamiliar (*n* = 23, 46%) and post ACEs familiarity was Somewhat Familiar (*n* = 29, 58%). The most frequently observed category of Pre PTSD familiarity was Somewhat Familiar (*n* = 26, 52%) and post PTSD Familiarity was Extremely Familiar (*n* = 33, 66%). Each area of knowledge, including risk factor, ACEs, and PTSD, improved in familiarity (Appendix N). The most frequently observed category of pre personal mental health awareness was Extremely Likely (*n* = 25, 50%) and post personal mental health awareness was Extremely Likely (*n* = 29, 58%). The most frequently observed category of pre willingness to seek mental health services was Somewhat Likely (*n* = 25, 50%) and post willingness to seek mental health services was Extremely Likely (*n* = 24, 48%). The most frequently observed category of pre mental health resources knowledge was Extremely Comfortable (*n* = 24, 48%) and post mental health resources knowledge was Extremely Comfortable (*n* = 32, 64%). Personal mental health awareness and mental health resources knowledge remained the same, with the highest possible knowledge response selected of extremely comfortable and willingness to seek mental health services improved in likelihood (Appendix L).

Discussion

Results suggest that providing an educational curriculum enhancement to EMT students can improve knowledge of mental health and increase fire fighter specific self-efficacy. From these results, it can be assumed that this project helped to educate the EMT population. This educational intervention could be sustained in a community college setting to continue

proactively educating this population about mental health. It was found that the educational intervention was well received by EMT students and provided positive outcomes which aided the project success. Creation and utilization of a Power Point lecture and surveys generated an efficient process to provide EMT student education as well as ease of sustainability.

The findings obtained from this EBP were comparable to those analyzed during literature synthesis. Increasing mental health resources and addressing the collective effect of experiencing critical incidents may assist in decreasing rates of PTSD among first responders (Armstrong, Shakespeare-Finch, & Shochet, 2014). The preferred outcome is for first responders to manage mental health prior to a diagnosis of PTSD or an act of suicide. Providing education regarding the risk factors for PTSD development is important (Martin et al., 2017). Changing EMT curriculum to incorporate education regarding risk factors for negative mental health outcomes, including childhood trauma and secondary trauma, may increase awareness of the potential development of PTSD, depression, anxiety, substance use, and suicidality (Vigil et al., 2018). Research evaluating specific elements of emergency service, such as location, years of service, and their correlation to the development of PTSD and suicide should be pursued (Vigil et al., 2018).

Barriers

Overall, this evidence-based project was successful and produced statistically significant results. However, some barriers occurred during the completion of this educational enhancement project. One component that was not successful was a loss of communication with an instructor for one class of students, which resulted in the potential loss of 20 participants. In the future all instructors could have been involved in a brief meeting of the intervention to possibly increase participation as well as multiple avenues to communicate with each instructor beyond that of the

organization email system. Another limitation was that the intervention occurred during regularly scheduled class sessions in which some students were absent and missed the intervention. In the future the intervention could be offered during a mandatory Trauma Patient Management day in which students complete mandatory patient assessments to ensure all students receive the intervention.

Conclusion

A proactive approach is needed to educate first responders about how a history of ACEs and experiences of secondary trauma while on duty, are risk factors for the development of mental health symptomology that could ultimately lead to suicidality. This project was the first noted in the literature as taking an approach to awareness, education, and resource utilization. Further research is needed to explore the effects of mental health knowledge enhancement and identify effective interventions to address mental health symptomology and suicide among first responders. Effectively increasing awareness of risk factors for the development of mental health disorders may then decrease the incidence of untreated mental health symptoms and therefore decrease the rate of suicide among first responders. Implementing a curriculum enhancing educational component to an EMT class can provide mental health education to first responders prior to entering the workforce.

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Appendix A

Evaluation Table for Quantitative Studies

Table 1

Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Maunder et al. (2014). Symptoms and responses to critical incidents in paramedics who have experienced childhood abuse and neglect. **Funding:** Terna Conter Foundation **Bias:**	Health Promotion Model inferred	**Design:** Quantitative, Descriptive, Between-Group **Purpose:** Determining prevalence of childhood abuse and neglect in PM and its association to response to CIS and current	**N:** 635 PM **n:** 232 completed survey **n:** 229 completed ICI **Setting:** Attendees of a continuing education program for a large urban EMS organization **SD:** M: 150	**IV:** PM **DV1:** TSI **DV2:** BSI **DV3:** CES-D-10 **DV4:** MBI **DV5:** ICI	TSI life event QR – 19 items BSI – 7 items CES-D-10 – 10 items MBI Human Services Survey emotional exhaustion scale (MBI) – 25 items ICI – multiple levels of items	**Univariate ANOVA:** for continuous parametrically distributed variables (age, YOS, BO) **MWU:** for continuous non-parametrically distributed variables (DP, somatic symptoms)	**DV1:** CI 95% Prevalence 38.4% SA: 5.4-12.7 PA: 24.5-35.2 EA: 20.6-30.2 AA: 32.1-44.6 **DV2:** BSI p=0.8, NS **DV3:** CES-D-10 p=0.8, NS **DV4:** MBI p=0.6, NS	**LOE:** III **Strengths:** Evaluates childhood trauma effects (limited research); Multiple instruments **Weaknesses:** Between group design with a year-old study of healthcare workers (not represented on this table);

