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# Prehospital Care Professional Development: does education change practice in a developing country?

## **Keywords:**

Paramedic, Malaysia, focused ethnography, prehospital care.

## **Key Points:**

Education which contains knowledge specific to prehospital care can and does have an impact on professional development in a developing Emergency Medical System. The Intermediate Ambulance Care course (IAC) is an example of an education course that, as shown by this research, has assisted in developing specialist knowledge, bringing closer the emergence of a profession.

## **Abstract**

**Background:** This study considers the impact of the Intermediate Ambulance Care (IAC) Course on the development of prehospital care practice in Penang, Malaysia and considers how the course contributes to professional development. The research question asks what impact the education program has had in a rapidly changing emergency medical system (EMS) in Penang.

**Methods:** Using a qualitative methodology, focused ethnography, data were collected from interviews, participation and observation of pre-hospital emergency care providers and medical professionals in Penang, Malaysia.

**Results:** Four themes were identified. The themes describe how the participants' values and beliefs contribute to the increasing professionalization of their role in health care.

**Conclusion:** As well as increasing paramedic knowledge there was an observable change in participants' values and beliefs about prehospital care and health outcomes. This has contributed to the professional development currently being experienced in prehospital care in Penang, Malaysia.

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## Reflective Questions:

How can education impact professionalism?

How does establishing a unique body of knowledge promote professional development?

What is unique about prehospital care?

## **Introduction**

The Intermediate Ambulance Care (IAC) course is a thirty-week ambulance training program offered in Penang, Malaysia. It was designed to improve the clinical education of ambulance practitioners in Penang and forms a part of many different training opportunities of varying quality in the region.

The question that this research aims to address is: what is the impact of the IAC on the on the emerging professionalisation of prehospital care in Penang, Malaysia? Utilising a focused ethnographic approach, this research considered the program's contribution to professional development, enabling comment on how such programs could improve future service provision.

## **Background**

Prehospital care is an inter-professional and inter-sectorial service that transects many aspects of health care. Emergency health care has not been well regarded nor considered a distinct specialty in its own right in many countries and yet, in some systems, it is an integral part of primary, secondary and in some cases tertiary health care models (Tippett et al. 2008). While this may be the case in some health care systems considered developed by the World Health Organisation (WHO) (WHO 2018), the same cannot be said for others, let alone those that are considered still to be developing.

In developed health care systems, for example, Australia, New Zealand (NZ) or the United Kingdom (UK), paramedics act in the role of prehospital care providers as autonomous health care practitioners. They often treat people in their own homes without the need to transport them to hospital (Raven et al. 2006). Evidence based independent practice means that prehospital care practitioners can develop their own scope of practice in order to deliver unique solutions to public health issues and health needs of society. These activities have the support and recognition of peak professional bodies in Australia and New Zealand, among other areas, as advancing the professional status of paramedics (Paramedics Australasia 2015).

This is contrasted in Malaysia, where a number of different occupations contribute to the provision of prehospital care practice (Hisamuddin et al. 2007). Those practitioners are referred to by a number of different titles, such as paramedic or medic. Some belong to other professional groups, such as Nurses, Medical Assistants or even Medical Practitioners. Literature describing the international comparison of prehospital care roles, titles and occupation or professional grouping is largely absent. This study has taken the pragmatic view and referred to those who undertake prehospital care in Penang as prehospital care providers. Furthermore, the term paramedic is used to refer to those who practice this role in a more clearly defined manner, such as those in the United Kingdom or Australia.

Paramedic professional development in the UK, Australia and other countries has, by and large, occurred when education shifted from a vocation model to pre-employment tertiary education. Education, and associated research activities, can assist in creating a distinct body

of knowledge and the ability to critically reflect on current practices and norms in prehospital care (Greenwood 1984) This change of practice benefits the community by improving the standard of service delivery for both urgent care and public health.

