|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Appendix A: Demographic Characteristics of the Sample | | | | | | | | | | | |
|  | |  |  | Fatigued  (yes/no) | | Injured  (yes/no) | | Safety Compromising Behaviors  (yes/no) | | Errors/Adverse Events  (yes/no) | |
| Gender | | N |  |  |  |  |  |  |  |  |  |
|  | Male | 469 |  | 206 | 252 | 150 | 319 | 426 | 18 | 293 | 144 |
|  | Female | 240 |  | 104 | 131 | 88 | 152 | 217 | 7 | 143 | 78 |
|  | |  |  | X2 (1, N=693) = .03, p=N/S | | X2 (1, N=709) = .21, p=N/S | | X2 (1, N=668) = .55, p=N/S | | X2 (1, N=658) = .36, p=N/S | |
|  | |  |  |  |  |  |  |  |  |  |  |
| Level of Certification | | |  |  |  |  |  |  |  |  |  |
|  | PCP | 554 |  | 285 | 256 | 185 | 369 | 496 | 23 | 335 | 178 |
|  | ACP | 158 |  | 99 | 56 | 55 | 103 | 150 | 2 | 104 | 44 |
|  | |  |  | X2 (1, N=696) = 6.10, p<.05 | | X2 (1, N=712) = .11, p=N/S | | X2 (1, N=671) = 3.18, p=N/S | | X2 (1, N=661) =1.27, p=N/S | |
|  | |  |  |  |  |  |  |  |  |  |  |
| Age (average in years) | | 38  (SD 10.1) |  | 38.2  (SD 9.74) | 37.5  (SD 10.4) | 38.3  (SD 9.5) | 37.8  (SD 10.4) | 38  (SD 10) | 38  (SD 13) | 36.4  (SD 9.6) | 40.7  (SD 10.3) |
|  | |  |  | t(686)= -.96, p=N/S | | t(670)= -.94, p=N/S | | t(25)= .03, p=N/S | | t(408)= 5.18, p<.01 | |
|  | |  |  |  |  |  |  |  |  |  |  |
| Years in paramedicine | | 13.6  (SD 9.9) |  | 13.9  (SD 9.5) | 13.1  (SD 10.5) | 14.0  (SD 9.8) | 13.4  (SD 10) | 13.6  (SD 9.8) | 13.7  (SD 13) | 16.2  (SD 10.6) | 12.2  (SD 9.4) |
|  | |  |  | t(670)= -.94, p=N/S | | t(684)= -.86, p=N/S | | t(25)= .04, p=N/S | | t(383)= 4.69, p<.01 | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Appendix B: Bivariate Analyses of relationship between predictors and safety outcomes. | | | | | | |
|  |  |  |  |  |  |  |
|  | Injuries | | | | | |
|  | OR | 95% CI | Nagelkerke r2 | AIC | BIC | SSA-BIC |
| Fatigued | 2.18\*\*\* | 1.57-3.03 | .044 | 876.94 | 886.04 | 879.69 |
| Shift length (12+ hours) | 1.54 | 0.65-3.68 | .002 | 914.67 | 923.81 | 917.46 |
| Rotate shifts | 1.48\* | 1.01-2.16 | .008 | 909.27 | 918.40 | 912.05 |
| Worked 40+ hours weekly | 1.36 | 0.90-2.06 | .004 | 911.03 | 920.16 | 913.81 |
|  |  |  |  |  |  |  |
|  | Safety Compromising Behaviors | | | | | |
|  | OR | 95% CI | Nagelkerke r2 | AIC | BIC | SSA-BIC |
| Fatigued | 3.95\*\* | 1.56-10.01 | .054 | 207.05 | 216.04 | 209.69 |
| Shift length (12+ hours) | 2.37 | 0.53-10.65 | .005 | 223.14 | 232.17 | 225.82 |
| Rotate shifts | 1.69 | 0.74-3.87 | .008 | 222.63 | 231.65 | 225.30 |
| Worked 40+ hours weekly | 5.94\*\*\* | 2.63-13.42 | .095 | 199.93 | 208.95 | 202.60 |
|  |  |  |  |  |  |  |
|  | Errors and Adverse Events | | | | | |
|  | OR | 95% CI | Nagelkerke r2 | AIC | BIC | SSA-BIC |
| Fatigued | 1.47\* | 1.06-2.04 | .011 | 833.14 | 842.10 | 835.75 |
| Shift length (12+ hours) | 3.70\*\* | 1.61-8.52 | .021 | 840.78 | 849.77 | 843.42 |
| Rotate shifts | 1.67\*\* | 1.15-2.41 | .015 | 842.68 | 851.67 | 845.32 |
| Worked 40+ hours weekly | 1.35 | 0.90-2.04 | .004 | 843.49 | 852.48 | 846.13 |
|  |  |  |  |  |  |  |
| \* p < .05 \*\* p < .01 \*\*\* p < .001 | | | | | | |
| Information criteria (IC) based fit statistics are another estimation of model fit. The Bayesian Information Criteria, Akaike Information Criteria, and Sample-Size Adjusted BIC each indicate better fit as values decrease as they suggest a more parsimonious model. IC fit indices are calculated from log likelihood values yet apply penalties for the number of model parameters and size of the sample. | | | | | | |

|  |
| --- |
| Appendix C: EMS Safety Inventory\* |
|  |
| In the past three months… |
|  |
| **Injury** |
| I was injured during a shift. |
| I received a needle stick injury. |
|  |
| **Safety Compromising Behaviors** |
| I was overly stressed during a shift. |