Key:
AA- any abuse **ACE**- Adverse Childhood Experiences **AD**- alcohol dependence **AUDIT-C**- Alcohol Use Disorders Identification Test-Consumption **BO-** burnout **BRS**- Brief RES Scale **BSI**- Brief Symptom Inventory **CES-D**- Center for Epidemiologic Studies – Depression **CDRISC**- Connors-Davidson RES Scale **CI-** confidence interval **CIS-** critical incidents **CR**- criteria **CRRW**- Coping Response in Rescue Workers **CS-** Chi Squared **DP-** depression **DSM-V** – Diagnostic and Statistical Manual 5th Edition **DTS**- Davidson Trauma Scale **DV**-dependent variable **EA**- emotional abuse **EMS**- Emergency Medical Services **EMT**- Emergency Medical Technician **F-** female **FF** – fire fighter **FFMQ** - Five Facet Mindfulness QR **FR**- first responder **HADS**- Hospital Anxiety and Depression Scale **HP-** health programs **ICI**- Index Critical Incident **IES-R**- Impact of Events Scale Revised **IV**- independent variable **KS**- Kolmogorov-Smirnov **LEC**- Life Events Checklist **LOE**- level of evidence **LR**- linear regression **LRM**- Logistic Regression Model **m**- mean **M**- male **MBI**- Maslach Burnout Inventory **MH**- mental health **MSPSS**- Multidimensional Scale of Perceived Social Support **MWU**- Mann-Whitney U **N**- sample **n**- sample size **nEMT**- non-EMT **NR** – not reported or recognized **NS-** not significant **OR**- odds ratio **PA**- physical abuse **PCL-5** - PTSD Checklist for DSM-V **PCL-C**- PTSD Checklist Civilian Version **PHQ**- Patient Health Questionnaire **PLA**- psychological abuse **PM**- paramedic **PSS**- Perceived Stress Scale **PSQ-ORG** - Organizational Police Stress Questionnaire **PSQ-OP** - Operational Police Stress Questionnaire **PTG**- Post Traumatic Growth **PTSD**- Post Traumatic Stress Disorder **QR**- questionnaire **RAPS**- Rapid Alcohol Problems Screen **RE**- race/ethnicity **RES**- resilience **RF**- risk factors **RS**- relationship status **SA**- sexual abuse **SAT**- suicide attempts **SBQ-R**- Suicidal Behaviors Questionnaire **SCD**- suicide **SD**- sample demographic **SI**- suicidal ideation **ST**- student **SS**- symptom severity **TE**- trauma exposure **TIC**- trauma-informed care **TIC-C**- trauma-informed care curriculum **TSI** – Traumatic Stress Institute **W**- white **YOS**- years of service

NR **Country:** Canada		physical and MH.	F: 81 m age: 37.6 m YOS: 5.7 **Inclusion CR:** PM **Exclusion CR:** NR **Attrition:** 36.5%			**CS:** for categorical and ordinal variables	**DV5:** ICI MU physical arousal: 3893, p<0.03 MU irritability: 4027, p<0.048 MU social withdrawal: 3931, p<0.03	Lengthy survey **Conclusion:** Demonstrated childhood trauma may affect PM physical and MH. **Feasibility/ Applicability:** Recommended for further research to address SCD in FR. Instruments feasible for testing.
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Strait et al. (2016). Consideration of personal ACE during implementation	Health Belief Model inferred	**Design:** Quantitative, Prospective **Purpose:**	**N:** 967 ST **n:** 267 (pre-survey) **n:** 422 (post-survey)	**IV:** ACE/TIC curriculum **DV1:** Pre-survey	Multi-question digital survey (pre/post) – 12 questions	**CS:** for survey responses	**DV1:** 13.6% extremely likely to use ACE with PT's	**LOE:** III **Strengths:** Large sample size across multiple HP

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of TIC Curriculum in Graduate Health Programs **Funding:** NR **Bias:** NR **Country:** United States		To implement TIC-C for multiple graduate HP, determine ST understanding/ willingness to assess ACEs, and ST's voluntarily assessing own ACE score and attitude towards ACEs and TIC.	**Setting:** Campus small rooms, proctor **SD:** Graduate ST 422 post survey (M:144, F:278) **Inclusion CR:** ST in one of 9 HP **Exclusion CR:** NR **Attrition:** Pre-survey: 27.6% Post survey: 42% (surveys were not required)	**DV2:** Post-survey	Interprofessional education course: teams of 9, three 2-hour sessions (Session1: TIC/ACE education; Session 2: collaborative research and discussion on ACE and toxic stress; Session 3: Role play and creation of fact sheet)		7.1% extremely confident in TIC **DV2:** 42% extremely likely to use ACE with PT's 16% extremely confident in TIC	**Weaknesses:** Surveys were not required to participate in the TIC-C; IRB did not allow for collection of ACE scores; pre/post survey is not validated **Conclusion:** ST who voluntarily assess personal ACE score have a greater understanding of ACE and TIC. **Feasibility/ Applicability:** Recommend incorporating ACE/TIC training into graduate HP curriculum

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Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Vigil et al. (2018). Death by suicide: The EMS profession compared to the general public **Funding:** NR **Bias:** NR **Country:** United States (specifically Arizona)	Behavior Systems Model inferred	**Design:** Quantitative, Retrospective, Case-Control Study **Purpose:** To determine the statewide Mortality Odds Ratio (MOR) of SCD completion among EMTs versus nEMTs in Arizona	**N:** 350,998 **n:** 349,793 (nEMT) **n:** 1,205 (EMT) **n:** 7,775 (SCD by nEMT) **n:** 63 (SCD by EMT) **Setting:** AZ-EDR (AZ Vital Statistics Information Management System Electronic Death Registry) **SD:** M: 187,987 (nEMT); 1,127 (EMT)	**IV1:** nEMT **IV2:** EMT **DV1:** death by non-SCD **DV2:** death by SCD	AZ-EDR (AZ Vital Statistics Information Management System Electronic Death Registry)	**CS:** to assess significance between population characteristics **LRM:** determine MOR of SCD between nEMT and EMTs	Chi-Square: 2.2% nEMT, 5.2% EMT death by SCD ($p<0.0001$) **DV1:** nEMT MOR: 1.39 [95% CI, $p<0.05$] **DV2:** EMT MOR: 2.43 [95% CI, $p<0.05$]	**LOE:** III **Strengths:** First study to look at SCD as documented cause of death in EMTs. **Weaknesses:** Free text box in database for occupation; MH history not known; SCD's may have been labeled as "accidental or undetermined" deaths **Conclusion:** Elevated MOR among EMTs

