Paramedic involvement in health education within metropolitan, rural and remote Australia: a narrative review of the literature

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Abstract

Objective. A growing body of research indicates that paramedics may have a greater role to play in health care service provision, beyond the traditional models of emergency health care. The aim of this study was to identify and synthesise the literature pertaining to the role of paramedic-initiated health education within Australia, with specific consideration of metropolitan, rural and remote contexts.

Methods. A literature review was undertaken using the Ovid Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), EMBASE and Scopus databases. The search time frame was limited from January 2007 to November 2017. The search was performed using key paramedic search terms in combination with keywords such as health education, rural, metropolitan, remote and Australia. Reference lists from relevant papers were also reviewed.

Results. Fourteen articles met the inclusion criteria for synthesis. Health education in the Australian paramedic context relates largely to expanded-scope paramedics, health promotion and the role of paramedics as key members of local communities. There were no studies specifically related to the paramedic role in health education, although many papers referred to health education as one of many roles paramedics engage in today.

Conclusion. This review highlights a broadening of paramedicine’s traditional scope of practice, and an indication of how vital paramedics could be to local communities, particularly in rural and remote areas. An expanded role may help address health workforce sustainability problems in areas where health care provision is challenged by geographical constraints and low workforce numbers.

What is known about the topic? A broadening of paramedicine’s traditional scope of practice has been linked to improvements in health workforce sustainability problems in areas where health care provision is challenged by geographical constraints and low workforce numbers, such as rural and remote Australia. Health education, as well as health promotion, primary health care and chronic disease management, have been proposed as potential activities that paramedics could be well placed to participate in, contributing to the health and well-being of local communities.

What does this paper add? This paper identifies and synthesises literature focusing on paramedic-initiated health education in the Australian context, assessing the current health education role of paramedics in metropolitan, rural and remote areas. It provides an understanding of different geographical areas that may benefit from expanded-scope prehospital practice, indicating that the involvement of paramedics in health education in Australia is significantly determined by their geographical place of work, reflecting the influence of the availability of healthcare resources on individual communities.

What are the implications for practitioners? Today’s paramedics fill broader roles than those encompassed within traditional models of prehospital care. Rural and remote communities facing increasing difficulty in obtaining health service...
provision appear to benefit strongly from the presence of expanded-scope paramedics trained in health promotion, primary injury prevention, chronic disease management and health education: this should be a consideration for medical and allied health practitioners in these areas. Australian paramedics are uniquely placed to ‘fill the gaps’ left by shortages of healthcare professionals in rural and remote areas of the country.

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Introduction

Paramedics are health professionals who provide ‘rapid response, emergency medical assessment, treatment and care in the out of hospital environment’. The care provided by paramedics has a wide scope, with injuries and illnesses ranging from the very minor to the immediately life threatening being managed in a range of environments and conditions, usually with constraints on both resources and time. A growing body of research indicates that paramedics may have a greater role to play in the provision of health care, with a broadening of their traditional scope of practice linked to improvements in health workforce sustainability problems in areas where health care provision is challenged by geographical constraints and low workforce numbers, such as rural and remote Australia. Health education, as well as health promotion, primary health care and chronic disease management, have been proposed as potential activities that paramedics could be well placed to participate in, contributing to the health and well-being of local communities.

Extended paramedic roles have already been developed in some rural and remote communities both in Australia and internationally, where traditional models of service provision have proved problematic owing to challenges with health care resourcing, staffing and service provision. Extended roles have also been developed in metropolitan areas to provide non-emergency alternatives to ‘...low risk, low acuity patients’, lessening the emergency paramedic workload and strain on emergency departments. However, more information is needed to adequately identify the potential role of paramedics in relation to health education across Australia.