Evolving and expanding scope of care beyond traditional service delivery models means that those current unmet needs or major incidents can be addressed. Raven et al.(2006) discuss the nontraditional roles for paramedics throughout the U.K. and Australia whereby Community Paramedic and Extended Care Paramedic roles have transformed the profession into one that delivers wider public health outcomes (Mason et al. 2007; Mason et al. 2003; O'Meara 2003; O'Meara and Grbich 2009). As a measure of system responsiveness and development, the ability to respond to major incidents such as pandemics is now seen as a key feature of a developed prehospital care system (Tippett et al. 2008).

Since the 1990s, paramedic education has shifted its delivery from vocationally based to the higher education sector in many countries in the developed world, such as the United Kingdom or Australia (Brooks et al. 2016; Hou et al. 2013; Paramedics Australasia 2015; Townsend and Eburn 2014). However, there remains little information on how it is that education informs or assists with professionalisation. There is even less known when the setting of the prehospital care education is in a developing country.

A systematic search of the literature, started in September 2014 and continued until September 2015 revealed 33 related articles focused on answering the research question

above. The search terms of ['Ambulance' or pre\*hospital care or paramedic or EMT or technician or ambulance officer] AND ['Malaysia' or 'developing country'] were used to search PubMed, Ovid, Academic Search Complete, Embase and Eric databases, with the process supported by a subject Librarian from the University of Adelaide.

None of the 33 articles identified directly related to the research question and all focused on emergency medical system design, rather than providing a theoretical basis for practice or education. Due to the paucity of the literature the researchers were therefore unable to conduct a traditional literature review. Indeed, the absence of high quality research in this area highlights the need for this study.

### **Establishing the Context of the Study**

While fully integrated prehospital care systems may be taken for granted in many developed countries, those in the focus of this study, Penang, Malaysia, have only recently emerged. The Malaysian Ministry of Health in response to the developing needs of primary care, recognised the field of emergency medicine in 2009 (Fadhli et al. 2010). What has evolved since this time is a systematic up skilling of Malaysian medical skills via education and sponsorship links with the United Kingdom and other countries, such as Australia, throughout the 1990's (Jaafar et al. 2013).

This up skilling does not, however, appear to have been extended to prehospital care in the same way. Currently, Malaysian prehospital care systems are made up of complex mix of

Government, quasi-government and non-government agencies with individual training and competency standards and are best described as developing (Hisamuddin et al. 2007). Government Hospitals (such as the local Penang one, Hospital Pulau Pinang (HPP)) and Clinics are the main ambulance service providers. Red Crescent (RC), St John Ambulance of Malaysia (SJAM) and the quazi-Government Malaysian services such as the Civil Defense Department (MCCD) providing an ever-increasing share of emergency medical services.

The education and training of prehospital care providers in Malaysia has been ad hoc. Like the prehospital care systems, there is a blend of roles and associated education provided for both ambulance prehospital care providers and hospital based Assistant Medical Officers (AMOs) who work as prehospital care providers when required (Hisamuddin et al. 2007). The AMOs are tertiary trained, while other prehospital care providers receive often no more than extended basic or advanced first aid training. This results in a workforce, which is comprised of varying competencies, professions and perspectives. Those differing perspectives have potential to result in competing interests and therefore impede development of prehospital care.

In 2011 the IAC was offered by SJAM to ambulance practitioners based in Penang in order to address the need to provide an improved education base for prehospital responders. The course was offered to all government and non-government organizations (NGO) such as Red Crescent, Bomba (Fire Services), MCCD and hospital emergency department staff. The majority of students have come from SJAM, however all of the other providers have been



represented at times and the course aims, in part, to bring together the varying perspectives to aid development.

There remains tension in the literature as to how prehospital care education leads to improvements in patient care (Giddens et al. 2012; Spaite et al. 2000). This increasingly divergent debate centers on which model of service provision is advantageous for developing ambulance services. Furthermore, few, if any, studies have considered the impact of non-tertiary training courses in terms of professional development in a developing system. In addressing the paucity of literature, this study explores the perceptions of those involved in the IAC with regard to the impact of a professional learning and development on clinical service delivery.