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			White=280,76 (nEMT); 972 (EMT) **Inclusion CR:** Deaths between 1-1-09 to 12-31-15; ≥18yo					suggests an increased risk of death due to SCD than nEMTs. **Feasibility/ Applicability:** Future research to confirm findings and identify aspects most responsible for SCD
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Martin et al. (2017). Correlates of suicidality in firefighter/EMS personnel **Funding:** NR **Bias:**	Health Promotion Model inferred	**Design:** Quantitative, Correlational **Purpose:** Explore associations of established correlates of suicidality (RS, RE,	**N:** 3,036 **Setting:** Large urban EMS department suicide prevention program **SD:**	**IV1:** SCD Prevention Program **DV1:** RAPS-4 **DV2:** PHQ-9 **DV3:** PCL-C **DV4:**	SCD Prevention Program RAPS-4 – 4 items PHQ-9 – 9 items PCL-C– 17 items	**CS**: test of independence to examine relation between lifetime SI before and after joining EMS department	**DV1:** +AD=31.2% **DV4:** CS=315.14, p<.001 +SI before EMS =9.8% +SI after EMS =9.1%	**LOE:** III **Strengths:** Exclusively EMS, large sample, multiple suicide correlates tested **Weaknesses:**

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NR **Country:** United States		YOS, PTSD, SS, DP, AD) with lifetime SI and SAT	Age: 19-65+ years (majority 25-54) M: 97.5% F: 2.5% White: 61.6% mYOS= 1-2yos:10% 3-20yos:57.3% 21+yos:32.6% **Inclusion CR:** EMS employee **Exclusion CR:** NR **Attrition:** 100%, data gathered with SCD prevention program	Lifetime SI QR **DV5:** Lifetime SAT QR	Lifetime SI QR – 2 items Lifetime SAT QR – 2 items	**Hierarchical LR:** Lifetime SI and Lifetime SAT as outcome variables, bivariate level significantly correlated variables (YOS, PTSD, DP, AD)	**DV2/3/4:** LR=.18, F(3, 2662)=51.29, p<001 DP and PTSD severity significantly associated with lifetime SI **DV5:** +SA before EMS= 1.4% +SA after EMS= 0.7% **DV2/3/5:** LR=.05, F(3, 2672)=13.13, p<001 DP and PTSD severity significantly associated with lifetime SAT	Pre-existing data set, Lifetime SI and SAT QR not standardized measures, predominantly male participants (norm for career) **Conclusion:** DP and PTSD are significant predictors of suicidality **Feasibility/ Applicability:** Application of SCD prevention can be online. Increasing awareness, prevention, and treatment of DP and PTSD can target SCD rates among EMS personnel

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Joyce et al. (2018). Can resilience be measured and used to predict mental health symptomology among first responders exposed to repeated trauma? **Funding:** Australian Government Research Training Program Scholarship and University of New South Wales Brain	Health Promotion Model inferred	**Design:** Quantitative, Secondary Analysis of a cluster RCT **Purpose:** To determine if baseline RES among FR predicts future MH symptomology following TE	**N:** 143 (completed baseline measures) **n:** 11 (excluded at 6 months for lack of TE) **n:** 56 completed entire study **Setting:** 24 primary rescue/hazmat stations **SD:** M=53, F=3 YOS: 1-5=4, 6-10=11, 11-15=16, 16-20=5, >20=20	**IV1:** Baseline measures **IV2:** 6-month follow up measures **DV1:** CDRISC_10 **DV2:** BRS **DV3:** TE screening **DV4:** PCL-5 **DV5:** HADS	CDRISC_10 – 10 items BRS – 5 items TE Screening – 2 items PCL-5 – 20 items HADS – 7 items AUDIT-C – 3 items	**Multivariate LR:** for associations between baseline RES and future MH symptomology with repeated TE	**DV1/2/4:** Association of baseline RES and future PTSD (p=.02) **DV1/2/5:** Association of baseline RES and future DP (p=.03)	**LOE:** III **Strengths:** First study with RES s potential RF, validated measurement tools **Weaknesses:** Small sample and poor attrition **Conclusion:** Screening for RES can help identify FF at greater risk for DP and PTSD. **Feasibility/ Applicability:** Screening for resiliency

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Sciences PhD Grant **Bias:** Authors associated with a RES training company and work for an organization that offers RES training **Country:** Australia			**Inclusion CR:** FF **Exclusion CR:** Current MH treatment **Attrition:** 39% (lost participants for follow up and exclusions)	**DV6:** AUDIT-C				requires minimal time with free measurement tools and can identify at risk personnel that would benefit from preventative MH services
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Fjeldheim et al. (2014). Trauma exposure, posttraumatic stress disorder and the effect of explanatory variables in	Health Promotion Model inferred	**Design:** Quantitative, Descriptive **Purpose:** To determine frequency, nature, and severity of	**N:** 132 **n:** 131 participated **Setting:** University in the Western Cape	**IV:** PM **DV1:** LEC **DV2:** DTS **DV3:** CES-D	LEC – items not listed DTS – 17 items CES-D – items not listed	**Multivariate LR** to assess variables for PTSD **KS** tests to determine distribution normality	3 models for analysis: overall TE, DEP, social support, and RES significant for predicting PTSD	**LOE:** III **Strengths:** Attrition, multiple valid measurement tools, passive ACE inclusion (TE includes

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paramedic trainees. **Funding:** National Research Foundation and Harry Crossley Foundation **Bias:** NR **Country:** South Africa		direct TE, PTSD symptoms, and other MH among PM trainees; identify risk and RES factors; create a risk profile for PM trainees	**SD:** M=84, F=48 W=47% m age=22 years **Inclusion CR:** 1st year PM trainees **Exclusion CR:** NR **Attrition:** 99% (n=1 not in final results, reason not identified)	**DV4:** AUDIT **DV5:** PHQ-15 **DV6:** PSS-10 **DV7:** MSPSS **DV8:** CD-RISC	AUDIT – 10 items PHQ-15 – 15 items PSS-10 – 10 items MSPSS – 12 items CD-RISC – 25 items	**MWU** and **LR** to analyze data	94% directly witnessed a TE PM with PTSD criteria: TE exposure p<.003, DP p<.000, stress p<.000, physical health symptoms p<.000, low RES p<.012, low social support p<.008	work and non-work trauma) **Weaknesses:** Multiple questionnaires may cause fatigue; cross sectional design prevents measurement of symptom change over time **Conclusion:** Continued need for screening for PTSD symptoms in PM, including further assessment of ACE involvement **Feasibility/ Applicability:** Screening RFs minimal time with free