The aim of this review was to identify literature pertaining to the role of paramedic-initiated health education of individuals and communities within Australia, with specific consideration to the metropolitan, rural and remote contexts. If Australian paramedics are uniquely placed to ‘fill the gaps’ left by shortages of healthcare professionals in rural and remote areas of the country, the beneficial flow-on effects throughout the Australian healthcare system could be significant. This has noteworthy ramifications for the delivery of health care, as well as patient outcomes, and may be one method of addressing the healthcare challenges faced by rural and remote communities across Australia.

Metropolitan, rural and remote Australia

The framework for this review was heavily dependent on understanding the influence of geographic location on the workplaces of paramedics, as well as the population demographic, facilities and health services they interact with. Table 1 provides a brief summary of the Australian Institute of Health and Welfare’s (AIHW) Rural, Remote and Metropolitan Areas (RRMA) classification index, providing context for the differences in health education roles of paramedics within Australia. The Accessibility/Remoteness Index of Australia (ARIA) classification is included to indicate how accessible goods and services and opportunities for social interaction are within each specific area.

Due to the wide variety of classification terms commonly used in the literature, and for the purposes of this review, ‘rural and remote’ are regarded in terms of being removed from facilities and services available within metropolitan and urban areas.

Methods

This review sought to identify all studies involving the current or potential education role of paramedics within metropolitan, rural and remote Australia. The paramedic role in health education as part of an expanded scope of practice or within community paramedicine is a topic of international research; thus the present review was limited to the Australian context to enable the identification of potential gaps and opportunities.

Inclusion criteria

Studies were included if they focused on health education strategies or programs delivered in the prehospital setting by paramedic staff, with a keyword of ‘health education’, published in the English language and a focus on Australia.

Table 1. Summary of the Australian Institute of Health and Welfare’s (AIHW) Rural, Remote and Metropolitan Areas classification index

<table>
<thead>
<tr>
<th>AIHW index</th>
<th>Population</th>
<th>ARIA classification</th>
<th>Accessibility to goods/services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>&gt;100,000 (capital cities and urban areas)</td>
<td>Highly accessible</td>
<td>Excellent access to goods, services and opportunities for social interaction</td>
</tr>
<tr>
<td>Rural</td>
<td>25,000–99,000 (large rural centre), 10,000–24,999 (small rural centre), &lt;10,000 (other rural area)</td>
<td>Accessible or ‘moderately’ accessible</td>
<td>These areas have ‘some’ or ‘significant’ restrictions to accessibility of some goods and services and opportunities for social interaction</td>
</tr>
<tr>
<td>Remote</td>
<td>&gt;5,000 (remote centre), &lt;5,000 (other remote area)</td>
<td>Very restricted, very little accessibility</td>
<td>The most remote from goods and services and opportunities for social interaction</td>
</tr>
</tbody>
</table>
Exclusion criteria

Studies were excluded if they focused on emergency care in all other settings, or discussed emergency care without an educational focus. Studies from outside the Australian context were also excluded.

Data sources and search strategy

The search of the Ovid Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), EMBASE and Scopus databases used a search time frame from January 2007 to November 2017. The search was performed using one-term analysis keywords from a recently published paramedic literature search filter that has a focus on sensitivity, designed to meet the needs of paramedic researchers.20

After running the search for paramedic keywords, a search for the other key foci was undertaken: health education, rural, metropolitan, remote and Australia. The paramedic-themed results were then combined with the keywords, initially identifying 156 articles of potential relevance. Duplicates were removed. The results from each database were then reviewed through a title and abstract search. This resulted in a large number of studies being removed due to not meeting the inclusion criteria. Potentially relevant abstracts were reviewed in full text to determine eligibility for inclusion in the review. The reference lists from these articles were then reviewed to identify additional literature not located through the database search strategy, with an author search further helping to locate relevant documents.