## Methods

### *Study design*

This study used a qualitative method, focused ethnography, to describe the impact and subsequent professional development of those prehospital care providers and associated medical personnel with the IAC. To ensure trustworthiness, authenticity and transferability, important concepts to ensure rigour in qualitative research (Guba and Lincoln 2005; Lincoln et al. 2011), verification criteria as described by Morse et al. (2008) were considered.

Methodological coherence (which is the coherence between the research question and method); appropriate sampling (as demonstrated by saturation and replication); collecting

and analysing data concurrently; theoretical thinking; and theory development all formed part of the consideration of the methodology and execution of the study.

Focussed ethnography was selected as the most methodologically coherent way of seeking an answer to the research question. It has previously been described as a context specific, time-limited study focused on situations within groups (Knoblauch 2005). Under this methodology, the researcher is able to obtain a sharper focus on a particular aspect of the lived experience of participants. As professional development is a concept that exists in the minds of participants and interested parties (it is a 'constructed reality', rather than something that can be quantified and measured), focussed ethnography was considered as appropriate to 'observe' this reality by way of interviews.

Ethics approval was sought and obtained through the University of Adelaide Human Research Ethics Committee (H-2014-276), where the lead researcher was based. This was accepted as evidence of adherence to appropriate ethical standards by the Penang based authorities. Rigor, as discussed above, was ensured through methodological triangulation (utilizing participant observation and thematic analysis of interviews). The thematic analysis was externally validated with external researchers who oversaw the de-identified data and review process.

### *Sample*

A purposive sample was used to enroll participants who were able to comment directly on the impact of the IAC on professional development. Ambulance practitioners (either

employed or volunteer), emergency physicians, IAC graduates and AMOs were targeted for recruitment into the study. Of the 11 participants in the study, some held dual or multiple roles within the study (n=9). For example, as can be seen in Table 1, a participant may have been employed as a medical professional and volunteer in an ambulance role via an NGO and attend the IAC. Participants were employed either by an NGO or the local Government Hospital, Hospital Pulau Pinang (HPP).

#### *Data collection*

Data were collected through interviews, observation and participation of ambulance and medical staff who were involved directly or indirectly with the IAC. Eleven semi-structured interviews (five females and six males, aged 21-43), were undertaken. They were audio recorded and transcribed verbatim before being offered back to the participant for verification. Table 1 below describes the participants' role in EMS service provision.

Table 1: Participants Roles' in the EMS System in Penang

Participant (pseudonym from study data)	Age Range	Role				
		HPP	NGO	Medical Prof.	Ambulance Role	IAC Trained
Leigh	30-39		√		√	√
Nicky	30-39		√		√	√
Reilley	20-29		√		√	√
Joyce	30-39	√		√	√	
Greer	20-29	√		√		
Dell	20-29	√		√		
Reegan	40-49	√	√	√	√	√

<b>Shannon</b>	40-49	√		√		√
<b>Kelsey</b>	30-39	√		√		
<b>Devin</b>	20-29		√			
<b>Val</b>	30-39		√			√

Observations were based in the main public hospital and at various NGOs (SJAM, Red Crescent and MCCD) with paid staff and volunteer staff. Observations focused on the process of handovers between ambulance crews and emergency department staff, those IAC trained and non-IAC. During these observations the researcher participated in ambulance activities, such as patient care and general administrative duties.

## Results

Data analysis drew on the six-stage process as described by Braun and Clarke (2006) with four themes extracted from the data: quality of training and quality of care go hand in hand; Focusing how NGOs lead change; prehospital care in Penang is at a crossroads; and the IAC is one course that has assisted in the development of prehospital care. Table 2 shows the development of those themes.

Table 2: Development of Themes Derived from Interviews.

<b>Theme (Phase 3)</b>	<b>Sub-Theme from data (Phase 2)</b>	<b>Concepts from data (Phase 1)</b>
<b>Quality of Training and Quality of Care Go Hand in Hand</b>	When higher quality of care is seen, it is perceived to relate to higher quality of training	Training standards vary and are set by each provider. There is no central control of training content or standards. Those organizations that are perceived as providing a comparatively higher level of care are also those with a comparatively higher standard of training.