| I found myself at an unsafe scene. |
| I may have been contaminated with copious amounts of patient bodily fluids. |
| I was involved in a collision involving one of my agency’s vehicles. |
| I have reported for my shift without getting adequate rest beforehand. |
| I have reported for my shift after drinking alcohol within the previous 8 hours. |
| I did not complete a pre-shift check of equipment and medications because |
| I did not restock the ambulance before a call or shift because |
| I have “fudged” information on a patient care report (i.e. vitals, chronology of events). |
| I felt vulnerable to harm due to lack of appropriate PPE (i.e. BSI, Turnout Gear, etc). |
| I felt that ***a patient’s*** safety was jeopardized because my agency did not provide me with updated equipment. |
| I felt that ***my*** safety was jeopardized because my agency did not provide me with updated equipment. |
| I felt that ***a patient’s*** safety was jeopardized because my agency did not provide me with updated protocols/policies/procedures. |
| I felt that ***my*** safety was jeopardized because my agency did not provide me with updated protocols/policies/procedures. |
| I have exceeded the speed limit while routinely driving the unit in a non-emergency mode. |
| I have greatly exceeded the speed limit while responding lights and sirens (i.e. more than 20 kilometers over the posted speed limit). |
| My “chute time” (Time from call received to rolling) was greater than 2 minutes. |
|  |
| **Errors/Adverse Events** |
| I did not establish an IV after two attempts because |
| I did not use a secondary treatment device when the preferred failed (e.g. IO instead of IV access, king airway instead of ET tube) because |
| I did not check a glucose level in a patient with altered mental status because |
| I did not check a glucose level in a diabetic patient with nausea and vomiting because |
| I did not use CPAP on a patient with Congestive Heart Failure while enroute to the hospital because |
| I did not place a patient on the monitor because |
| I did not perform a 12-Lead EKG on a patient with chest pain because |
| I did not perform a 12-Lead EKG on a patient with STEMI because |
| I confirmed a STEMI but did not administer aspirin when warranted because |
| I administered the wrong medication by not checking the label because |
| I administered the wrong dose of medication by not confirming the dose because |
| I transferred a patient at the Emergency Department (ED) with an unrecognized esophageal intubation (ET tube placed in esophagus rather than trachea) because |
| I did not secure an embedded object in a wound instead of securing the object with bandages and accidently removed it because |
| I did not properly interpret an EKG because |
| I did not properly size a piece of equipment and then used it on a patient (e.g. ET tube, C- Collar, Airway Adjunct, IV Catheter) because |
| I did not transport a specialty care patient to a specialty care facility (i.e. Trauma, Stroke, Pediatric) because |
| I accidentally started an IO in a location outside of protocol. |
| I made a patient with chest pain or shortness of breath ambulate instead of using a stretcher. |
| I accidentally dislodged an ET tube. |
| I placed an IV into an artery instead of into a vein. |
| I accidentally dropped a patient while on a transportation device (i.e. stretcher, stair chair). |
| I accidentally caused physical injury to a patient moving the patient. |
|  |
| \* The EMS Safety Inventory used in this study was adapted from Patterson PD, Weaver MD, Frank RC, Warner CW, Martin-Gill C, Guyette FX, et al. Association between poor sleep, fatigue, and safety outcomes in emergency medical services providers. Prehospital Emergency Care. 2011; 16(1):86-97. Response options vary depending on the question. |