

ORIGINAL ARTICLE

Development of an essential medicine supply competency framework for primary healthcare personnel: Participatory Action Research

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ABSTRACT

Background: Many maternal and child health related deaths in Pacific Island Countries (PICs) may be prevented with readily available medicines provided by suitably trained health personnel. A systematic approach to improving essential medicines supply management competency has begun in the region with the need to develop a competency framework for primary healthcare personnel in the Pacific Islands identified as a priority. The aim of this research is to determine the competencies required by primary healthcare personnel involved in essential medicine supply at the primary healthcare level within PICs.

Methods: Through a process of participatory action research, academics, Ministry of Health officials and health personnel, worked together to develop and validate a competency framework suitable for the region. Three cycles of participatory action research were conducted: cycle one - a draft competency framework was developed using existing frameworks, validated by workplace observation and survey; cycle two - the draft framework was presented and discussed at nine workshops to validate and finalise the framework; cycle three - the final competency framework was validated using an online survey tool.

Results: A suggested competency framework with a high degree of relevance was generated for primary healthcare personnel at the facility level. The framework contains 70 competencies, organised into four clusters, addressing supply, professional practice, public health and patient related competencies specific for the primary healthcare environments of Pacific Island Countries. This four dimensional focus reflects the importance of addressing medication selection, procurement, distribution, use, and management for an effective medicines supply system.

Conclusion: Primary healthcare personnel including nurses and nurse aids responsible for essential medicine supply and its supervision are encouraged to use this tool when considering appropriate training and when monitoring staff effectiveness in their local environments. This framework could be used as a basis to develop similar frameworks in other international environments.

Keywords: *Competencies; competency; competency framework; essential medicines; Pacific; Pacific Island countries; pharmacy; primary healthcare; supply management*

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Introduction:

Background to the Pacific

The Pacific Islands are made up of 22 independent island countries, comprising more than 7500 islands, scattered over 30 million square kilometres of the Pacific Ocean (UNFPA 2012). The Pacific Islands encompass a wide variety of ethnic, cultural and linguistic groupings that can be broadly divided into Melanesia, Micronesia and Polynesia. The region has a population of approximately 9.6 million people distributed among a number of small island states with more than 80% residing in rural areas (UNFPA 2012). Figure 1.

Limited human resources are a major impediment to achieving the health-related Millennium Development Goals (MDGs) in this region. There is a recognition that many maternal and child health related deaths in Pacific Island Countries (PICs) may be prevented with readily available medicines provided by suitably trained health personnel (WHO-WPRO 2005). This World Health Organisation (WHO) observation is supported by the Australian Agency for International Development (AusAID) and the United Nations Population Fund (UNFPA), who report continued problems in maintaining the supply of essential medicines through to the clinics and aid posts of PICs (AusAID 2004; AusAID 2008; UNFPA 2008; UNFPA 2010; WHO-WPRO 2005; WHO 2011).

The role of primary healthcare personnel in medicines supply

The workforce responsible for maintaining the medicines supply system in PICs is made up of nurses, midwives, health extension officers, nurse aids and other health personnel at the primary healthcare level (Level 1), pharmacy supply health personnel at the provincial level (Level 2) and pharmacists and stores managers at the national level (Level 3) (Brown 2009b). The role and presence of these three distinct levels of Essential Medicine Supply Management (EMSM) is consistent across PICs, but their presence is dependent on country size. The personnel who fill these roles may vary between PICs depending on country requirements, except for the personnel at Level 1, which appear to be consistent. With 80% of healthcare delivered at the primary healthcare level, primary healthcare personnel including nursing staff, play a crucial role in essential medicine supply management (EMSM) within PICs (Brown 2009b).



Figure 1. Map of Pacific Island Countries (<http://mappery.com/maps/South-Pacific-Countries-Map.mediumthumb.jpg>)

Primary healthcare personnel need to be competent in relevant aspects of EMSM in order to use their country supply systems effectively. This material is often missing from their pre-service curriculum, while skills in appropriate EMSM are often assumed (Brown 2009b). As a result, many primary healthcare personnel working at the facility level lack the skills they require for this essential part of their day to day work.

