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Objectives, taxonomies and competencies of community oriented and community based education applied to community paramedicine

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ABSTRACT

The role of a paramedic has primarily been to provide emergency care. This role is being rethought of with discussions of developing a community paramedic. The reach of this development and expanded scope of practice remained unknown. This article reviewed scholarly literature on the topic of community paramedics to present a critical analysis and triangulation of community oriented and community based education (CBE) to current paramedic education guidelines to identify shared objectives. The focus of paramedic education was identified to be on emergency assessment and intervention. Whereas, CBE was focused on assessing community needs to develop, implement and evaluate community intervention. A limited number of shared objectives were identified. The time spent on these shared objectives was unclear. Additional education will be required to cover the unshared objectives, and the profession must consider educational standards, requirements and how to increase inter professional collaboration within health systems, academic settings and within communities, which are core objectives of community-based providers. It must also be considered if the needs for community paramedics represent the pinnacle of current emergency medical services and time to evolve organizations, the profession and standards.

KEY WORDS: Community health care, community health education, community paramedic, emergency medical services, paramedic

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Received: March 07, 2014

Accepted: July 16, 2014

Published: November 05, 2014

INTRODUCTION

The role of a paramedic in emergency medical services (EMS) has primarily been to provide emergency care in the out of hospital environment. Discussions have occurred that raise the need for expanding the role of EMS by developing community paramedics. Community paramedics are seen as a way to respond to sustainability problems within the health workforce by linking rural communities with urban-based health services and increasing general community capacity [1]. Cited reasons included healthcare money could be saved if prehospital providers treated patients in the field or directly referred patients, mobile practitioners would be able to reach underserved patients and improved effectiveness of the public health system with these new roles in injury prevention and screening [2]. A loosely bound group that met in 2005 developed a definition of community paramedicine as being a model of care whereby paramedics apply their training and skills in “non-traditional” community-based environments, often outside the usual emergency response and transportation model. The community paramedic practices within an “expanded scope,” which includes the application of specialized skills and protocols beyond the base paramedic training. The community paramedic

engages in an “expanded role” working in non-traditional roles using existing skills [3].

Health system reviews from the United States (US), United Kingdom (UK) and Canada (CA) identified the underutilization of non-physician healthcare providers and resulted in targeting role expansion for certain healthcare providers with increased interprofessional collaboration [4]. Community paramedics would interact with the community and allow for people from rural communities to address issues influencing their wellbeing [1]. The challenges of providing healthcare to rural communities have resulted in calls for the increased capabilities of allied healthcare professionals to provide assessments and treatments normally performed by physicians [4].

The 8% annual increase for emergency ambulance requests made for patients who do not require emergent pre-hospital intervention is one fact supporting the development of community paramedics [4]. In most EMS models, 50% of the patients transported to an emergency department are discharged without significant treatment or referral, and this contributes to the estimated 30-50% inappropriate ambulance

transports in the US, UK and CA. [4]. The need for community based and integrated EMS dates back to the 1996 EMS Agenda for the future and since then most expanded scope of practice initiatives have focused on providing direct clinical care [1]. Several organizations within the US, UK, CA have recommended expanding the capability of paramedics in treating minor conditions beyond hypoglycemia, epistaxis and falls at home to include providing referral to non-emergency resources [4]. Suggestions of adding health promotion and injury prevention to the scope of paramedic practice have been made by others [4]. A consensus on the expanded capabilities of a community paramedic is lacking as well as supporting research on the safety and effectiveness of the practice [4].

Thus far only discussions on the output, capabilities or scope of practice have occurred and discussions on the inputs and actual training and educational rigor have been ignored. The need for a consensus on expanded capabilities or scope of practice, training standards and educational methodologies are required and should be discussed together. A community healthcare provider is not a new topic in the context of medicine. In order to develop a community paramedic a critical analysis and discussion on the principles of community oriented education (COE), community based education (CBE) and competency based medical education (CBME) is needed. In addition, a triangulation of these principles to current EMS educational standards and texts is needed to identify areas within EMS education that connect with or support the development of a community paramedic.

