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Continuing Professional Education Needs Assessments in Emergency Medical Services

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Abstract: Emergency Medical Service (EMS) educators are faced with the daunting task of providing prehospital care providers with quality continuing professional education (CPE) while meeting the needs of various stakeholders. This study sought to find how EMS educators make CPE offering decisions by examining three primary areas: the sources of information used to generate CPE topic ideas, factors that influence decision making, and strategies used to collect and analyze data. Additionally, a comprehensive list of CPE offered by study participants from the last two years was generated, which demonstrates how these three areas drive EMS CPE.

Introduction

The EMS system is a critical component in the overall healthcare continuum. In 2003 alone, 114 million people were seen in emergency rooms throughout the United States, of which 16.2 million were transported by EMS (Larkin, Claassen, Pelletier & Camargo, 2006). Many advances in prehospital medicine created the need for continuous learning by prehospital care providers. As a result, initial training programs have improved over the years, but the CPE of these same prehospital care providers after initial certification/licensure, however, has not followed suit. This is unfortunate because CPE represents the greatest amount of education prehospital care providers receive throughout their EMS career and is connected to relicensure/recertification.

While EMS educators do provide CPE, these programs typically are not based on a systematic assessment of educational need (NHTSA, 2000) and are, instead, too often based on standardized CPE curricula. EMS educators are trained to present curricula developed on predetermined topics that is often out of date (NHTSA, 2000). We know from best theory and research in adult education (AE), instructional design (ID), and human resource development (HRD) that training is most effective when based on a rigorous needs assessment. Without the *right* CPE at the *right* time in the *right* context for the *right* prehospital care provider, training will likely become a fruitless activity with little or no practical value. Knowing more about needs assessment would enable EMS educators to accurately identify individuals' learning needs to develop more relevant CPE, which could have greater impact on patient outcomes. And yet, even with ample encouragement from the EMS field and evidence from AE, ID, and HRD, no EMS educator training curriculum specifically addresses the issue of needs assessment for CPE.

Examining understandings and practices in EMS education against the best theories and practices from the fields of AE, ID, and HRD will identify gaps that could benefit from adopting such theories and practices. However, a comparison of needs and needs assessment practices cannot yet be made, as it is unknown where EMS educators turn for information for learning needs, how that information is collected, what strategies are used to make decisions about CPE or what factors influence the CPE offering selections. To explore these current understandings and practices, this study was guided by four research questions:

1. What sources of information do EMS educators use to identify and prioritize CPE offerings?
2. What influences affect the needs assessment processes EMS educators use to identify and prioritize CPE offerings?
3. What strategies for EMS educators use to identify and prioritize CPE offerings?
4. What CPE is offered by EMS educators?

Conceptual Framework

This study was rooted in the concept that many influences affect how the EMS educator decides what should be provided as CPE and in what order of priority, which largely reside both inside and outside the educator's control. As Cervero and Wilson (2006) noted, the process for identifying and prioritizing training needs is a matter of democratically negotiating stakeholders' needs and is primarily based on the program planner's judgments. Others, such as Queeney (1995) and Gupta, Sleezer, and Russ-Eft (2007) assert that data collection and analysis are essential in making these decisions. Caffarella (2002) indicates that there are numerous sources of ideas for education and training programs as well as techniques for program planners to elicit program ideas.

Based on the AE, ID, and HRD literature, an overarching understanding of the complex identification and prioritization process emerged, which involved three major elements: (a) sources of information to generate CPE topic ideas, (b) strategies to collect and analyze data, and (c) factors that influence the decision-making process. The first element, sources of information, refers to the places from where ideas for CPE topics come and typically include people, documents, and laws and regulations. The second element, strategies to collect and analyze data, is the various ways data are retrieved from their source in a form that is valuable to the assessor and the formality in which they are analyzed. Finally, the third element, factors that influence the decision-making process, is the internal, external, tangible, and intangible forces that influence the needs assessment process.

Research Design

This quantitative study utilized a 97-item researcher-designed survey to examine the three elements that impact CPE topic selection and to develop a comprehensive listing of CPE offered by EMS educators during the previous two years. The sources of information and strategies to collect and analyze data elements were measured using a 4-point Likert frequency scale (1= never, 2=seldom, 3=often, 4=always). Factors influencing CPE decision-making were measured using a 4-point Likert importance scale (1=not important, 2=slightly important, 3=moderately important, 4=very important). Open-ended items allowed for responses not captured by the closed-ended items. Additionally, demographic items asked about participant and EMS service characteristics. Finally, items asked how many and which EMS courses the responded offered in the previous two years.

