LIBERTY UNIVERSITY

Improving Self-Efficacy in Flight Nurse Practitioners in Preparation for the Role of the Law Enforcement Tactical Nurse Practitioner

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Abstract and/or Background

Abstract: Current evidence demonstrates that the number of prehospital nurse practitioners working in civilian and military settings is growing. Additional training beyond the formal nurse practitioner curriculum is necessary to increase the self-efficacy, knowledge, and skills of the nurse practitioner for operational battlefield conditions in far-forward, austere, and tactical settings. Evidence also demonstrates that the Tactical Combat Casualty Care (TC3) course is the national standard for tactical care and training for all healthcare providers. The purpose of this evidence-based pilot study was to increase the tactical self-efficacy of the United States-based nontactical civilians who are highly trained and skilled flight nurse practitioners (FNPs). The preselected FNPs completed a TC3 course to increase their self-efficacy in their tactical knowledge, ability, and skills through a combination of formal (didactic), informal (vicarious), and physiological conditioning (scenario-based) positive verbal or written reinforcement/reassurance as theorized by Albert Bandura. Increasing the tactical self-efficacy of the FNPs helped prepare them to assume the role of the law enforcement tactical nurse practitioner in support of a metropolitan police department special weapons and tactics team. A general self-efficacy scale was administered pre- and post-course to the preselected group of FNPs, and data were compared and analyzed using two-tailed paired *t* tests. Clinical relevance was identified in the fact that tactical self-efficacy was increased in all participants, and a statistically significant increase in tactical self-efficacy was seen in fifty percent of the preselected FNPs. Results were initially disseminated to key stakeholders and then considered for publication in a peer-reviewed journal.

Background: The medical crew members of the university-based Level I trauma center's multi-aircraft flight program form a multidisciplinary team built on safety, trust, knowledge, skill, and collaboration (Alfes & Manacci, 2014; Alfes et al., 2015; Jones, 2014; Rasmussen et al., 2018; Ruskin, 2019). One of the disciplines represented on the flight team was the flight nurse practitioner (FNP). All the FNPs on the flight team were credentialed, highly skilled, and trained advanced-level providers but had low self-efficacy related to the tactical environment due to a lack of exposure to and training on tactical conditions (Alfes & Manacci, 2014; Alfes et al., 2015; Bandura, 1977; Jones, 2014; Ruskin, 2019). The FNPs were trained to perform such advanced procedures as direct and video tracheal laryngoscopy, surgical cricothyrotomy, finger thoracostomy, chest tube thoracostomy, escharotomy, pericardiocentesis, and central line placement (Jones, 2014). In addition, the FNPs have additional technical education and training to operate the various medical devices they may come in contact with while transporting patients in the prehospital and interhospital environments. Finally, the FNPs were trained to work independently with their partners and collaboratively with other healthcare professionals to successfully transport critical patients to their destination while maintaining the professionalism, compassion, and courtesy expected of an advanced-level provider (Jones, 2014).

Introduction and Research Question

Introduction: In discussing advanced-practice tactical medicine, it is important to know that physicians have been involved in civilian tactical medicine for many years by providing medical oversight and direction of the local police department's special weapons and tactics team medics and operational support when the team is called out on a mission (Tang et al., 2017). What are local police departments to do if no tactical physician is available to assume this role? With the rise of the non-physician advanced practice registered nurse provider since the latter half of the 20th century, traditional physician-only roles that have gone unfilled due to physician shortages can now be filled with competent advanced-level providers (Feyereisen et al., 2021). However, as these providers move into new areas of clinical practice, their self-efficacy is expected to be low because they are working in a new unknown environment (Bandura, 1977). As the provider understands, becomes accustomed to, and grows comfortable with their new professional work environment through physiological conditioning, positive performance accomplishments, written and verbal reinforcement/reassurance, vicarious experiences, and formal education, their self-efficacy is expected to increase (Bandura, 1977). As this self-efficacy increases, the provider will increase their effort and persistence to overcome additional barriers and obstacles, perceived threats, and adverse experiences to thoroughly understand their new role or environment to the point that negative internal or external stimuli are no longer feared but expected and welcomed (Bandura, 1977).