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								measurement tools
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Stanley et al. (2019). Posttraumatic stress disorder symptoms and mindfulness facets in relation to suicide risk among firefighters **Funding:** Military Suicide Research Consortium and National Institute of Mental Health **Bias:**	Health Promotion Model inferred	**Design:** Quantitative, Correlational **Purpose:** If mindfulness attenuates PTSD and SCD symptoms	**N:** 831 **Setting:** Lage metropolitan fire department **SD:** M=94.5% F=4.8% W=75.2% Age=20-63 years (m38.37) YOS=m13.02 (range 0-42years) **Inclusion CR:** FF in the department **Exclusion CR:**	**IV:** FF **DV1:** LEC-5 **DV2:** PCL-5 **DV3:** FFMQ **DV4:** SBQ-R	LEC-5 – 17 items PCL-5 – 20 items FFMQ – 39 items SBQ-R- 4 items	**LR** for association of PTSD and SCD risk and mindfulness facets	**D2:** m9.71 (SD=14.40) **DV3:** two facets lessened PTSD and SCD risk (acting with awareness and nonjudging inner experience): one facet (observing) potentiated association of PTSD and SCD risk **DV4:** m3.85 (SD=1.79)	**LOE:** III **Strengths:** Mindfulness facets studied; multiple measurement tools **Weaknesses:** Cross sectional data prevents inferences regarding causality; current mindfulness results gathered but with conjunction of acute/chronic SCD risk

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NR **Country:** United States			NR **Attrition:** 100% (4035 FF in department, FF voluntarily signed up for study)					**Conclusion:** Increasing mindfulness facets of awareness and nonjudgment for FF may lower PTSD and SCD risk **Feasibility/ Applicability:** Screening FFs minimal time with free measurement tools and can identify need for mindfulness interventions
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Hughes et al. (2017). The effect of multiple	Health Belief Model inferred	**Design:** Quantitative, Systematic Review,	**N:** 37 **SD:**	**IV1:** ACEs	Instruments not specified – articles chosen based upon study	Pooled OR (CI 95%) utilizing a random-effects model	26 articles from cross-sectional studies	**LOE:** I **Strengths:**

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adverse childhood experiences on health: A systematic review and meta-analysis **Funding:** Public Health Wales **Bias:** NR **Country:** Multiple countries (majority were USA and UK, minimal from Finland, Canada, China, New Zealand, Philippines, Saudi Arabia, Sri Lanka)		Meta-analysis **Purpose:** To review evidence from existing cross-sectional, case control, or cohort studies measuring association between ACEs and health outcomes	5 databases (not specified) **Inclusion CR:** Measure 4+ ACEs, adults 18+, sample size 100+, **Exclusion CR:** High risk or clinical populations	**DV1:** substance use **DV2:** sexual health **DV3:** MH **DV4:** weight, exercise **DV5:** violence **DV6:** physical health	size, setting, participants, ACEs, and outcomes (23 risk outcomes)		11 articles from cohort studies 4+ ACEs increased risk of health outcomes OR<2 = weak association OR of 2-3= moderate association OR of 3-6= strong association OR>7= strongest association (violence, mental illness, substance abuse) Heterogeneity= >75%	Heterogeneity between studies; synthesis of ACE impact on health outcomes **Weaknesses:** No studies from low income countries; studies were of retrospective ACE reports **Conclusion:** ACEs impacts health outcomes across the lifespan. Educating on ACEs and possible prevention can impact health **Feasibility/ Applicability:** ACEs is a free short questionnaire

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								that can be easily implemented to increase self-awareness and early intervention for resources.
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Armstrong et al. (2014). Predicting post-traumatic growth and post-traumatic stress in firefighters **Funding:** NR **Bias:** NR **Country:** Australia	Model of post traumatic growth	**Design:** Quantitative, Cross Sectional **Purpose:** To investigate variables influential in trauma literature with those related to stress outcomes in EMS and the impact of these variables on PTSD	**N:** 218 **Setting:** State wide fire service department **SD:** M=96.8% >45 years old= 56.4% **Inclusion CR:** FF who experienced a traumatic event **Exclusion CR:**	**IV:** FF **DV1:** TE QR **DV2:** IES-R **DV3:** PTG-I **DV4:** PSQ-Op and PSQ-Org **DV5:** 2-Way Social	TE QR – 1 item (not validated) IES-R – 22 items PTG Inventory (PTG-I) – 21 items PSQ-Op – 20 items (adapted for FF) PSQ-Org – 20 items (adapted for FF)	**LR** for predictive ability of work context variables, social support, and coping on PTG and PTSD	Significant predictors in PTSD model= trauma source ($p<.018$), operational stress ($p<.004$), organizational stress ($p<.034$), work event reappraisal ($p<.002$) Significant predictors in PTG model= trauma context	**LOE:** III **Strengths:** PTG addressed, Trauma within work and personal life explored **Weaknesses:** Causality cannot be established due to cross sectional design **Conclusion:** Awareness to reduce PTSD and

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			NR **Attrition:** NR	Support Scale **DV6:** CRRW	2-Way Social Support Scale – 20 items CRRW – 27 items		(p<.000), self-care (p<.000)	promote PTG within EMS by addressing trauma in work and personal life. **Feasibility/ Applicability:** QR easily implemented to increase trauma awareness and PTG/PTSD outcomes
Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
Felitti et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes	Health Belief Model inferred	**Design:** Quantitative, Retrospective and Prospective **Purpose:** To describe the long-term relationship of	**N:** 13,494 (mailed survey) **n:** 9,508 (responded to survey) **n:** 8,506 (after exclusions) **Setting:** Mailed QR	**IV1:** ACE QR **DV1:** PLA **DV2:** PA **DV3:** SA	ACE QR: Derived from multiple published QR's (Conflicts Tactics Scale (PLA, PA, violence to mother), Wyatt (SA), 1998	**LR analysis** for each RF and disease condition	Graded relationship between number of ACE category and adult health risk and disease (p<.001)	**LOE:** III **Strengths:** Landmark study for ACEs **Weaknesses:** Self-report QR, retrospective, only associations