Generalised EMSM training has been used in the past and assumes that all target audiences are the same. Within PICs there are different expected competencies for various health personnel, depending on their level of activity within the medicines supply system (Brown 2009a; Brown 2009b). Any new training strategy should acknowledge this variation, and ensure that the core competencies of medication selection, procurement, distribution, use and management are addressed, as required by the health personnel present within the levels of the supply chain.

Brief project overview

An innovative capacity building approach has been developed involving a partnership between the United Nations Population Fund (UNFPA) Suva sub regional office, the University of Canberra, Ministry of Health officials and the health personnel within identified PICs (Federated States of Micronesia, Republic of Kiribati, PNG, Solomon Islands, Kingdom of Tonga, Tuvalu and Republic of Vanuatu). The International Pharmacy Federation – Pharmacy Education Taskforce (FIP-PET) ‘needs-based approach’ to pharmacy education and a participatory action research methodology, are used to form the framework for this project (Figure 2) (Anderson, Bates, Futter, Gal, and Rouse 2010).



Figure 2. International Pharmacy Federation Pharmacy Education Taskforce, Needs-Services-Competencies- Education Cycle (Anderson et al. 2010) (Republished with permission from FIP)

This new approach has as its starting point the need to understand local culture and its impact on learning and teaching; the mapping of competency requirements and an understanding of currently available information and materials. Subsequently this information will be applied to develop and trial new pedagogical approaches to the training of health personnel involved in EMSM. This strategy seeks to support the existing systems of the country.

Six sequential research questions outline the new knowledge to be identified by this project (Table 1). Results pertaining to question one and two are currently being considered for separate publication. A service based pharmacy competency framework for PICs is being considered for publication to answer aspects of question three, while this paper focuses on the specific requirements of primary healthcare personnel working at the facility level (The data used in this paper is a subset of the data collected for the pharmacy competency framework for PICs that was analysed specifically for primary healthcare personnel for this paper).

The research aim

The aim of this research is to determine the competencies required by primary healthcare personnel involved in EMSM at the primary healthcare level within PICs.

Competence, competencies and competency frameworks

The concept of professional competence has evolved over the last 30 years, from a model representing knowledge to one which includes expertise and the application of knowledge and skills to the workplace (Bruno 2011).

Table 1: Sequential research questions

Sequential research questions defining the broader UC projects	
1.	What information currently exists, addressing competencies and training requirements for health personnel in Pacific Island Countries involved in pharmaceutical services, with a specific emphasis on EMSM?
2.	What culturally sensitive principles need to be considered when assessing the learning needs of South Pacific pharmaceutical health personnel?
3.	What are the competencies required by the various cadres of health personnel involved in pharmaceutical services in PICs?
4.	What is the assessment of training materials currently used for health personnel in Pacific Island Countries involved in EMSM?
5.	What effective pedagogical approaches can be developed that contribute to EMSM competency development for primary healthcare personnel in PICs?
6.	Can these new pedagogical approaches be applied to a variety of PICs?

Competence is about the overarching capacity of a person to perform. People are more than the sum of their competencies, being competent is definitely moving towards effective performance (Armitage and Raza 2008). Competence includes knowledge, skills, behavioural attributes and professional values. Competency is 'a single item of knowledge, skill or professional value' and relates to specific capabilities; competence is the full repertoire of competencies.

Competencies are expressed as performance in what the individual does, rather than what he or she can potentially do. This definition leads to the concept of behavioural competencies; a typical behaviour that is observed when effective performers apply motives, traits and skills to a relevant task (Whiddett and Hollyforde 2003). Competencies are not simply a list of characteristics such as motives, traits or skills, they provide examples of what we would see when people use these characteristics effectively. Competencies help to assess how people combine and use knowledge, abilities and motives, when tackling job tasks. Rather than simply measuring them in isolation (Whiddett and Hollyforde 2003).