Research Question: In the non-tactical civilian flight nurse practitioner with low tactical self-efficacy, does receiving education through the Tactical Combat Casualty Care course increase their tactical self-efficacy to perform their role in a tactical environment with a local metropolitan SWAT team?

(P) The population was the non-tactical civilian flight nurse practitioner with low tactical self-efficacy
(I) The intervention was providing education through the Tactical Combat Casualty Care course curriculum to increase tactical self-efficacy
(C) [no comparison needed for EBP implementation projects]
(O) The outcome of the intervention was an increase in FNPs' self-efficacy to perform their role in a tactical environment?

Methods

Conceptual Framework and Methodology: This evidence-based practice project utilized the Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care (Iowa Model Collaborative, 2017) as a guide to conduct a pilot project using a quasi-experimental approach and inferential statistics to collect and analyze data. As such, the PICO question was used to conduct and obtain data results.
Theoretical Framework: The middle-range theory of self-efficacy, which was based on the social cognitive theory developed by Albert Bandura, was used as the theoretical framework for this project (Bandura, 1977).
Pilot Study: Selected flight nurse practitioners took a Tactical Combat Casualty Care (TC3) course. Tactical self-efficacy was measured pre-course and post-course.
Measurable Outcomes: Pre-course/Post-course comparisons of the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995).
Data Analysis: Paired *t*-tests on individual and group self-efficacy scale scores (Sullivan, 2023).

Table 1: ***Observed Changes in Self-Efficacy per Participant per domain***

DOMAIN	SELF-EFFICACY SCALE ITEM	P-1	P-2	P-3	P-4	P-5	P-6	TOTAL:
1	I can always manage to solve difficult problems if I try hard enough.	N	N	Y	N	Y	N	2
2	If anyone opposes me, I can find the means and ways to get what I want.	Y	Y	N	N	Y	N	3
3	It is easy for me to stick to my aims and accomplish my goals.	Y	N	N	Y	Y	Y	4
4	I am confident that I could deal efficiently with unexpected events.	Y	N	N	Y	Y	Y	4
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	Y	N	N	N	Y	N	2
6	I can solve most problems if I invest the necessary effort.	N	N	N	N	Y	N	1
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	Y	N	Y	N	Y	N	3
8	When I am confronted with a problem, I can usually find several solutions.	N	N	N	N	Y	N	1
9	If I am in trouble, I can usually think of a solution.	Y	N	N	N	Y	N	2
10	I can usually handle whatever comes my way.	N	N	Y	N	Y	Y	3
	Totals:	6	1	3	2	10	3	

[Key: Y = Yes, an increase in self-efficacy was observed; N = No change was observed].

Table 2: ***Clinically Relevant Self-Efficacy Increases per Participant***

Participant	Number of Domains Changed	Self-Efficacy Increased in Domain(s)
1	6	2, 3, 4, 5, 7, and 9
2	1	2
3	4	1,7, and 10
4	2	3 and 4
5	10	1, 2, 3, 4, 5, 6, 7, 8, 9, and 10
6	3	3,4 and 10

Table 3: ***Blinded Pre-Test and Post-Test Results***

Participant	Pre-t Test Results	Post t Test Results	Absolute Differences
1	88	96	8
2	88	92	4
3	96	100	4
4	76	96	20
5	72	92	20
6	92	96	4

Table 4: ***Participant 1 Pre-Course and Post-Course Scores per Domain***

Domain	Pre-course	Post-course	Absolute difference
1	4	4	0
2	3	4	1
3	3	4	1
4	3	4	1
5	3	4	1
6	4	4	0
7	3	4	1
8	3	3	0
9	3	4	1
10	4	4	0

Table 5: ***Participant 2 Pre-Course and Post-Course Scores per Domain***

Domain	Pre-course	Post-course	Absolute difference
1	4	4	0
2	3	4	1
3	4	4	0
4	4	4	0
5	4	4	0
6	4	4	0
7	4	4	0
8	4	4	0
9	4	4	0
10	4	4	0