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of death in adults. **Funding:** Centers for Disease Control and Prevention and Association of Teachers of Preventative Medicine **Bias:** NR **Country:** United States		childhood experiences to important medical and public health problems.	**SD:** F=52.1% mAge= 56.1 W=79.4% **Inclusion CR:** Kaiser Heath plan member; Recent medical evaluation at Health Appraisal Clinic (Aug-Nov1995 and Jan-Mar1996) **Exclusion CR:** Dec1995 (historically less survey responses during holidays), **Attrition:** 70.5%	**DV4:** violence against mother **DV5:** substance abuser in the home **DV6:** mentally ill person in the home **DV7:** household member imprisoned	National Health Interview Survey (alcohol/drug abuse exposure). Each question starts with "While you were growing up during the first 18 years of your life…"		4+ ACEs = 4-12 fold increase in health risks (alcoholism, drug abuse, DP, and SCD): 2-4 fold increase (smoking, poor self-rated health): 1.4-1.6 fold increase in physical inactivity and obesity	between ACE and health RF **Conclusion:** ACEs have a strong long-term association with adult health risk behaviors, status and diseases, increased prevention at primary, secondary, and tertiary levels are needed. **Feasibility/ Applicability:** ACEs QR can be implemented in primary care to identify at risk adults and implement preventative education.

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Appendix B

Synthesis Table

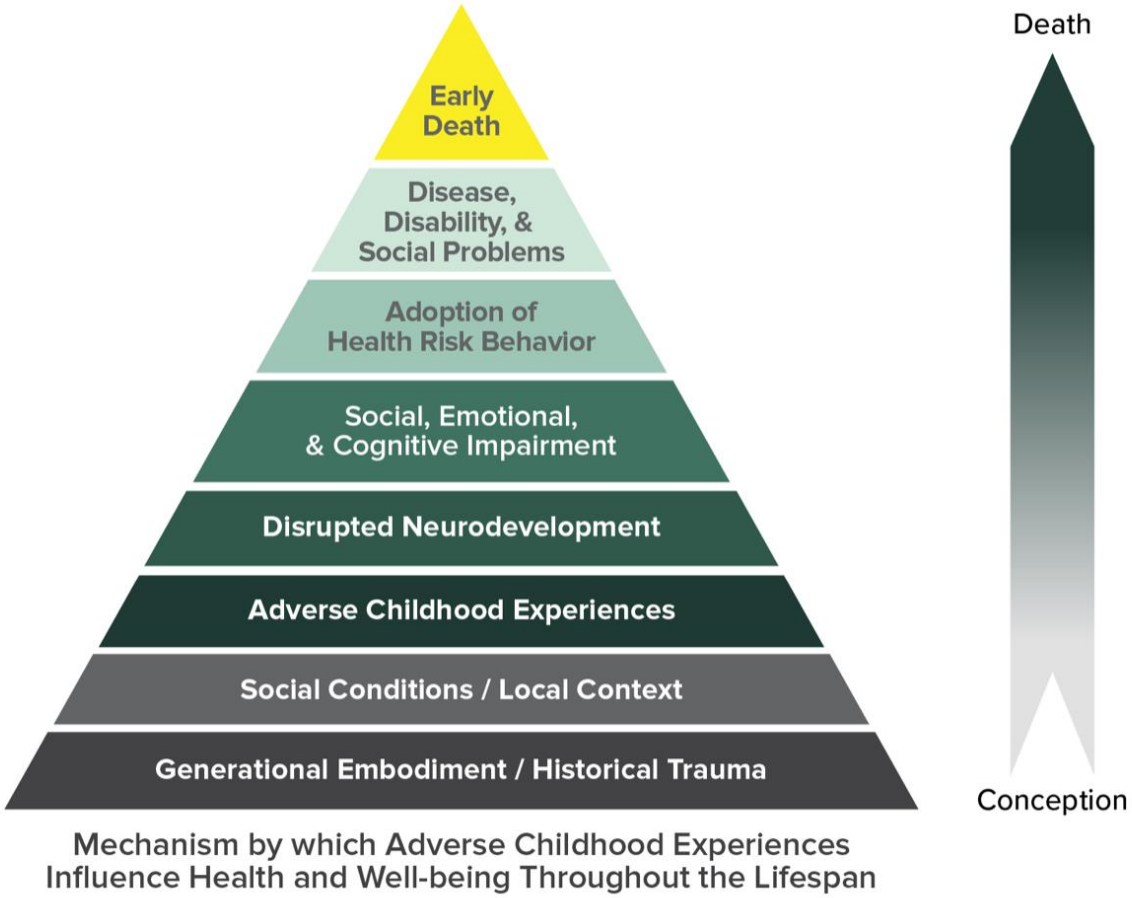
Table 2

	Studies	Maunder, et al.	Strait, et al.	Vigil, et al.	Martin, et al.	Joyce, et al.	Fjeldheim, et al.	Stanley, et al.	Hughes, et al.	Armstrong, et al.	Felitti, et al.
Basics	Year	2014	2016	2018	2017	2018	2014	2019	2017	2014	1998
	LOE	III	III	III	III	III	III	III	I	III	III
	Design	DES BG	PRS	RPS CC	COR	SA of RCT	DES	COR	SR MA	CS	RPS PRS
	Mean Age	37.6			25-34		22	38		45+	56
	Attrition	36.5%	27.6%	0%	0%	39%	1%	0%			29.5%
	Participants	EMS	ST	EMS	EMS	EMS	EMS	EMS	GP	EMS	GP
Interventions	Stress QR	X				X	X	X		X	
	Depression/ Anxiety QR	X			X	X	X		X		
	Substances QR				X	X	X		X		
	Resiliency QR					X	X	X		X	
	Health QR	X					X		X		
	Trauma QR	X				X	X	X		X	
	Suicide EDU/QR				X			X	X		
	ACE EDU/QR	X	X						X		X
	AZ-EDR			X							
Major Findings	Stress/PTSD	↑				↑	↑	↑		↑	
	Depression/ Anxiety	↑			↑	↑	↑		↑		
	Substance Use				↑	↑	↑		↑		
	Resiliency					↑	↑	↑		↑	
	Physical Health	↑					↑		↑		
	Trauma Event	↑				↑	↑	↑		↑	
	Suicidality			↑	↑			↑	↑		
	ACE history	↑	↑						↑		↑