METHODOLOGY

A literature search was required to further investigate community oriented and CBE and how it applied to the developing concept of a community paramedic. Artifacts from the literature review are presented and triangulated with paramedic education guidelines from the US and paramedic textbooks available to the author to identify shared objectives.

RESULTS

COE

COE was described as focused on both population groups and individuals that took into account health needs of the community [5,6]. COE is the relevant subject matter and covers the health problems of the society for which the students study and are trained for, and the objectives of the school that are reflective of the curriculum content and relevance to community health needs [5,6].

CBE

CBE was described as the means of achieving educational relevance to community needs and implementing the COE program [6]. The aim of CBE programs is to graduate students who are responsive to health needs of a community and to make use of the community as the learning environment [5-7].

Extensive utilization of the community as an educational environment and for learning activities is not limited to the engagement of students, but includes teachers, members of the community and representatives from other sectors as well [5-7].

The abbreviated underlying guiding principles of effective CBE programs were described as: (a) Activities should relate to planned educational goals and objectives; both students and teachers must have a clear understanding of the purpose and expected results (b) activities should be introduced early (c) activities must continue throughout the program (d) activities should not be seen as casual experiences but as standard and integral part of the educational process (e) student's training must be work that is related to their needs and part of the degree requirements (f) obvious differences between the objectives of community based program and traditional field work [6].

A program may be considered CBE if during its duration there is a balanced variety of learning activities in various settings [6]. A CBE learning activity takes place within a community or in a variety of primary and secondary healthcare services and includes: (a) Assignment to a family whose care is observed over a period of time; (b) urban, suburban and rural community designed to gain an understanding of relationship of the health sector to other community development sectors including social system of special interest groups and populations such poor sections of the community; (c) participation in a community survey or community diagnosis and action plan; (d) supervised primary healthcare work [6].

CBE Taxonomy

The CBE taxonomy created three main categories, service oriented, research oriented and training-focused. Each main category of the CBE taxonomy has two subcategories [5]. Service oriented programs are based on prior community needs assessments and resources. Service oriented programs are subdivided into health-intervention programs and community development programs. Health-intervention programs are focused on delivering health services in rural centers and preventative services such as health education at the community level [5]. Community development programs are engaged in community development and organized at-least at the university level to develop students with active involvement in the community [5].

Research oriented programs aim to make informed decisions and addressing problems in delivery of healthcare to the community [5]. Research oriented programs are subdivided into community-based and health-facility-based programs with the only difference being the research site [5]. These programs are offered late in a CBE curriculum and collect data to locate and describe major health problems within a community [5].

Training-focused programs are focused on student training at the primary care level within a defined community or working environment [5]. Training-focused programs are subdivided into primary-care-oriented and community-exposure programs [5].

Primary-care-oriented programs focus on providing clinical training in primary healthcare facilities to students [5]. Community-exposure programs are mostly observers or might be involved in data collection or other limited tasks [5].

These taxonomies provided a more systematic approach to CBE programs. CBE programs may start with one taxonomy and finish with another [5]. The design of a CBE curriculum, provider competencies and validation tools would be accelerated by forming partnerships with community partnerships, local higher educational institutes and national standards groups [4].

CBE Undergraduate Program Objectives

A survey conducted to validate general CBE objectives in undergraduate medical training was sent to 72 medical schools in various nations, 43 medical schools, or 60%, responded and the researchers reported 17 of the 21 objectives scored greater than 75% relevancy, which was the summation of relevant (4) and highly relevant (5) [8]. CBE objectives were edited and expanded with respect to literature and collected qualitative data. This yielded 20 validated general CBE program objectives [6]. The validated objectives were as follows: In co-operation with the community, graduates are able to: (1) Identify health problems related to the given circumstances; (2) determine incidence and prevalence of disease in the community and to appreciate the complex interplay between psychological, socio-cultural, and environment factors that impact on health and illness; (3) develop realistic solutions to community-identified health problems and to solicit community's participation in that process; (4) collaborate with professionals from other disciplines and other related sectors to solve identified health problems with consideration of government health policy; (5) mobilize the community for health interventions; (6) design and implement a health intervention, and analyze results [8].