	Quality of training varies depending on the service provider.	Quality of care is not necessarily associated with resources, however those with mainly volunteer resources may have lower training available. Some of the NGO's that have greater financial resources are regarded as having lower standards of care. Having Government funding does not always result in higher perceived practice standards.  A rank order may exist in terms of quality of training.
<b>Prehospital care in Penang is at a crossroads</b>	Penang lacks standardisation in both service delivery and training. This is seen as a key way to improve patient care.	The IAC is seen as one way of achieving standard training, however it would need the co-operation of the NGO's.  Similar to how change might be managed, the NGO's need to display leadership in this area.  Prehospital care in Penang is under developed. The current system is outdated and not as effective as it could be. Even given the limitations of a developing nation, Penang can and should do better. Change can occur from the top (government) down or from the practitioners up. In both instances there needs to be specific people with both the authority and the knowledge to effect change.
	Training is one of the keys ways that standardisation may be achieved.	The IAC is seen as one way of achieving standard training, however it would need the co-operation of the NGO's.
<b>The IAC is one course that has assisted in the development of prehospital care</b>	The course assists in improving practice through education	Education standards are variable amongst the NGO's and there is no specific prehospital care program for AMO's. The IAC provided a course that fills a gap in the education market. It is not the only course, but is accessible.
	Perception of quality of care and professional development have been improved as a result of the course.	Those who have completed the course are now perceived as being more professional in their approach to prehospital care.
<b>Focusing how NGOs lead change</b>	Change is required for the system to improve. Change can happen if people are willing	The NGO's and the practitioners within them are well placed to achieve change. If practitioners wait for 'top down' change, they may be waiting a long time.
	NGO's are able to set their own agenda.	NGO's are seen as not being as restricted by Government policy and bureaucracy. In the absence of regulatory bodies (authorities), NGOs are able

		to set their training agenda as individuals or in collaboration
	The prehospital care system currently relies on NGO's and now cannot exist without them.	A move to a single Government run system would be unlikely due to the system that currently exists being an integral part of the prehospital care response. The Government Service does not have the funding to change practice.

*Quality of Training and Quality of Care Go Hand in Hand*

There is a distinct difference between each of the ambulance services providers in the quality of training and care that is delivered. This was attributed to each service having different operating systems and training methods, with attempts to standardise some aspects of the patient experience and practice largely depending on each individual agency. Clinical care and education were seen as linked. One participant, a Doctor, summed up the current state of clinical care within Penang's EMS system by saying:

*"I don't think it's very [well] organized yet ... most [ambulance practitioners] are Medical Assistants [AMOs] and the other main NGO will be St John. The rest of the NGO's are not very well trained. So in terms of attending the patient, how they are going to manage the patient, it's very much primitive still. I don't think care is very well managed here"*

The quality of patient care was viewed as often equating to the quality of the training provided. While quality of care is difficult to empirically assess in prehospital care, and in the absence of local guidelines, there is nothing to compare service providers against. Where

there are standards, they relate only to availability and response times, not clinical outcomes. It is unclear the exact standard that participants individually chose to use as a guide to their ranking of service providers.

In the absence of any standards or measurement guidelines, the opinions of the medical professionals who received patients, along with other practitioners working within the industry were seen as a valuable source of data. Those opinions consistently ranked the AMO's and SJAM Penang staff as the top two, followed by Red Crescent and MCCD. While some participants were eager to point out that there are factors at play, such as the volunteer nature of people in the poorer performing organizations, they agree that most of the difference lies in education and training standards.

It was observed that medical staff were able to make informed opinions and form professional opinions on presentation of patients. One such participant, stated that the AMO's and SJAM are adequately trained and "the rest of the NGO's are not very well trained" Another commented that the training given to the AMO's and SJAM enabled them to distinguish between a critically ill patient and one who was not. When asked about the other organizations (namely MCCD and RC), they commented that the training was insufficient to allow members of those organizations to perform at this level. The improved level of training was reflective of the way in which patients were treated and handed over to the emergency department staff at HPP.