Results and discussion

Fourteen relevant articles met the inclusion criteria for synthesis. Studies were predominantly observational, including four descriptive studies,2,5,21,22 two comparative case studies,23,24 one conceptual study,25 one Quasi-experimental post-test-only design,26 five literature reviews2,27,29,30 and an open-ended survey instrument.31

Key themes arising in the literature included the geographically dependent nature of the needs of rural and remote communities, particularly those related to health workforce sustainability problems, specific community needs, a multidisciplinary response to emergency care and the paramedic scope of practice.

Table 2 outlines key characteristics and outcome measures.

Findings

The involvement of paramedics in health education in Australia is significantly determined by their geographical place of work, and reflects the influence of the availability of healthcare resources to individual communities. The existence of expanded roles of paramedics in rural and remote areas of Australia is driven by community need, in the face of reduced access to healthcare resources, including a shortage of healthcare workers and a maldistribution of health resources. Notably, in 2007 the Council of Ambulance Authorities (CAA) made a submission regarding the current state of emergency service provision in rural and remote areas and the need for changes to resourcing and workforce planning to ensure the needs of local communities are met.32 Several authors point to a range of drivers for change, including difficulties with health service provision in rural Australia,28 as well as demographic factors, such as an aging population and an increase in chronic disease,33,34 placing increased demand on ambulance services. Studies retrieved for the present review reflect current discussion around extending the scope of paramedic practice from the traditional respond–treat–transport models to models of care that are tailored to meet rural and remote community needs. Authors, including O’Meara et al.25 Blacker et al.31 and Stirling et al.,2 point out that this extension of practice is possible due to the amount of downtime in rural and remote areas,2,21 likely through a reduced high-acuity emergency workload. Other factors include the growing recognition of paramedicine as a profession and improved integration with local health systems.25 The introduction of primary health care, health promotion and population health training into university paramedic curricula is regarded as crucial to the development of expanded roles for paramedics.35 Focused education programs in these areas would allow paramedics to develop the skills and knowledge required to undertake enhanced roles within rural and remote communities.26

Health education

Studies with the keyword ‘health education’ largely focused on the complex issue of community need with regard to healthcare resource provision and availability, and indicated strong links between an expanded scope of practice for rural and remote paramedics and their roles in health promotion, community education, primary injury prevention and multidisciplinary practice.

Mulholland et al.22 detailed how rural paramedics from the east coast of Tasmania conducted regular education sessions open to a range of local health professionals. These sessions covered emergency skills, such as cardiopulmonary resuscitation and intubation, skills identified as those in which experience is infrequently gained among rural paramedics. Mulholland et al.23 indicated that these sessions not only allowed paramedics to assimilate their critical care knowledge, but also that their interaction with other health professionals had mutually beneficial outcomes. That study indicated the importance of the paramedic in interdisciplinary education in a rural area of Tasmania. It also mentioned that local paramedics offered health education sessions to local community groups, but did not elaborate on themes or structure.

Current education roles of paramedics in rural and remote Australia are markedly different to their metropolitan counterparts. Rural paramedics are increasingly becoming first line primary healthcare providers in small rural communities and developing additional responsibilities throughout the cycle of care.25 Health education in rural areas appears strongly linked to community involvement,5,7 support from other healthcare staff and good relationships between multidisciplinary teams.

Expanded scope of paramedic practice

An expanded scope of practice (ESP) role has emerged in several healthcare disciplines globally in response to health workforce sustainability problems, and is seen when practitioners apply ‘skills and protocols for which they were not
originally trained. For paramedics, this involves moving beyond emergency patient care and embracing new roles in primary health care, health promotion and prevention and community engagement. It is within the expanded scope role that health education is embedded in paramedic practice; paramedics undertake health promotion and prevention activities according to the specific needs of local communities, including road safety, alcohol-related harm prevention, cardiovascular disease awareness, disease management and public education programs. Although education and training in these areas varies widely between ambulance service providers, the aim is to develop the professional practise base of paramedics who will be engaging with communities in an expanded scope.