The competencies expected to ensure skilful performance in a certain work environment need to be clearly identified in order to ensure a proper assessment of competence. Healthcare professionals, patients and society regularly redefine the expected quality of care that should be delivered over time, making increased demands on 'competencies' (McRobbie, Webb, Bates, Wright, and Davies 200;

Wass, Shatzer, and Jones 2001). Healthcare providers should be able to adapt to these changes by taking on new roles within their field of speciality as lifelong learners (Gordon, Christensen, Dayrit, Dela, Karle, and Mercer 2008; Govaerts 2008; McRobbie et al. 2001; Newton, Boyle, and Catizone 2008).

The advancement of medical knowledge in recent years has pushed education towards a competency-based approach. Documents and training modules in current medical education frequently refer to concepts of competency. There is a growing suggestion that a competency-based approach is sensible and sustainable for workforce development. In the case of the pharmacy workforce, the International Pharmacy Federation (FIP) is co-ordinating a global initiative that seeks to develop a competency framework for pharmacy that is adaptable to local needs and cultural contexts (Bruno, Bates, Brock, and Anderson 2010).

Competency frameworks are a collection of competencies which provides the structure needed to allow the application of competencies to training, professional development and assessment of competence (Whiddett and Hollyforde 2003). Behavioural indicators are the basis of the framework, with closely related behaviours organised into competencies, and related competencies grouped into clusters. There have been various approaches to constructing competency frameworks, but they have the same basic elements and are organised in a similar way (Whitcomb 2002).

For a competency framework to be effective it must be usable and fit for its intended purpose. A competency framework should enable interaction by the personnel governed by it. It should be clear and easy to understand; be relevant; take into account expected future changes; contain behavioural indicators that do not overlap; contain behaviours that are necessary and appropriate; and fair (Bruno 2011). These criteria provide a good base for evaluating and testing a framework.

Methods

A participatory action research (PAR) methodology, approved by the UC human ethics committee (project number 10-2 and 10-85) was used to develop a suggested EMSM competency framework suitable for primary healthcare personnel in PICs. Any participation was voluntary, with explicit written permission obtained for participation in interviews, focus groups and workshops. Three PAR cycles were undertaken.

PAR is collective, self reflective inquiry that researchers and participants undertake so they can understand and improve upon the practices in which they participate. The reflective process is directly linked to action, influenced by an understanding of history, culture, and local context, and embedded in social relationships (Baum, MacDougall, and Smith 2006). PAR includes systematic enquiry, professional practice intervention, and participation in decision making by key stakeholders. Any resultant action is further researched with a continuing interactive reflective cycle of planning, action and reflection (figure 3) (Reason and Bradbury 2008).

Participatory Action Research - Cycle one

The methodology used in this cycle is the same methodology used by the authors to develop the 'draft pharmacy competency framework for PICs' (Currently being considered for publication). The data used in this paper is a subset that was analysed specifically for primary healthcare personnel for this paper, compared with the total data set which covers all cadres involved in EMSM provision in PICs.

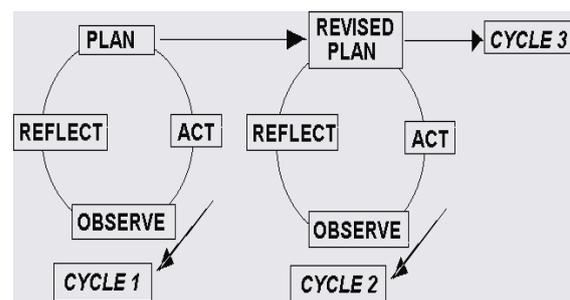


Figure 3. Participatory action research cycles (Riding, Fowell, and Levy 1995)

In order to develop a draft EMSM competency framework for primary healthcare personnel in PICs a Fiji pharmacy competency framework and Papua New Guinea (PNG) pharmacist competency framework were used (previously revealed by a review conducted in the region) (Brown 2009b; Guinea 2005; Smith 2006). The structure of the new framework was informed by the draft professional development framework for pharmacy technicians developed in the United Kingdom, judged to be relevant by pharmacists experienced in the region (CoDEG 2010). These existing frameworks were synthesised into a draft framework through a process of direct alignment by one researcher (AB). In drafting the framework consideration was given to the current practice of EMSM by health personnel at the primary health level in PICs (Level 1), as identified by previous studies completed in the region (Brown 2009a; Brown 2009b). Behavioural statements were written in plain English, consistent with local use and

the draft framework was then embedded in a PAR validation framework.