To provide health education to the community, graduates must have knowledge of: (7) Adequate nutrition; (8) life style-related health risks in the community (e.g. smoking, alcohol and drug abuse, promiscuity, lack of physical activities); (9) environment-related health risks (e.g. contagious diseases, water and vector borne diseases, pollution); (10) occupational health and able to: (11) Design and transmit health education sessions; (12) train community health workers in health education; (13) evaluate the effectiveness of health education [8].

To reduce inequity in access to health services, graduates are able to: (14) Assess availability of health services to the community; (15) determine health care utilization by the community and community attitude to available health services; (16) observe and workable solutions to the effectiveness and efficiency of community health services; (17) design realistic strategies to improve community access to health services; (18) work in a variety of community health care settings (e.g. primary health care centers, district hospitals, maternal and child care units) and to provide preventive, primary curative, and emergency care; (19) judge which patients need to be referred; (20) participate in health teams (e.g. with nurses, midwives, community health workers) [8].

Emphasis on Interprofessional Practice and Collaboration

The validated CBE objectives described interprofessional practice and collaboration in community health [8]. Health care workers believe they are practicing collaboratively simply because they work together with other health care workers when in reality each have agreed to use their skills to achieve a common goal [9]. Learning about healthcare as a whole rather than as a collection of discrete but disjointed actions has been suggested to further the understanding of the care process and better prepares professionals to contribute to the improvement of health care teams and systems [10]. Graduates of CBE programs are expected to be able to work within interprofessional health teams to provide care and understand health structures including system limitations [10].

Interprofessional education and collaborative practice could contribute to solving urgent health challenges [9]. Collaborative practice could improve access and appropriate use of health services along with patient care and safety including decreased lengths of hospital stay, conflict among health teams, clinical error and mortality rates [5]. Research indicated interprofessional education is most effective when principles of adult learning are applied, learning methods reflect the real world practice and interaction occurs between students [9].

Outcomes seen under interprofessional learning domains of knowledge, skills and attitudes and behavior are: (1) Teamwork, being able to be both a team leader and member; (2) roles and responsibilities, understanding one's own roles, responsibilities, expertise and those of other types of health workers; (3) communication, expressing opinions competently to colleagues and listening to team members; (4) learning and critical reflection, reflecting critically on one's own relationship within a team and transferring interprofessional learning to the work setting; (5) relationship with, and recognizing the needs of, the patient, working collaboratively in the best interests of the patient and engaging with patients, families, care givers and communities as partners in care management; (6) ethical practice, understanding the stereotypical views of other health workers held by self and others and acknowledging that each health workers views are equally valid and important [9].

Competency Based Medical Evaluation and Problem-based Learning

How to best achieve competency in interprofessional collaboration and teamwork remained unclear [10]. Competencies are considered as abilities or capabilities and parts of competence [11]. CBME curriculums begin with outcomes in mind and the basis of which define graduate abilities and then develops milestones, instructional methods and assessment tools to evaluate gains in student learning [11]. A variety of education settings in CBE programs would help the student develop an acceptable level of competence [6]. Rationale that favors CBME includes: (1) Focus on outcomes, described as an approach of evaluating each curricular element on the basis of contributing to learner outcomes. If an element did not contribute to learner

outcome it would be cut from the curriculum; (2) emphasis on abilities, described as a shift from an objectives-based approach to curricular elements building on one another in a constructive manner. It was argued an objectives-based approach led to an over-emphasis on knowledge at the expense of skills, attitudes and higher order aspects of practice. An emphasis on abilities allowed the educator to design learning experiences that incorporate prior learning and emphasized observable abilities; (3) de-emphasis on time-based learning, described as a shift from contemporary medical education that is strictly oriented toward time spent in training rather than acquired abilities. It was argued that since some learners progress faster than others that an accommodating and flexible curriculum would be more efficient and engaging; (4) promotion of learner-centeredness, which encouraged students to take responsibility for their own learning, progress and development by creating a pathway from program milestone to milestone [11].