Several studies made reference to the importance of multidisciplinary and community-based response to patient care in rural areas, where residents face difficulty accessing health care and the availability of healthcare professionals is often low. The ESP paramedic is seen as one way of improving access to health resources in rural areas.

### Health promotion

Paramedics have been identified as being well placed to play a key role in improving health in the community through a range of health promotion activities, particularly in rural and remote areas of Australia where paramedics experience lower volumes of emergency callouts and are generally more engaged with local communities and key health care stakeholders.

Health promotion is mentioned by several authors as being well placed to play a key role in improving health in the community through a range of health promotion activities, particularly in rural and remote areas of Australia where paramedics experience lower volumes of emergency callouts and are generally more engaged with local communities and key health care stakeholders. A study discussed health promotion and illness prevention as an area engaged in by ESP paramedics in four rural locations. In that study, the authors found that paramedics participated in health promotion and illness prevention work targeted to community needs, and that paramedics were seen by community residents as valuable health information resources. The data suggested that paramedics were found to be accessible and were consulted by residents for general healthcare information, rather than used purely for emergency care. That study also...
found that health promotion work engaged in by paramedics occurred through involvement in local committees, with ESP paramedics noted to be active in a range of committees, including road safety taskforces and social and sporting groups.5

Another study used on-site medics (working on offshore oil rigs, exploration camps and mining sites) to promote specific interventions aimed at physical and psychological health, including smoking awareness, healthy weight management and sexually transmitted diseases.26 The employees of remote sites are often underserved by healthcare services, due to isolation, limited resources and distance. Paramedics were found to have the time and motivation required to deliver health promotion activities, but were underequipped with skills and materials.26 That study found that medics in remote worksites may be well served to conduct health promotion when provided with appropriate tools.

The concept of paramedic involvement in health promotion being improved through the provision of appropriate training and tools is echoed by Lynagh et al.,21 who noted that a lack of training was likely to be a barrier to paramedic-initiated health promotion activities related to alcohol harm reduction and that although paramedics were largely very willing to engage in health promotion activities, they were not generally supported by adequate opportunities and processes for education and referral. That study found that paramedics were ready to undertake a range of actions as part of alcohol education and referral. That study found that paramedics were ready to undertake a range of actions as part of alcohol education and referral. That study found that paramedics were ready to undertake a range of actions as part of alcohol education and referral. That study found that paramedics were ready to undertake a range of actions as part of alcohol education and referral. That study found that paramedics were ready to undertake a range of actions as part of alcohol education and referral. That study found that paramedics were ready to undertake a range of actions as part of alcohol education and referral.

This finding is mirrored by a literature review and document analysis that identified interprofessional education as a curriculum requirement to ensure the production of health practitioners who were effective across both the emergency health and health promotion disciplines.27

Addressing community need

Needs assessments are vital when attempting to identify what local communities most require in terms of healthcare providers, facilities and resources. A Queensland report found that a comprehensive review should be undertaken as part of understanding whether an ESP for paramedics would help address community needs.3 One example of meeting the needs of a specific rural and remote community involved the introduction of basic healthcare monitoring and injury and illness prevention schemes into remote Indigenous communities in Queensland.7 The comparatively poor health status of this group and significant difficulties with regard to comprehensive and accessible healthcare resources were identified as drivers for change, with several specific interventions for remote Indigenous communities introduced at a paramedic level.3 Identifying community needs and tailoring prehospital response appropriately is vital to ensuring that needs are met and that community engagement is maintained.

Several studies indicated the links between paramedics who were well engaged with local communities and their involvement in community education, with regard to both community members and healthcare professionals.24,25 Community-based education, including impromptu or opportunistic public education by paramedics, was noted to be a key facet of community engagement in rural areas.25

Primary injury prevention

Stirling et al. found that ESP paramedics from four rural locations address injury prevention by ‘...providing information and education programs’2 and that paramedics were seen to have strong credibility within the community with regard to injury prevention. Like others in this area, that study made reference to the unique position paramedics have with regard to observing the frequency of incidents within local areas and delivering specific primary injury prevention programs to meet local needs.2 Paramedics on industrial worksites undertake injury prevention work as part of the ESP that is required in the remote or offshore environments they work in,30 but no data were available regarding the specific programs paramedics were involved in and the resulting outcomes.