The draft framework was validated through a qualitative approach using work based, face to face interviews and focus groups, from a cross section of cadres (doctors, pharmacists, pharmacy assistants/technicians, nurses and midwives) within Vanuatu and PNG. Participants were asked a series of questions covering their day to day work based activities involving medications. The questions covered the broad competency areas of the draft framework, with the aim of comparing current work based practice of primary healthcare personnel with the draft EMSM competency framework.

Cluster sampling was used to select three distinct regions of each country, thereby ensuring that a range of health personnel from each of the three levels of the medicines supply chain was represented. A metropolitan, provincial and remote region was chosen in each country. Time to travel and cost, were considered in determining the final sample regions. Feedback obtained from this validation process was used to modify the draft framework as preparation for more feedback from PAR cycle two.

Participatory Action Research - Cycle two

The draft EMSM competency framework for primary healthcare personnel in PICs was presented as part of a series of workshops relating to EMSM improvement across the Pacific region. During the workshop specific small group interactive sessions discussed the following competency sub groups: national systems, ordering, records, storage, dispensing, monitoring and supervision, donations, disposal, medicines use, money and communication. The presented results were reviewed using a manual, broad thematic approach, and the draft EMSM competency framework was updated to capture expected behaviours in EMSM not yet represented in the draft framework (All existing behaviours were considered relevant by the participants).

Participatory Action Research - Cycle three

The newly modified EMSM competency framework for primary healthcare personnel in PICs was uploaded to Survey Monkey in a format previously validated by FIP-PET (Bruno 2011). The survey asked respondents to declare the relevance of each competency based behaviour, using a four point scale. Survey Monkey is a commercially available online survey tool suitable for qualitative research (Survey 2011). The resulting survey tool was distributed electronically using the UNFPA PIC network, and electronically to previous participants of

the PAR cycle two workshops, where permission to follow-up respondents had been obtained. Two electronic reminders were provided at bi-monthly intervals and the survey link remained open for a total of nine months. Feedback obtained during this process from PIC health personnel was used to update the revised EMSM competency framework for primary healthcare personnel in PICs to a final version. This final version was reformatted using the draft FIP global pharmacy competency framework published in 2010 (FIP-PET 2010). The reformatting was considered important to allow future international comparison.

Results

Tables 3 to 6 present each of the four main competency clusters from the final EMSM competency framework for primary healthcare personnel in PICs. The tables include the stepped changes that occurred as a result of the first two PAR cycles, and the percentage relevance calculations for the third PAR cycle (Table 3-6 appear at the end due to size).

Participatory Action Research - Cycle one

An initial draft EMSM competency framework for primary healthcare personnel in PICs was developed from the source frameworks and work place validation surveys. The initial draft framework was presented as 41 behavioural competencies grouped in 11 competency sub groups, under the main competency clusters of medicines and equipment supply and, medicines and equipment use (In PAR cycle two the behavioural competencies from the draft framework were redistributed under the revised cluster headings of organisation and management, professional/personal, pharmaceutical public health and pharmaceutical care). The initial list of 41 consolidated behaviours derived after the first PAR cycle appears in column 2, titled 'added in PAR cycle 1', of Tables 3 to 6.

A total of 23 face to face interviews was conducted, in Vanuatu (n=18) and PNG (n=5). Five focus groups were also conducted. The surveys covered a range of health personnel involved in the pharmacy medicines supply chain and their supervisors, including: nurses (n=12), mid level pharmacy cadres (n=3), managers (n=1), midwife (n=2), pharmacist (n=2), village health worker (n=1), with an average of 8.6yrs (range 1-28yrs) experience at their current place of work. These healthcare personnel represented hospitals (n=4), clinics (n=10) and stores (n=3); from metropolitan (n=5), provincial (n=12) and remote (n=6) areas. The main themes of

the survey included stock ordering, stock control, stock delivery and stock dispensing. The survey was designed to elicit day to day practices of medicines supply management.