Key: **ACE** – Adverse Childhood Experiences **AZ-EDR** – Arizona Electronic Death Registry **BG** – between group **CC** – case control **COR** – correlational **CS** – cross sectional **DES** – descriptive **EDU** – education course **EMS** – emergency medical services personnel (FF, EMT, PM) **EMT** – emergency medical technician **FF** – fire fighter **GP** – general population **I/A** – ideation/attempt **MA** – meta-analysis **PM** – paramedic **PRS** – prospective **PTSD** – Post Traumatic Stress Disorder **QR** – questionnaire **RCT** – randomized control trial **RPS** – retrospective **SA** – secondary analysis **SR** – systematic review **ST** – student **TE** – trauma exposure **X** – intervention utilized ↑- present

Appendix C

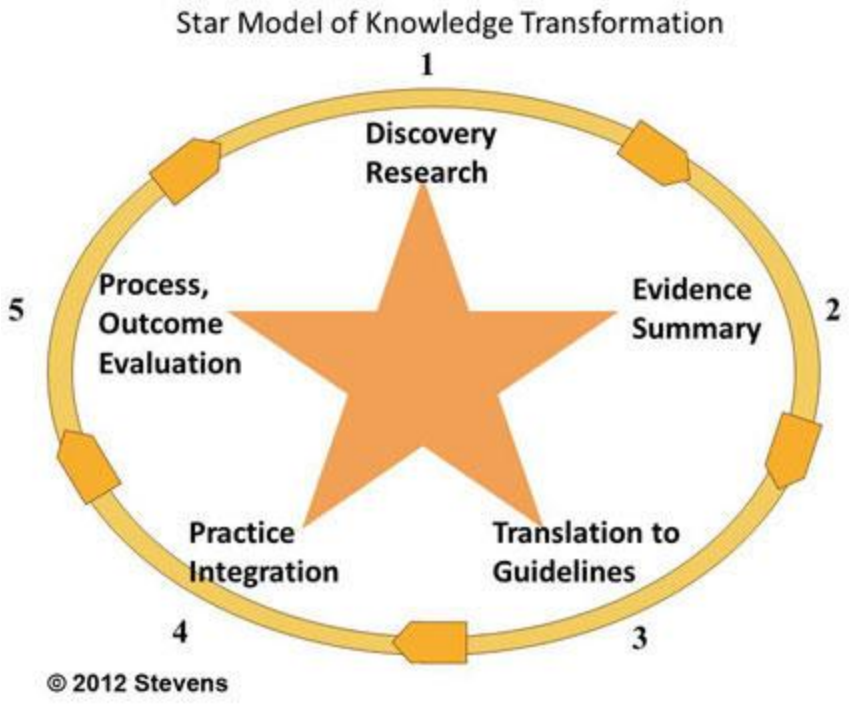
ACE Pyramid



ACE Pyramid. Reprinted from Center for Disease Control and Prevention. Retrieved from https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/about.html

Appendix D

ACE Star Model of Knowledge Transformation



ACE Star Model of Knowledge Transformation. Reprinted from The University of Texas Health Science Center at San Antonio. Retrieved from https://www.nursing.uthscsa.edu/onrs/starmodel/star-model.asp

Appendix E

Logic Model for Trauma Informed Curriculum Implementation

Goals: Implement trauma informed curriculum for emergency medical technician (EMT) students at a Southwestern Community College to increase awareness of risk factors for development of Post-Traumatic Stress Disorder (PTSD).

Inputs	Outputs		Outcomes -- Impact		
	Activities	*Participation*	*Short*	*Medium*	*Long*
Key Staff Project Leader Program Director Faculty EMT Class Time	**Key Staff** Implement textbook change that includes detailed wellness and psychiatric information Develop trauma informed curriculum education modules Implement education on trauma informed curriculum changes	**Key Staff** 1 Project Leader 1 EMT Program Director 1 Resident Faculty 4 Adjunct Faculty	**Key Staff** Evaluate pre/post mental health knowledge surveys to determine curriculum change effectiveness and/or areas of change needed	**Key Staff** Changes to EMT core curriculum	**Key Staff** Enhancement of education curriculum targeting current research of suicide among first responders.
Community Students EMT Class Time	**Students** Complete pre/post mental health knowledge survey (on survey monkey via school email) Participate in class curriculum change	**Students** 100 EMT students 4 EMT classes	**Students** Increased knowledge of risk factors for mental health Increased knowledge of primary and secondary trauma and its impact on mental health	**Students** Changes in behavior towards seeking mental health treatment Changes in behaviors towards treatment of mental health patients	**Students (EMTs)** Improvement in mental health wellbeing of EMTs Improvement in overall health outcomes for EMTs Decrease in suicide completion rate of EMTs
Technology/Supplies Classroom Computer Microsoft PowerPoint Internet					

*Orange arrows indicate cyclical curriculum knowledge evaluation and subsequent alterations as needed (ACE Star Model of Knowledge Transformation).

Assumptions

Trauma informed education improves mental health risk factor awareness.
Risk factor awareness increases utilization of mental health treatment, which decreases suicidality.
Outcomes will cyclically drive curriculum changes.

Community Impacts

Improvement in mental health wellbeing of first responders.
Improvement in health outcomes for first responders.
Decrease in suicide completion rate of first responders.
Decrease financial impact from PTSD related comorbidities.