Table 6: ***Participant 3 Pre-Course and Post-Course Scores per Domain***

Domain	Pre-course	Post-course	Absolute difference
1	3	4	1
2	3	3	0
3	3	4	1
4	4	4	0
5	4	4	0
6	4	4	1
7	3	4	0
8	4	4	0
9	4	4	0
10	3	4	1

Table 7: ***Participant 4 Pre-Course and Post-Course Scores per Domain***

Domain	Pre-course	Post-course	Absolute difference
1	3	3	0
2	3	3	0
3	3	4	1
4	3	4	1
5	3	3	0
6	3	3	0
7	3	3	0
8	4	4	0
9	4	4	0
10	3	3	0

Table 8: ***Participant 5 Pre-Course and Post-Course Scores per Domain***

Domain	Pre-course	Post-course	Absolute difference
1	1	3	2
2	2	3	1
3	2	4	2
4	2	4	2
5	1	3	2
6	2	3	1
7	1	4	3
8	2	3	1
9	2	3	1
10	3	4	1

Table 9: ***Participant 6 Pre-Course and Post-Course Scores per Domain***

Domain	Pre-course	Post-course	Absolute difference
1	3	3	0
2	3	3	0
3	3	4	1
4	3	4	1
5	3	3	0
6	4	4	0
7	4	4	0
8	4	4	0
9	4	4	0
10	3	4	1

Results and/or Conclusions

Results

1. Overall, group tactical self-efficacy increased. Clinical relevance and statistical significance with a high effect were observed in all domains of the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995). See Tables 1 and 2.
2. Overall, individual tactical self-efficacy increased. Clinical relevance and statistical significance with a high effect were observed in 50% of the participants (Participants 1, 3, and 5). See Tables 4 – 9.
3. Overall, tactical knowledge and skill increased. Although not part of the EBP pilot study, clinical relevance and statistical significance were observed, with a high effect, in pre-test/post-test exam score comparisons. See Table 3.

Conclusions

1. With proper tactical training, flight nurse practitioners are the ideal advanced-level providers in the absence of a physician to provide tactical care to a metropolitan SWAT team due to their background and extensive training (Boutonnet et al., 2018; Green & Ruel, 2020; Woo et al., 2017).
2. The TC3 curriculum is the nationally recognized standard for tactical trauma care (Boutonnet et al., 2018; Butler, 2017; Pilgrim et al., 2022; Wessels et al., 2021).

Future Work

1. Because this was an EBP pilot study, the outcomes and results are not generalizable outside of the group of flight nurse practitioners who participated in the study.
2. Future studies will need to be conducted to generalize the results. These studies could confirm the findings of this EBP pilot study, address the on-going and integrated training of nurse practitioners with the SWAT team, or address the implementation of tactical nurse practitioner role in law enforcement, military, disaster, or mass casualty incidents (planned and unplanned).
3. This EBP pilot study brought together the current knowledge regarding nurse practitioners working in prehospital, military, austere, and tactical environments.
4. The Level I Trauma Center's university-based flight program will use these data to advance its plan to implement the law enforcement tactical nurse practitioner role in support of the local metropolitan SWAT team.
5. The primary goal is to support the metropolitan SWAT team, respond to SWAT calls, and render advanced-level provider trauma care to the SWAT team first and then to any civilian casualty in the absence of a SWAT team injury, decreasing time to advanced-procedure interventions and/or the initiation of blood products to reduce overall morbidity and mortality. Once perfected, this model can then be taken to other law enforcement agencies (city, county, state, or federal agencies) and replicated to help reduce law enforcement and civilian trauma-related morbidity and mortality across the country.
6. To sustain, nurture, and grow the FNPs' self-efficacy, ongoing integrated tactical training with the metropolitan SWAT team will need to be planned. It will be part of additional phases of the university-based Level I trauma center's implementation plan. Once their tactical self-efficacy, tactical knowledge, and tactical skills are high enough not to hinder SWAT operations or be a liability to the SWAT team or other law enforcement officers, the FNPs collectively can start working in the role of the LET-NP.