### *Focusing how NGOs lead change*

Having introduced the IAC, improving patient care was viewed as a reasonable and attainable goal. However, the delivery of this care is dependent on its organization. According to participants, the current standards within all EMS services should be at least Basic Ambulance Care (BAC) level (a six-day course internally run by SJAM Penang). While this was viewed as minimum, one participant commented that it is not well enforced with some crews only able to deliver “basic first aid”:

*“It depends on your luck where you have your medical emergency at... so, if you happen to be in a central part in Penang, if you call 999, 999 would have dispatch nearest ambulance which is Penang General Hospital. Let’s say if you are in the southern part of Penang, if you are unlucky, you might get not so well trained ambulance to respond to you ... Pre-hospital care in Penang is not standardised. It varies from organisation to organisation , from person to person”.*

When asked about their ‘ideal’ system of prehospital care, each participant stated that there was a need to standardise training and service provision. In contrast, hospital employee participants all commented that a single ambulance service based at the hospital was their preferred ‘best practice’ model. Participants who have roles within NGO’s were split on this issue, some preferring standardized education across existing services and preferring one service. Interestingly, one participant with multiple roles commented that:



*“If funding is not a problem I would think definitely a single emergency [system] would be better in controlling their management and all that. But the model we are using now in Penang with multiple agencies working together seems to be working as well”.*

### *Prehospital Care in Penang is at a Crossroads*

Pre-hospital care in Penang is at a crossroads, due in part to the availability of staff to attend to ambulance calls as well as increasing demand. This situation seems to have driven the increased reliance on NGO's to provide additional services within Penang. A participant commented on the ability of the Government systems to cope and the place of NGO's within the prehospital care system.

*“In Penang, as in the rest of Malaysia, actually we are very scarce on the number of ambulances that we have, which are belonging to what we call the Ministry of Health. So, we have tried to expand the number of ambulance we have by actually incorporating them into multiple non-governmental agencies into this prehospital care system”*

One participant supported the idea that NGO's are not only integral to the prehospital care system in Penang, but the system would likely fail without them:

*“If we were to do it all on our own, we wouldn’t have the resources. It still needs to have the community ... to be able to cover the numbers of cases that we see. For example, ... I think we see about 14,000 Ambulance calls a year, so compared to maybe 6 years ago, it was probably 6000 calls. So the number of calls have been increasing, so the demand is also increasing. So although [HPP] still manage the majority of all the ambulance calls, if we do not have extra help from the other organizations, we are also not going to be able to cope”.*

Similarly, some viewed the involvement of NGO’s in prehospital care as an inevitable consequence of a lack of resources. However, participants made the additional comment that resourcing is linked with the values of the community:

*“In this part of the world people don’t see health as something that they need to actually invest a lot. For example, someone can go to a barber shop have their hair cut for RM50, wait there for two or three hours and they are very happy with the hair do. But if people go to a private GP practice, they pay the RM20 consultation fees, Doctor say ‘Oh ok, you don’t need any medications, consultation fee is RM20’ they will be screaming. That’s how it is, so money probably is there, but it’s not channeled to the needs. But basically the majority of them are still think ambulance is a form of emergency taxi, just come and pick up the patient and go”.*

In this way economic affordability is linked with community acceptance of what is an essential service. The perceived lack of value placed on health care (and by association prehospital care) can be translated into a lack of recognition of those who provide that care as professionals.

*The IAC is One Course That is assisting the Development of Prehospital Care*

The IAC was perceived by all participants with knowledge of the course, as being a positive driving factor in their own and service professional development. For those without direct knowledge of the IAC, the idea of having a course with specific prehospital care knowledge is seen as essential to improved ambulance practice.

Participants reported that ambulance practice requires knowledge that cannot be found in other disciplines and simply being medically trained is not sufficient. In particular, one participant, a Doctor, found that being involved in an ambulance response without any specific training is a harrowing experience as on one ambulance run she was treating an elderly lady for a gastrointestinal bleed outside of the hospital:

*“She was like bleeding frank blood on my shoes, I was like, ‘Aunty please survive’ and I couldn’t get a line in ... So it’s tough for me. I would say because I’m not fully trained to go out on calls. I mean if it’s in the Hospital, it’s easier for me because there’s help around”*

This typifies the views of the Doctors involved in this study. Whilst medical knowledge is important, prehospital care knowledge is perceived as broader than just medical knowledge.