This survey was developed through an iterative process using the literature and subject matter experts. The resulting pilot instrument was given to a random sample of the target population to determine return rate and reliability. From the results, the final study instrument was developed. The final instrument was administered to the remaining population of interest, with item validity based largely in the development process. EMS educators identified as Training Officers with the National Registry of Emergency Medical Technicians (NREMT)

served as the population of interest, based on their proximity to EMS education. In total, 3,877 invitations to the online survey were sent. Of the 1,073 responses, 634 responses were deemed usable, resulting in an 18.4% adjusted return rate.

Findings

This study produced interesting findings related to how various internal and external forces influenced CPE. From the four research questions, the major influences identified included: (a) recertification/relicensure requirements, (b) having adequate resources to conduct CPE, (c) common practices in collecting and analyzing data, and (d) internal and external sociopolitical forces.

Overall, the most significant source of information used to generate CPE ideas comes from the governing bodies that control certification/licensure. Given that EMS personnel must remain certified or licensed without any lapse in order to work, this was not a surprising finding. The findings did reveal, interestingly, that state offices of EMS are looked to most frequently for CPE topic ideas, over the National Registry. Other major sources of CPE topic ideas include (in descending order): *recommendations from people within my EMS service*, *federal/state/local laws*, and *data from patient care reports*. The least frequently used sources of information for generating CPE topic ideas (in ascending order) include: *EMS supply/vendors*, *scholarly journals*, *the Internet*, and *EMS-related magazines*.

The most frequent factors that influence the decision-making process include (in descending order) *having adequate expertise*, *having adequate instructors*, *having adequate equipment*, r*ecommendations from my EMS service's chief/director, having adequate time*, *recommendations from the EMS service's staff* and *having adequate money to conduct the CPE*. Interestingly, five of the seven top factors point to the importance of the logistics and resources involved in conducting CPE. The least influential factors in the decision-making process for CPE include (in ascending order): the EMS educator's *personal fear of offering the CPE*, *personal fear of not offering the CPE*, *recommendations from others outside of the EMS service*, *the EMS service's history of offering the CPE,* and the EMS educator's *personal interest in teaching the CPE*.

EMS educators rely most frequently upon *reviewing patient care reports* to collect data for generating CPE topics. This is followed by (in descending order) *observing the target audience for deficiencies, brainstorming with the EMS staff, administering practical skills exams, survey staff, and interviewing staff*. The least frequently used methods of collecting data include (in ascending order): *reading articles, administering written knowledge exams, reviewing reports other than patient care reports*, and *brainstorming with others outside the EMS service*. These findings indicate the disparity of exam use to collect data between the cognitive and skills exams, with favor given to the latter for use in generating CPE topic ideas. Once collected, data are analyzed in order to generate CPE topic ideas. In descending order, EMS educators most frequently *identify patterns in the data*, *use subjective impressions of the data*, and *conduct statistical analysis of the data* in order to determine what CPE topics should be considered.

By far, the most frequently taught courses were *Basic Cardiac Life Support* and *Advanced Cardiac Life Support*, two courses typically required to maintain certification/licensure. The next most frequent courses taught include (in descending order): *Emergency Vehicle Operator's Course*, *Pediatric Advanced Life Support*, *refresher courses based on the National Standard Curriculum*, *Assessment and Treatment of Trauma*, *Hazardous*

Materials Awareness, *Pediatric Education for Prehospital Providers*, and *PreHospital Trauma Life Support*. Among the least frequently taught courses include (in ascending order): *Advanced Wilderness Life Support*, *National Disaster Life Support*, *Advanced Disaster Life Support*, *Advanced Hazmat Life Support*, and *Advanced Trauma Life Support (For Physicians)*. A large proportion of responses to an open-ended question about other types of non-standardized courses included inservice-type classes of short duration that were not comparable to either the courses listed in the closed-ended portion of the survey nor to a refresher course, which follows the National Standard Curriculum.

Discussion, Conclusions, and Implications

Discussion

The results of the study indicated a heavy reliance on mandates from state EMS offices and the NREMT to generate CPE topic ideas, with the third most utilized source for generating CPE topic ideas being recommendations from people within the EMS educator's service. The combination of mandates and recommendations was sought more frequently than data from patient care reports and data from reports other than patient care reports. This reliance on mandates and recommendations over extant data undoubtedly biases CPE topic idea generation process, creating a situation where mandates are leading EMS CPE rather than EMS CPE needs fulfilling the mandates.

Availability of resources for CPE activities was the most influential factors in deciding what CPE to offer, followed by recommendations from stakeholders. That recommendations from the EMS service's staff fell below both resource availability and recommendations from EMS chiefs/directors in influence suggests that EMS educators are hearing the CPE needs and wants of the service, but are unable to act upon the information because of resource limitations and directives from more powerful entities. Resource limitations combined with directives from EMS chief/directors, creates potential for less-than-optimal CPE. Schön (1987) describes the swamp of professional practice where an educator often chooses to "remain on the high ground where he can solve relatively unimportant problems according to prevailing standards of rigor or shall he descend to the swamp of important problems and nonrigorous inquiry" (p. 3). This dilemma in which EMS educators find themselves is much like the swamp of professional practice described by Schön. EMS educators are forced to deal with issues of recertification/relicensure—the high ground—instead of more meaningful issues of prehospital care provider performance, which requires more diligence to effectively manage.