References

1. Alfes, C. M., & Manacci, C. F. (2014). Taking simulation to new heights: Designing a flight simulation center. *Clinical Simulation in Nursing*, *10*(9), 442–445. https://doi.org/10.1016/j.ecns.2014.05.006
2. Alfes, C. M., Steiner, S. L., & Manacci, C. F. (2015). Critical care transport training: New strides in simulating the austere environment. *Air Medical Journal*, *34*(4), 186–187. https://doi.org/10.1016/j.amj.2015.03.006
3. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. https://doi.org/10.1037/0033-295X.84.2.191
4. Boutonnet, M., Raynaud, L., Pasquier, P., Vitiello, L., Coste, S., & Ausset, S. (2018). Critical care skill triad for tactical evacuations. *Air Medical Journal*, *37*, 362366. https://doi.org/10.1016/j.amj.2018.07.028
5. Butler, F. K. (2017). Two decades of saving lives on the battlefield: Tactical Combat Casualty Care turns 20. *Military Medicine*, *182*(3-4), e1563–e1568. https://doi.org/10.7205/MILMED-D-16-00214
6. Feyereisen, S., McConnell, W., Thomas, C., & Puro, N. (2021). Physician dominance in the 21st century: Examining the rise of non-physician autonomy through prevailing theoretical lenses. *Sociology of Health & Illness*, (8), 1867–1886. https://doi.org/10.1111/1467-9566.13366
7. Green, D., & Ruel, J. (2020). Impact of advanced practice prehospital programs on health care costs and ED overcrowding: A literature review. *Advanced Emergency Nursing Journal*, *42*(2), 128–136. https://doi.org/10.1097/TME.0000000000000291
8. Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, *14*(3), 175–182. https://doi.org/doi:10.1111/wvn.12223
9. Jones, J. (2014). Vanderbilt LifeFlight celebrates 30 years of service. *Air Med Journal*, *33*(4), 146–149. https://doi.org/10.1016/j.amj.2014.03.003
10. Pilgrim, C. H. C., Hendel, S., Eatough, N., & Graves, M. (2022). Treatment at point of injury – forward movement of surgical assets to address non-compressible truncal haemorrhage. *Journal of Military and Veterans' Health*, *30*(1), 41–50. https://doi.org/doilink/03.2022-92674215/JMVH
11. Rasmussen, K., Røislien, J., & Sollid, S. J. (2018). Does medical staffing influence perceived safety? An international survey on medical crew models in helicopter emergency medical services. *Air Med Journal*, *37*(1), 29–36. https://doi.org/10.1016/j.amj.2017.09.008
12. Ruskin, K. J. (2019). Helicopter air ambulance services. *Current Opinion in Anesthesiology*, *32*(2), 252–256. https://doi.org/10.1097/ACO.0000000000000700
13. Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy Scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). NFER-Nelson.
14. Sullivan, L. M. (2023). *Essentials of biostatistics in public health* (R. Riegelman, Ed.; 4th ed.). Jones & Bartlett Learning.
15. Tang, N., Levy, M., Margolis, A., & Woltman, N. (2017). Graduate medical education in tactical medicine and the impact of ACGME accreditation of EMS fellowships. *Journal of Special Operations Medicine*, *17*(1), 101–104.
16. Wessels, L. E., Roper, M. T., Ignacio, R. C., Davis, K. L., & Ambrosio, A. A. (2021). Telementorship in underway naval operations: Leveraging operational virtual health for Tactical Combat Casualty Care. *Journal of Special Operations Medicine*, *21*(3), 93–95. https://doi.org/10.55460/ATK4-KWC0
17. Woo, B. F. Y., Lee, J. X. Y., & Tam, W. W. S. (2017). The impact of the advanced practice nursing role on quality of care, clinical outcomes, patient satisfaction, and cost in the emergency and critical care settings: A systematic review. *Human Resources for Health*, *15*(1), Article 63. https://doi.org/10.1186/s12960-017-0237-9