This initial draft framework was further modified by the second PAR cycle.

Participatory Action Research - Cycle two

A total of nine EMSM workshops with 224 participants were held in the countries of: Cook Islands, Chuuk State-Federated States of Micronesia (FSM), Kiribati, Pohnepi State-FSM, PNG, Yap State-FSM, Solomon Islands, Tonga, and Vanuatu. Participants included: nurses (n=111), healthcare workers (n=28), pharmacy assistants (n=17), medical assistants (n=18), pharmacists (n=7), nurse aids (n=4), and midwives (n=8).

PAR cycle. All existing behaviours from PAR cycle 1 were considered relevant by the participants.

The final suggested EMSM competency framework for primary healthcare personnel in PICs contains 70 competency based behaviours within 18 competency sub groups under four main clusters. Tables 3 to 6 outline the framework reformatted using the draft FIP global pharmacy competency framework published in 2010 (FIP-PET 2010).

Participatory Action Research - Cycle three

A total of 13 online validation surveys were collected using the Survey Monkey tool from six PICs. Ten surveys were fully completed. The surveys covered a range of health personnel involved in the medicines supply chain and their supervisors, including: pharmacist (n=2), nurse (n=6), mid level pharmacy cadres (n=2) and midwife (n=1) and other (n=2). 53% (n=7) of respondents had more than ten

Table 2: The four main competency clusters and the percentage relevance

Cluster Name	Focus of Cluster	Number of competency sub groups	Number of behavioural competencies	% Relevance
Organisation and Management Competencies	systems	8	24	95.7% (n=13)
Professional/Personal Competencies	practice	4	27	94.9% (n=11)
Pharmaceutical Public Health Competencies	population	2	6	93.9% (n=11)
Pharmaceutical Care Competencies	patient	4	13	96.2% (n=10)

Discussion groups were conducted as outlined in methodology, asking participants to consider the relevance of listed EMSM behaviours to their work, considering the need for additions and deletions where necessary. Manual thematic analysis of the discussion group presentations occurred after each workshop. The thematic data was then reviewed by a researcher (AB). 29 behaviours within 11 competency sub groups were further added to the draft framework as a result of this process. These changes are noted in Table 3 to 6 as the results of PAR cycle 2 modifications.

The competency sub groups of 1.2 donations, 1.6 budget and reimbursement, 1.10 improvement of service, 2.3 continuing professional development, 3.2 health promotion and 4.1 patient consultation and diagnosis were all added as a result of PAR cycle two. Significant additions to 2.4 legal and regulatory practices were also the result of this

years experience in their current role. Answers to each competency were pooled as relevant (highly relevant plus relevant), or not relevant (low relevance plus not relevant), and percentage measures calculated. Percentage relevance was calculated as relevant responses divided by total responses expressed as a percentage for each of the competencies. Results for all behaviours under competency sub groups were pooled to determine an average percentage.

A suggested competency framework with a high degree of relevance was generated for PICs containing 70 competencies, organised into four clusters. A summary of the relevancy percentages for the four clusters appears as Table 2, while Tables 3-6 detail each of the four competency clusters, relevant competency behaviours and relevancy percentages.

Forty two (60%) of the 70 behavioural competencies were rated as 100% relevant by respondents. The 'supply non-prescription medicines, therapies and diagnostic aids to meet the patient's needs' (72.7% relevance n= 11) and 'demonstrate the ability to say no to donations that are not consistent with the donations policy' (76.9% relevance n=13) behaviours, showed the least relevance and may reflect the absence of 'non-prescription' based treatments and an open attitude to medical donations by many primary health personnel, who often work in resource poor environments. The absence of national donation policies in some countries may also be a factor. The competency sub group '1.2 donations of medicines & equipment' (80.8% relevance n=13), and '1.6 budget & reimbursement' (88.5% relevance n=13) may reflect different attitudes to donations and the availability of free healthcare in many PICs, therefore these sub groups appear less relevant.