Appendix F

ASU Knowledge Enterprise Development

EXEMPTION GRANTED

Diane Nunez
EDSON: DNP
602/496-0751
DIANE.NUNEZ@asu.edu

Dear Diane Nunez:

On 7/26/2019 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health and Role Performance
Investigator:	Diane Nunez
IRB ID:	STUDY00010417
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Meyer Recruitment Flyer, Category: Recruitment Materials; • Meyer Measurement Tool, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Meyer IRB Application , Category: IRB Protocol; • Nunez CITI certificate, Category: Other (to reflect anything not captured above); • Meyer CITI certificate, Category: Other (to reflect anything not captured above); • Meyer Consent Form , Category: Consent Form; • Meyer Letter of Support, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Meyer Mental Health Resources Handout, Category: Resource list; • Meyer Education Outline, Category: Technical materials/diagrams;

Appendix G

Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health and Role Performance

Summary of Curriculum Enhancement

	Topic	*Description*
Interaction 1	Introduction	Introduction and explanation of project. Recruitment flyer provided.
Interaction 2	Base Knowledge Assessment	Recruitment flyer and Consent form distributed. Completion of pre survey and demographics. Provide mental health resources handout.
Interaction 3	Curriculum Enhancement	Education session incorporated into Psychiatric Emergencies curriculum. • What are resiliency and risk factors? • How resiliency is protective of mental health • What are adverse childhood experiences (ACEs)? • The relationship between adverse childhood experiences (ACEs) and adult mental health • How awareness of adverse childhood experiences (ACEs) can improve health and health outcomes • What are Post Traumatic Stress Disorder and secondary trauma? • Understanding the relationship between risk and health outcomes • How mental health knowledge can improve EMT role performance • Available mental health resources for first responders (provide handout)
Interaction 4	Closing and Knowledge Re-assessment	Review that understanding the self can promote optimal wellbeing and role performance of the EMT. Provide mental health resources handout. Post- project survey completion.

Appendix H

Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health and Role Performance

Consent Form

Dear Participant,

I am a graduate student under the direction of Professor Dr. Diane Nunez DNP, RN, ANP-BC, FNAP in the Edson College of Nursing and Health Innovation at Arizona State University. I am conducting an evidence-based project to see if a curriculum enhancement will impact mental health knowledge and beliefs, promote mental health wellbeing and strengthen role development as an emergency medical technician (EMT).

I am inviting you to participate in the program because you are enrolled to take EMT 104 during the Fall 2019 semester. This project includes curriculum enhancement provided during regularly scheduled class time. Initial data collected will include a brief pre-survey and demographic information. A brief post intervention survey will be completed to determine the impact of the project on mental health knowledge and beliefs, mental health wellbeing, and EMT role development.

The project will be implemented during four different class sessions with time allotted for questions and answers during each interaction. The initial interaction will provide project information. The second interaction will include a pre survey and demographic questionnaire, which will take approximately 15 minutes to complete. The third interaction is an educational session during the regular weekly content addressing Psychiatric Emergencies: Mental Health and Well-Being. The enhanced content will be provided on topics including resiliency, risk factors, and mental health resources. The information will be provided during a 60-minute Power Point education session. The fourth interaction is a review of information and post survey completion and will take approximately 10 minutes to complete. You have the right not to answer any survey questions. Your participation in this project is voluntary and you may withdraw at any time. If you choose not to participate there will be no penalty and will not affect your class standing.

Your responses on the questionnaires will be anonymous and the pre and post-questionnaire responses will be linked using a 6-digit unique Project ID number. We will not collect your name or other personal identifying information. The results of this project may be used in reports, presentations, or publications as aggregate data only. Completing the pre and post surveys will be considered your consent to participate. If you have any questions concerning this program, please contact the following team members:
Dr. Diane Nuñez, DNP, RN, ANP-BC, FNAP at 602-496-0751
Melissa Meyer, BSN, RN at 480-695-5366

This project has been reviewed and approved by the Arizona State University Institutional Review Board. If you have any questions about your rights as a subject/participant in this project, or if you feel you have been placed at risk, you can contact the Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Sincerely,
Melissa Meyer, BSN, RN, DNP Student
Dr. Diane Nuñez DNP, RN, ANP-BC, FNAP

Appendix I

Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health and Role Performance

Demographics

What is your Gender?
___ Male
___ Female
___ Other _____

What is your Age?
Age _____

Are you of Latino, Hispanic, or of Spanish Origin?
___ Yes
___ No

How would you Describe yourself?
___ White
___ Black or African American
___ Native American or American Indian
___ Asian
___ Pacific Islander Alaska Native, Native Hawaiian or Other Pacific Islander
___ Other/mixed race _____

What is your Marital Status?
___ Single, never married
___ Married or domestic partnership
___ Widowed
___ Divorced
___ Separated

What is your Highest Level of Education?
___ High School or equivalent
___ Vocational or Technical School
___ Bachelor's Degree
___ Master's Degree
___ Doctoral Degree

How do you plan to use your EMT certification?
___ Employment in a fire department role
___ Employment in a private ambulance role
___ Employment in wildland or forestry services
___ Employment in an urgent care, emergency room, clinic, or other healthcare facility
___ Knowledge for further educational goals (such as Nursing, Physician Assistant, etc.)
___ Other _____

Do you identify as a military veteran or service member?
___ Yes
___ No

Appendix J

Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health and Role Performance

For each situation described below, please rate how capable you are that you can successfully deal with it. Please rate them as you **currently** believe. Because people differ from each other in the ways that they deal with situations, there is no single correct answer. Answer with your immediate response rather than spending a lot of time thinking about your answer. Please write your answer in the blank provided.