Data analysis strategies, when employed, are not very sophisticated and rely primarily on the EMS educators' subjectivities. Primarily, EMS educators identified patterns in the data (11.0% "always"; 62.8% "often"), followed by use of subjective impression of the data (9.6% "always"; 57.3% "often"). Conducting statistical analysis of the data (10.3% "always"; 45.3% "often") was the least frequently used analysis strategy. While rigorous data collection and analysis may provide accurate indicators of learning needs, one must consider the resources available (to include knowledge and expertise) in order to be successful (Knox, 2002). As Queeney (1995) notes, it is more important to work within the limitations when assessing learning needs than to develop a sophisticated process that cannot be implemented. Given the regulatory mandates and directives of powerful people, it is no surprise that more subjective, less analytical methods are employed to identify CPE needs. This leaves EMS educators with little

sense of purpose for conducting a rigorous needs assessment and little impetus to determine any other CPE outside of what is told to be taught.

The courses taught by EMS educators who participated in this study demonstrated three key patterns. First, those courses specifically required for successful recertification/relicensure or accreditation were the most frequently taught courses, demonstrating the influence of mandates from certification/licensure and accreditation organizations over CPE prioritization and selection. Second, funding availability in the form of grants may not have as much weight in CPE selection as evidenced by the frequency of pediatric courses versus the infrequency of disaster courses in CPE taught. Finally, the type of EMS service may have influenced the type of CPE offered based on typical services provided as evidenced by the frequency of hazardous materials courses associated with fire department-based EMS and select locations offering wilderness trainings.

Conclusions

Six major conclusions were drawn from this study. First, the primary driver of EMS CPE is recertification/relicensure. It is apparent that meeting recertification/relicensure requirement was the most pressing concern for EMS educators. Various certifying organizations' requirements determine what CPE is ultimately taught, though a conflict may exist between actual learning needs as compared to the arbitrary requirements.

Second, EMS educators rely on mandates and recommendations from other over extent data, potentially creating a bias in CPE decision-making. The result is CPE serving the governing bodies and recommending people while not necessarily addressing knowledge and performance gaps that actually exist. The influence that authority figures have over EMS educators may actually dissuade a thorough needs assessment, which will limit differentiation of wants from needs. Thus, when one does not triangulate data from more than one source (DeSilets, 2007) to make such CPE decision, validity suffers and there is less likelihood that actual CPE needs are being addressed.

Third, scarce resources to conduct CPE are a key factor in CPE decision-making. Similar to other fields, EMS educators are keenly aware of the limitations posed by having inadequate resources to conduct CPE. The constraints posed by having inadequate resources to conduct CPE, then, may impact CPE quality and ability to improve participant performance, leading to less than optimal training. That EMS educators acknowledge this reality demonstrates thoughtful consideration of what CPE can be effectively conducted given the constraints.

Fourth, EMS educators are not necessarily given the appropriate authority to make CPE decisions. The heavy influence the EMS chief/director and medical director on the EMS educator coupled with the suggested position of EMS educators within organizational hierarchies, may mean EMS educators are not afforded a commiserate amount of authority to effectively conduct CPE activities capable of bridging knowledge and performance gaps. The EMS community has not fully embraced the importance of CPE and the level of professionalism and authority EMS educators must possess to effectively integrate CPE as a strategic operational success component. Therefore, EMS education should be viewed as a subspecialty in the field.

Fifth, EMS educators do use some needs assessment strategies to identify CPE, but not to the fullest potential. While the data demonstrates that EMS educators do follow some assessment practices, much improvement is needed within the EMS field to move CPE to a performance-based focus. EMS education has a disconnect between identifying actual learning needs versus learning wants and a dependence on utilizing available ready-made programs versus developing learning to address specific learning needs. Most importantly, the findings suggest that EMS

views the purpose of CPE as meeting recertification/relicensure mandates rather than bridging performance gaps. In this way, EMS and EMS educators unknowingly fail the prehospital care provider by maintaining a current system that refreshes previous knowledge rather than developing human resources to advance the field.

Finally, the CPE courses taught reflect the assessed needs in the current EMS education reality. EMS educators do appear to select CPE topics needed to meet assessed needs; most frequently recertification/relicensure needs as indicated in Conclusion 1 above. In addition, EMS educators use data from quality improvement activities illuminate learning needs of prehospital care provider knowledge and skills. With these data, EMS educators can identify and prioritize CPE to fill these learning gaps.