Observations within the NGO's by the author support the description of the wider impact of the IAC above. Participants of the IAC were viewed by colleagues as clinical leaders within their organizations. Whilst some were in leadership positions prior to the course others have taken on roles with new staff and were observed providing guidance during Ambulance responses. The description given of the IAC by participants familiar with it describe it as "more advanced knowledge set to shape [the] ambulance crew to be more professional".

## **Discussion**

The IAC has enabled the emergence of practitioners who are able to demonstrate a systematic application of their new knowledge, skills and attitudes in how they delivered their perception of quality, and more professional patient care. In this way a body of knowledge specific to prehospital care appears to be emerging from the IAC.

Evident also is the increased respect of IAC participants by emergency medical hospital staff enabling improved authority to practice. This was evident when they more readily accepted the handover when it was given and received. This means that the IAC graduates were perceived to have the authority to practice as a prehospital care provider, and their clinical knowledge and skills were deemed to be appropriate for their practice.

The developing culture and individual professional identity of ambulance workers as a cohesive group was strengthened by the IAC. The course gave a focal point for the development of the role and therefore a sense of identity. As prehospital care services in Penang are delivered by various organisations, there is no systematic way to gain common understanding of role definition and identity formation. This study has identified that the development of a common identity is somewhat limited by the slow uptake of the course by providers other than SJAM and to develop further, a common training program should be sought.

Given that Penang lies within a country that had been described as struggling with economic development (Hauswald and Yeoh 1997; Jaafar et al. 2013; United Nations 2014), the affordability of a single state-run service is therefore questionable. Ambulance services based on the current models in developed countries tend to be unaffordable within developing healthcare systems (Altintas et al. 1999; Hauswald and Yeoh 1997).

### **Limitations**

There two key issues that need to be addressed when considering the limitations of this study. These arise from the nature of the research question (and therefore the methodology), researcher influence and the transferability of the outcomes.

Guba and Lincoln (2005) comment that values cannot be extracted from any research process and the researcher being part of the system within which they are researching is not uncommon within ethnographic and indeed qualitative enquiry (Knoblauch 2005; Liamputtong 2013; Minichiello 2004). While it would not be accurate to describe the researcher as independent, it was not the intention of this research to seek such independence. The researcher simply remained critically aware of his possible influences as the research developed.

This research set out to describe the ways in which the IAC, being a specific educational program, may have influenced the development of professional ambulance practice in Penang, Malaysia. Whilst there may well be wider implications for other, similar settings, it is important to note that in much the same way as the impact of the course cannot be completely described within these pages, the same is true to the variations in practice and policy in settings outside of that described in this study.

The prehospital care system within Penang is developing and constantly changing, just as any system will constantly change. The views gathered over the course of this investigation relate to a specific time within the lived experiences of the participants.

## **Conclusion**

The community can be perceived as both the medical community and wider public, and there are various sanctions in place which have embraced the IAC graduates. Sanctions are in place

to control admission and regulation of community members. This can be seen by the medical community accepting the newly qualified IAC graduates as part of their community. While wider community views were not canvassed as part of this study, it is an area for future research.

The findings of this study show how an educational program can manifest in a change in the values and beliefs that are guiding one particular occupation, prehospital care providers, towards professionalism, rather than the clinical base of the education packages themselves. This may have implications in the way in which future training is developed to concentrate more on professionally specific knowledge. Whilst this may be a significant distance from the professionalisation of paramedics in developed systems it is, none-the-less a significant step in that direction.

This paper contributes to the growing body of evidence relating to the impact of education on the professionalisation of prehospital care providers. It contributes further to an emerging body of knowledge on the role of prehospital care in developing health care settings. Professional development is a process that may well take considerable time and cannot be achieved by a single educational program, however it is important to consider the contribution the IAC has made to that journey.

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