Using the following scale, think about "how capable am I to…"

1_____2_____3_____4_____5_____6_____7
Not Capable A Little Capable Pretty Capable Very Capable

_____ 1. Deal with combative or hostile people.

_____ 2. Deal with injured children.

_____ 3. Deal with human dismemberment (loss of limbs, head, etc.).

_____ 4. Deal with blood, vomit, or other bodily fluids.

_____ 5. Deal with the sounds of people retching as they vomit.

_____ 6. Handle the death of a patient or person I am responding to.

_____ 7. Cope with the death of a child.

_____ 8. Handle difficult environmental working conditions (e.g., darkness, weather, etc.)

_____ 9. Cope with visual reminders of difficult calls.

_____ 10. Have dreams about difficult calls.

_____ 11. Not self-criticize my ability to handle calls.

_____ 12. Believe I am competent in all aspects of my work.

_____ 13. Manage the physical demands of the work.

_____ 14. Discuss with others the emotionally upsetting calls.

_____ 15. Multi-task when doing my job.

_____ 16. Cope with feelings of guilt.

_____ 17. Deal with the meaninglessness of a call.

_____ 18. Manage my anger.

_____ 19. Process what I might encounter on the way to a call.

_____ 20. Handle the humor associated with my job.

Appendix K

Trauma Among First Responders: Curriculum Enhancement to Promote Optimal Mental Health and Role Performance

Additional Questions:
For each question below, please answer them as you **currently** believe. Because people differ, there is no single correct answer. Please circle your answer.

1. **How familiar are you with risk factors and resiliency?**

   Unfamiliar / Somewhat Familiar / Extremely Familiar

2. **How familiar are you with adverse childhood experiences (ACEs)?**

   Unfamiliar / Somewhat Familiar / Extremely Familiar

3. **How familiar are you with post-traumatic stress disorder (PTSD) and secondary trauma?**

   Unfamiliar / Somewhat Familiar / Extremely Familiar

4. **How likely are you to recognize your own symptoms of mental health?**

   Unlikely / Somewhat Likely / Extremely Likely

5. **How likely are you to seek mental health services and support for your own mental health?**

   Unlikely / Somewhat Likely / Extremely Likely

6. **How comfortable are you that you know resources needed to seek mental health support?**

   Uncomfortable / Somewhat Comfortable / Extremely Comfortable

Appendix L

Table 1

Gender: Frequency Table for Nominal Variables

Variable	*n*	*%*
Gender		
Male	41	82
Female	9	18
Missing	0	0

Table 2

Age: Summary Statistics Table for Interval and Ratio Variables

Variable	*M*	*SD*	*n*	Min	Max
Age	21.98	4.35	50	18.00	34.00

Appendix M

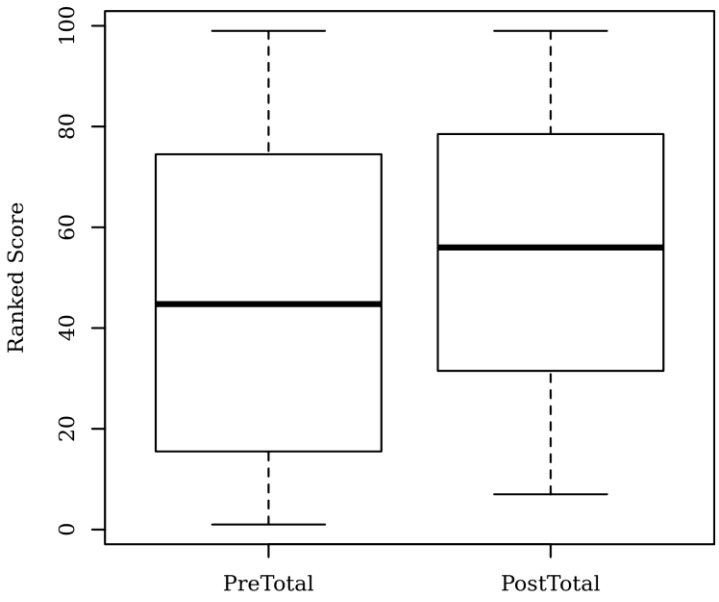
Table 1

Summary Statistics Table for Interval and Ratio Variables

Variable	*M*	*SD*	*n*	Min	Max
Pre total	111.16	16.65	50	68.00	140.00
Post total	116.96	12.74	50	92.00	140.00

Figure 1

Ranked values of pre total and post total scores



Appendix N

Table 1

Frequency Table for Ordinal Variables

Variable	*n*	*%*
Pre Risk Factor Familiarity		
Unfamiliar	4	8
Somewhat Familiar	24	48
Extremely Familiar	22	44
Missing	0	0
Post Risk Factor Familiarity		
Unfamiliar	1	2
Somewhat Familiar	22	44
Extremely Familiar	27	54
Missing	0	0
Pre ACEs Familiarity		
Unfamiliar	23	46
Somewhat Familiar	19	38
Extremely Familiar	8	16
Missing	0	0
Post ACEs Familiarity		
Unfamiliar	5	10
Somewhat Familiar	29	58
Extremely Familiar	16	32
Missing	0	0
Pre PTSD Familiarity		
Unfamiliar	7	14
Somewhat Familiar	26	52
Extremely Familiar	17	34
Missing	0	0
Post PTSD Familiarity		
Unfamiliar	3	6
Somewhat Familiar	14	28
Extremely Familiar	33	66
Missing	0	0

Table 2

Frequency Table for Ordinal Variables

Variable	*n*	*%*
Pre Own Mental Health Awareness		
Unlikely	2	4
Somewhat Likely	23	46
Extremely Likely	25	50
Missing	0	0
Post Own Mental Health Awareness		
Unlikely	3	6
Somewhat Likely	18	36
Extremely Likely	29	58
Missing	0	0
Pre Seek Mental Health Services		
Unlikely	7	14
Somewhat Likely	25	50
Extremely Likely	18	36
Missing	0	0
Post Seek Mental Health Services		
Unlikely	8	16
Somewhat Likely	18	36
Extremely Likely	24	48
Missing	0	0
Pre Mental Health Resources Knowledge		
Uncomfortable	7	14
Somewhat Comfortable	19	38
Extremely Comfortable	24	48
Missing	0	0
Post Mental Health Resources Knowledge		
Uncomfortable	3	6
Somewhat Comfortable	15	30
Extremely Comfortable	32	64
Missing	0	0