Implications

This study was the first of its kind in the EMS field to provide a baseline measure of EMS educators' practices to identify and prioritize CPE. While not perfect due to a low response rate, a sufficient number of study participants provided valuable information, which will advance the EMS education field and contribute to the overall dialogue in the HRD, ID, and AE literature.

Implications for Emergency Medical Services Education

This study was informed by the HRD, ID, and AE literature as well as the collective wisdom of EMS educators to assess three major elements of needs assessments in the EMS field: sources of information to generate CPE topic ideas, factors that influence the decision-making process, and strategies for collecting and analyzing data. The study's findings serve as a starting point for further research in discovering relationships among these variables and how these practices affect patient outcomes. The result includes practical contributions to those stakeholders involved in EMS and EMS education: EMS educators, EMS policy makers, and EMS professional organizations.

EMS educators. From this study, EMS educators are provided detailed information about the current practices being used to generate CPE topic ideas, how to collect and analyze these data, and what factors they can expect to encounter during the needs assessment process that will most likely influence any decisions. The results of this study will help EMS educators by providing a needs assessment practice overview and providing an explicit way to engage reflection about their own practice as compared to other EMS educators. For EMS educators who are on the administrative side of EMS education, knowing the enablers and barriers and deepening understanding of how these can affect the education process may stimulate action to more effectively identify and prioritize CPE to maximize learning opportunities and outcomes.

EMS policy makers. Using the results of this study, EMS policy makers can engage in more frank dialogues with EMS stakeholders about the purposes of certification/licensure and the role that CPE plays in recertification/relicensure. EMS policy makers can use the findings from this study to reevaluate CPE practices associated with recertification/relicensure. Moving away from current practices such as refresher training and minimum hours of training for recertification/relicensure, to a more strategic role of CPE as part of an overall human resource and organization development process, EMS policy makers may have more impact to provide better patient outcomes. Additionally, EMS policy makers can also use these results to make important decisions about EMS educator preparation, the role and preparation of instructional designers in EMS, and how to connect EMS outcome measures to CPE.

EMS professional organizations. Using the results of this study, EMS professional organizations can develop CPE for EMS educators on topics related to needs assessments.

Additionally, with a combination of preparatory programs and certifications, the professionalization of EMS education, and in particular in the areas of needs assessments and instructional design, can take hold. Recognizing EMS education as a subspecialty in the EMS field with preparatory programs and certification will not only draw much needed attention, but also establish standards and accountability not currently available industry-wide.

Implications for HRD, ID, and AE. This study contributes to the CPE and needs assessment literature by surfacing the practices and factors that influence the decisions made when identifying and prioritizing CPE needs. This study contributes to dialogue in the HRD, ID, and AE literature in three major areas: needs assessment practices, the influence of politics in CPE decision-making, and mandatory versus voluntary CPE. In terms of needs assessment practices, the literature review and framework used in this study may help other scholars and practitioners think about CPE needs assessments in different ways. The study provides additional evidence of the various factors influencing CPE decision-making. In particular, the data collected points to political influences, contributing additional information to the current literature regarding the subjectivity and politics involved in needs assessment practices. Finally, this study contributes to the dialogue on mandatory versus voluntary CPE by evidencing the influences of mandatory CPE for relicensure/recertification when conducting learning needs assessments.

Limitations & Future Research

This quantitative study is a beginning to understanding how EMS educators identify and prioritize CPE. Future research could continue to investigate these findings or approach the research from a different perspective.

One of the limitations of the study is the population from which data were collected. Since this convenience sample may not accurately represent the larger population of EMS educators, future studies may be conducted with a more inclusive population of those involved in EMS CPE. Additionally, individual states could use this study to investigate their respective state instead of a national study.

Being a quantitative study, conclusions as to why specific findings were obtained cannot be effectively drawn. A qualitative study into the relationships among the constructs and variables could more thoroughly reveal the deeper meanings that exist, particularly with the factors that influence the decision-making process. Additionally, a qualitative study could reveal other sources of information for generating CPE topic ideas, factors that influence the decision-making process, and strategies used to collect and analyze data.

Finally, this study revealed the scarce amount of research specific to EMS education. While many studies exist and the volume of research is on the rise, there is still opportunity for educators to pursue various research agendas, especially as it relates to the effectiveness and practicality of CPE in EMS.

Though modern EMS has been around in its familiar form for about 50 years, there is still a lot of growing the field can do, especially in the area of education. This study took interest in one specific aspect of EMS education – needs assessment in continuing professional education. While this study informs several important features of CPE and needs assessments in the EMS context, there is still much more to learn as the field tries to develop optimal processes, which can ultimately be linked backed to patient outcomes.

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