Education and training

Several studies suggest that if paramedics are to exercise an expanded role within fields such as health education, public health and primary care outreach, focused education is vital to ensure they are equipped with the specialist knowledge and skills required.3,5,24,27 In particular, differences between the rural and metropolitan prehospital environments indicate a need for paramedic education and training with specific rural components25 to fulfil the needs of rural communities. In response to drivers for change, including health resource accessibility, rural healthcare professional shortages and increased demand for health care,26 some educational providers have already developed specialist curricula designed to support extended paramedic roles, particularly in rural and remote Australia. These courses include James Cook University’s Graduate Certificate in Rural and Remote Paramedic Practice,5 which trained paramedics in chronic disease management, health promotion and primary health care, equipping rural paramedics with the skills required to work within a multidisciplinary health team in areas of workforce shortage. In New South Wales, the state ambulance service offers a 9-week program to train paramedics to undertake extended roles in patient referral, clinical interventions, including wound care and suturing, and system assessments.31 One study found that paramedics are willing to undertake expanded roles in health promotion and harm reduction in the course of their usual duties, but that further training would increase their knowledge and skill base in these areas.21

Paramedic involvement in health education within rural and remote Australia appears to be tied closely with education and training in extended roles. Unfortunately, there is minimal published evaluation research on curricula or programs in this area, making it difficult to establish efficacy and effectiveness. One evaluation available, of Queensland’s Graduate Certificate in Rural and Remote Paramedic Practice, found that the course provided paramedics with the skills and knowledge required to incorporate health promotion and prevention activities in rural and remote areas.3 Other authors discuss the importance of ongoing evaluation strategies,3,21,28 which would provide
evidence on the safety, economic outcomes and clinical effectiveness of paramedic education and training.

Limitations
This review was limited by a lack of high-level evidence, in particular those evaluating interventions and models of care. Most studies included in this review were lower-level cross-sectional studies and comparative case studies. Several authors do point out gaps in prehospital literature, owing to the number of often-uncontrollable variables encountered in the prehospital setting, such as environmental conditions and the frequently time-pressed, stressful circumstances under which prehospital treatment is provided. As a result of such factors, prehospital research has traditionally failed to keep pace with other medical professions, and several authors discuss the need to raise both the profile and quantity of research related to paramedic practice.22–45 Finally, the search term ‘community paramedicine’ (CP), an expanded scope model of care that is rapidly emerging both in Australia and overseas, did not appear in the most recent paramedic literature search filter and thus was not used in our search strategy. Given that CP can involve paramedic participation in community health-related activities, this is a limitation of this review. Thus, future paramedic search strategies in this area should consider including CP as a filter.

Conclusion
Australian literature discussing health education in the prehospital context relates largely to ESP paramedics, health promotion and community engagement, including the place of community consultation with regard to needs assessments in order to tailor paramedic response to meet community requirements. These themes are driven in rural and remote areas by health workforce sustainability problems in areas where health care provision is challenged by geographical constraints and low workforce numbers.

Most of the literature indicated that today’s paramedics are vital members of local communities, with broader roles than those encompassed within traditional models of prehospital care. Rural and remote communities facing increasing difficulty in obtaining health service provision appear to benefit from the presence of ESP paramedics equipped with enhanced knowledge and skills. However, there are few published evaluations of existing programs and, given the limitations of the methodologies for reporting and evaluating paramedic-initiated health education programs, the importance of ongoing evaluation research cannot be understated.

Competing interests
The authors declare no competing interests.

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