Discussion

A suggested competency framework for PICs

This is the first time that a suggested 'Essential Medicines Competency Framework for Primary Healthcare Personnel in PICs' has been published. The suggested framework represents a holistic approach to EMSM at the facility level with direct input from ten PICs (Cook Islands, Chuuk State-Federated States of Micronesia (FSM), Kiribati, Pohnpei State-FSM, PNG, Yap State-FSM, Samoa, Solomon Islands, Tonga, and Vanuatu). The four competency clusters represent a focus on the supply system, professional practice, public health and the patient. This four dimensional focus reflects the importance of addressing medication selection, procurement, distribution, use, and management for an effective medicines supply system.

The application of competency frameworks

A competency-based approach to workforce development has been adopted by a range of healthcare professions and encompasses the education spectrum from pre-service education to continuing professional development. The movement towards competency-based education or programmes began in the early 1970s in the United States of America (USA), and has been applied most broadly in teaching, law, medicine and nursing (Dozier 1998; Spielman, Fulmer, Eisenberg, and Alfano 2005). More recently there has been an increased interest in competency frameworks that could be used to aid staff development and improve medicine supply systems, with the People that Deliver initiative listing this as a desired activity (Deliver 2012).

Critical accounts have characterised competence-based approaches to education as being reductive, mere shopping lists or job specific task descriptions. Believing that competence restrains thought and action – by breaking down work roles into small discrete tasks the competency based approach was perceived to ignore the connections between individual tasks and the meaning underlying each task (Hughes 2004). On the opposite side of the debate, competency-based approaches are seen to put the professional practice at the core of education and practitioner/workforce development programmes (Albanese, Mejicano, Mullan, Kokotailo, and Gruppen 2007; Bates, McRobbie, Davies, and Webb 2004; Burden 2002; Geheb, Dickey, Gordon, Beemsterboer, and Flaherty-Robb 2004; Govaerts 2008; Hughes 2004; Laaksonen, Mills, Duggan, Davies, Bates, and Mackie 2007; McRobbie et al. 2001; Mills, Farmer, Bates, Davies, and Webb 2008; Mills, Farmer, Bates, Davies, Webb, and McRobbie 2005; Wass, Van der Vleuten, Shatzer, and Jones 2001).

Educational and training 'competency frameworks' need to develop effective performance of the individual, via competence, within a supportive framework that enables progression and development (Coombes, Avent, Cardiff, Bettenay, Coombes, Whitfield, Stokes, Davies, and Bates 2010; Meadows, Webb, McRobbie, Antoniou, Bates, and Graham 2004; Meštrović, Staničić, Hadžiabdić, Mucalo, Bates, Duggan, Carter, and Bruno 2011; Mills et al. 2008; Mills et al. 2005). The development of a suitable competency framework is just the beginning of this process. To be effective the framework must be applied.

The development of an 'EMSM competency framework for primary healthcare personnel in PICs' at the facility level provides a tool to enable individual PICs to better determine EMSM training requirements for health personnel and to monitor these personnel for practice improvement. The authors have begun using this framework to develop regional training approaches for primary healthcare personnel at the facility level (Level 1).

Education is only part of the solution

It is important to note that education is only part of sustainable approach to systems development with Potter and Brough suggesting a systematic approach to achieving sustainable health systems (including medicines supply), describing the interrelationship between tools, skills, health personnel and infrastructure, and structures, systems and roles in the wider health system (Potter and

Brough 2004). This model demonstrates that unless education is considered in the light of these elements it may not be relevant, and certainly will not be effective or sustainable.

Furthermore, there is an interrelationship between human resource for health (HRH) management systems, leadership, partnership, finance, education and policy as described by the 'HRH Action Framework' (Figure 4) (WHO-GHWA 2012).