CBEME programs organize around abilities that are needed from graduates [11]. Graduates of programs designed on the basis of healthcare functions should be able to: (1) Respond to the health needs and expressed demands of the community by working with the community, in order to stimulate self-care and a healthy life-style; (2) educate both the community and their co-workers; (3) solve, or stimulate action for the solution of, both individual and community health problems; (4) direct their own and community efforts towards the promotion of health and the prevention of disease, unnecessary suffering, disability and avoidable death; (5) work as members of health teams and with other health teams; (6) act as the leaders of such teams when necessary; (7) continue to learn throughout their working experience, in order to maintain and improve personal competence [6].

Professional functions were summarized to include: (1) Provision of preventive care; (2) provision of curative care; (3) health education of the population; (4) management of services; (5) participation in health team work; (6) training other members of the health team; (7) participation in research activities; (8) collaboration with other sectors involved in community development; (9) finding solutions to unfamiliar problems; (10) self-assessment and the continuous development of personal professional skills [6].

The abilities and functions required of community health providers have developed a need for CBE programs to include problem-based learning in the curriculum. Problem-based learning is the competence of both skills and scientific knowledge to solve a problem, and in this context a community health problem. Problem-based learning must be based on problems that affect majority of the community and have priority. CBE education would be able to enrich problem-based learning since it provides learning materials that stimulate active learning, or learning activities, with relevance [6].

Triangulation

The minimum level of education required to practice as a paramedic is completing a few hundred hours of

Emergency Medical Technician training and then completing a postsecondary non-degree paramedic program [12]. National documents from the US that guided paramedic education were triangulated for commonalities between the taxonomies, principles and objectives of CBE with paramedic instructional guidelines. In addition, two paramedic textbooks were triangulated for commonalities of COE and CBE. The results yielded a description of a paramedic, which was described as an allied health professional that served as the link from the scene into the health care system. With the primary focus to provide advance emergency medical care for critical and emergent patients who access EMS. Paramedics have complex knowledge and skills necessary to provide care and transportation. Paramedics performed interventions with basic and advance equipment typically found on an ambulance [13]. Triangulation yielded limited results on the taxonomies of CBE programs. Within EMS education guidelines community involvement and public education is listed, but not in terms of developing or conducting needs assessments [13,14]. The standards listed research principles to interpret literature and advocate evidence-based practice [14].

Triangulation did not yield results focused on student training in primary care or a community environment. The 20 general CBE program objectives validated [8] were triangulated and few similarities were discovered. Paramedic instructional guidelines were focused on identifying life threats or abnormal symptoms with some consideration to developing cultural competence [14]. Paramedic instructional guidelines described a need to educate on the basic principles of public health and understand how EMS interfaced with public health including providing prevention, promotion and surveillance to health problems, but not to develop realistic solutions [14]. Nutrition was described as part of preventing work related injuries and not to the extent of providing education to others. The same was found in regards of life style related health risks. Paramedic instructional guidelines limited occupational health to personal exposures, safety and protection. Being able to provide pre- and post incident patient education is listed in the standards but not being able to specifically design and transmit education sessions [14].

Paramedic instructional guidelines clearly indicated a focus on paramedic graduates being able to provide emergency care, primary and secondary assessments [14]. Paramedic instructional guidelines described a role for paramedics in emergency health teams, but did not specify being part of other non-emergency health teams [14]. Graduates of paramedic programs should understand teamwork and be able to be both a leader and member. However, the amount of emphasis on leadership training in EMS education has been scrutinized as being only one-half page focused on leadership out of nearly four hundred pages [15]. Paramedic instructional guidelines outlined the ability of paramedics being able to communicate with other team members [14]. Results of triangulation did not yield standards focused on interprofessional, collaboration or multi-disciplinary teamwork.

Triangulation discovered objectives and chapters within paramedic textbooks that went beyond the requirements of the

educational standards. Sander's Paramedic Textbook: Fourth Edition had chapter objectives on the role of a paramedic in promoting wellness and benefits of specific lifestyle choices that promote wellness, included proper nutrition, weight control, exercise, sleep and smoking cessation [15]. Included was a chapter titled injury prevention and public health with applicable objectives of describing participation in essential community wellness activities, evaluate a situation for potential opportunities for injury prevention and to differentiate among primary, secondary, and tertiary health prevention activities [16]. A chapter on clinical decision-making was discovered with applicable objectives focused on critical thinking and six elements required for effective clinical decision making in the prehospital setting [16]. A chapter titled Acute Interventions for Home Care provided objectives focused on general issues related to home health care and provided general assessment and management principles of the home health care patient [16].

A second textbook, Pollak Nancy Caroline's Emergency Care in the Streets: 7th Edition was triangulated and discovered chapter objectives on issues related to methods of transport, including non-transport situations, EMS and paramedics unique role in prevention and public education within a community and the importance of evidence based medical research including peer-reviewed literature in EMS and paramedic practice [17]. Chapter 3 Public Health provided objectives of explaining the paramedic's role in promoting illness and injury prevention in public health, discussing the principles of injury prevention including education, enforcement, engineering/environment, and economic incentives, and describing the steps involved in organizing a community prevention program [17]. Chapter 45 patients with special challenges listed homelessness, poverty and home care as examples of patients with special challenges [17]. Objectives for this chapter discuss how patients with special challenges impact EMS system performance, ways to advocate for rights to health care services for these patients and includes topics such as abuse, specific concerns related with terminal illness and to identify strategies for providing patient care to patients with special needs [17].

DISCUSSION

The primary focus of paramedic education is largely on emergency assessment and intervention. Though paramedic education may briefly introduce community oriented objectives there remained a significant difference between the standards of paramedic education to CBE. Previous research yielded data on the potential danger to patients if diagnostic and treatment decisions were moved into the prehospital environment without significant safeguards since paramedics are not taught to diagnose, laboratory and diagnostic tools are not feasible in the prehospital arena and the need for trained practitioners able to deal with great complexity and to distinguish between numerous etiologies [2]. CBE is focused on both providing clinical services in the community and high levels of identification, analysis, interpretation and development of interventions. CBE taxonomies and community health provider objectives such as developing and conducting research, conducting community

needs assessment and developing, conducting and evaluating community health interventions are simply not found in the rigor of paramedic education standards. Additionally, communication, reasoning and leadership skills required in a collaborative environment, primary health care setting and training in interdisciplinary health teams or environments are not prevalent in paramedic education standards.

Triangulation of this critical analysis yielded minimal similarities between paramedic education standards and the taxonomies, principals and objectives of COE and CBE. Triangulation of two paramedic textbooks discovered limited additional objectives similar CBE objectives that went beyond the standards of paramedic education. It is important to note the two textbooks triangulated did not provide the same additional objectives. The conclusion that paramedic education introduced some CBE concepts but does not fully delve into CBE was made. In addition, it remained unclear when these CBE concepts found within standards of paramedic education are introduced and how much time is actually required or spent on these CBE related objectives.

The EMS profession needs to evaluate if it is ready to develop an actual community provider. It must recognize that developing a community paramedic cannot be done alone as the nature of a community provider is collaborative and interdisciplinary. Likewise, education programs need to evaluate if they are community oriented and have the collaborative support from other health profession training programs. CBE programs are dependent upon active training in healthcare systems and public health services within a community. Therefore, an assessment of the local community, healthcare system and resources would be required to ensure opportunity for active training within a community. This would include conversations within with various health professions, civic and community representatives in an effort to develop a range of support for a community paramedic program.

There appeared to be an opportunity to develop a paramedic into a community paramedic. However, the EMS profession needs to fully understand the already established expectations of community health providers. It is imperative to remember that it is possible for a high school graduate to become a paramedic after only a few hundred hours of EMT training and completing a non-degree paramedic program. This level of education does not begin to provide the depth of understanding, ability and skill required to serve as a community-based provider. The EMS profession must recognize and adopt the foundations of COE and CBE by advocating for the required education, multi-disciplinary training and expected outcomes before supporting community paramedics.

There already are concerns that many interventions added over the years to EMS may not be supported by evidence-based medicine and may actually be harmful or ineffective [18]. In a time of evidence-based medicine and interprofessional research, any policies and decisions regarding community paramedics need to be crafted on solid research findings. Therefore, further discussions and support of research on the

topic of community paramedics, competencies and scope of practice need to continue in an interprofessional, academic and evidence-based fashion. Simply, any added interventions to a scope of practice need to first demonstrate benefit in the EMS setting, and address patient risks including if the intervention is appropriate for use in the field and by what level of provider education and licensure [18].

Research to identify the actual education and training time spent within EMS education on the overlapping objectives of CBE and paramedic education needs to occur to assist in determining the minimum additional educational requirements of paramedics applying to become a community health paramedics. Discussion on scope of practice, competencies and expanded capabilities needs to continue to establish educational and training standards for a community paramedic program and result in a consensus on whether community paramedic training is best served by just another EMS certificate, or if it is time to support a more longer-term approach to EMS education by requiring a recognizable healthcare degree comparable to other health professions [3].

CONCLUSION

The EMS profession must recognize the focus and limitations within the standards of paramedic education and the limited number of shared objectives with CBE. Developing a community paramedic will without doubt require additional education, training and development on several learning domains and taxonomies. The question left unanswered is to what extend additional education is required and how to best achieve the intended competencies. It must also be questioned and considered how the reasons for developing a community paramedic may represent the pinnacle of current EMS and signals the time to and need for vast organizational, educational and professional evolution based on evidence-based medicine to better meet the needs of the communities in which we serve.

Glossary of Terms

Collaboration occurs when two or more different individuals from different backgrounds with complementary skills interact to create a shared understanding that none had previously possessed or could have come to on their own; is not only about agreement and communication but about creation and synergy [9].

Community could refer to persons or families living in a geographical region, which could range from a nation to smaller forms of social organization. Community could also refer to class or other lines of people based on race, religion and or social class. Community is not a cohesive association of people, instead a competitive arrangement of groups, interests, resources and spaces that have dynamic structures or internal hierarchies [6].

Competence is an array of abilities across multiple domains or aspects of performance in a certain context. Statements about competence require descriptive qualities to define the relevant

abilities, context, and stage of training. Competence is multi-dimensional and dynamic [11].

Competency is the observable ability of a health professional, integrating multiple components such as knowledge, skills, values and attitudes that can be measured and assessed to ensure acquisition. Competencies can be assembled like building blocks to facilitate progressive development [11].

Competency-based Medical Education is an outcomes-based approach using an organized framework of competencies to the design, implementation, assessment and evaluation of medical education programs [11].

Competent is having the required abilities in all learning domains in a certain context at a defined stage of medical education or practice [11].

Health Team is a group of persons who share a common health goal and common objectives, determined by community needs and towards the achievement of which each member of the team contributes in accordance with his/her competence and skills, and respecting the functions of others [6].

Primary Care refers to the first level of healthcare system access [6].

Secondary Care refers the second level of the healthcare systems accessed by patients referred to by the level of primary care [6].

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Source of Support: Nil, Conflict of Interest: None declared.