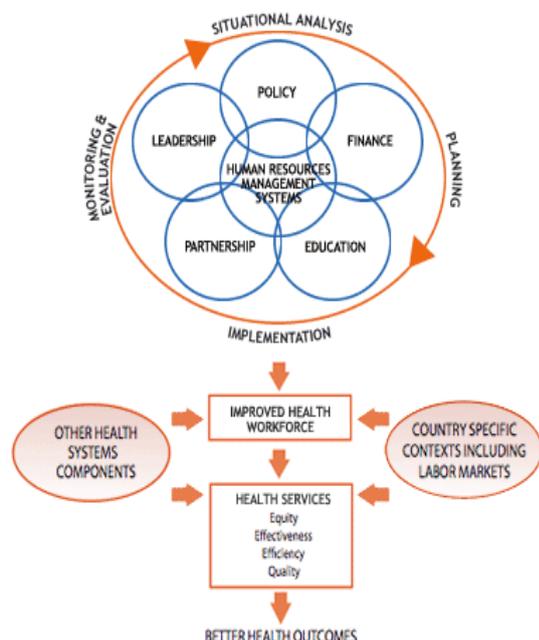


Figure 4. WHO GHWA Health Action Framework (HAF) (WHO-GHWA 2012)

The HRH Action Framework is an initiative of the GHWA and represents a collaborative effort between the U.S. Agency for International Development (USAID) and WHO. Republished with permission

The framework identifies that education should not be considered in isolation, but is one of six interrelated components that need to be addressed for sustained development in HRH to be achieved (WHO-GHWA 2012). Any new approach to EMSM education must integrate into the overarching HRH plan for individual PICs and be part of a wider process of health system strengthening.

Limitations

Although PAR cycle three showed a high relevance percentage for the majority of expected behaviours, further validation with a larger number of health personnel from a wider range of PICs is required. The limited availability of the internet in

many areas within PICs, and the costs associated with travel and face to face interviews will make further validation difficult. Consideration could be given to the use of phone interviews.

Conclusion

An 'EMSM Competency Framework for Primary Healthcare Personnel in PICs' has been developed through the use of an effective PAR methodology engaging academics, Ministry of Health officials and health personnel involved in the provision of pharmacy services. Primary healthcare personnel including nurses and nurse aids responsible for EMSM and its supervision at the facility level, are encouraged to use this tool when considering appropriate training and when monitoring staff effectiveness in their local environments. This framework could be used as a basis to develop similar frameworks in other international environments.

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Table 3. The development of the Organisation and Management competency cluster through three participatory action research cycles

Origination and management competency		Added in PAR cycle 1	Added in PAR cycle 2	PAR cycle 3 Relevance % (n=13)
1. Organisation and management competencies - a systems focus	Use the ordering system for obtaining medicines and/or medical sundries from the Central/National Medical Store	XXX		92.3
	Use patient and facility supply records to determine usage	XXX		100
	Identify the factors that affect usage patterns of medications and equipment and how this affects ordering (eg disease outbreaks), using national policies as a guide and to ensure consistent application	XXX		84.6
	Demonstrate the paperwork and calculations required to order medications	XXX		92.3
	Check off orders received	XXX		92.3
	Follow up orders not received	XXX		92.3
1.2 Donations of medicines & equipment	Follow the national donations policy referring to national pharmacists for advice		XXX	84.6
	Demonstrate the ability to say no to donations that are not consistent with this policy		XXX	76.9
1.3 Storage	Layout a medicines/pharmacy store including; the arrangement of medicines according to order form, labelling of medicines, use of stock cards/computerised system	XXX		100
	Secure the pharmacy store and limit access to appropriate staff	XXX		100
	Demonstrate appropriate use of, and ability to maintain the cold chain	XXX		100
	Apply methods of stock rotation (eg first in first out (FIFO), or first to expire first out (FEFO))	XXX		100
	Store medicines appropriately, including the considerations of temperature, access and cleanliness	XXX		100
1.4 Record Keeping	Use patient records as a tool to help look after patients	XXX		100
	Review records to provide information for government and non government organisations (NGOs) reporting	XXX		100
	Use appropriate recording systems (eg stock cards, order forms)	XXX		100
1.5 Disposal	Dispose of expired medications and/or medical equipment according to national policy	XXX		100
	Dispose of specific individual items of greatest risk with appropriate care (eg oncology medicine)	XXX		100
	Dispose of expired medicines and/or used medical sundries including syringes correctly	XXX		100
1.6 Budget & Reimbursement	Describe the general monetary value of medicines and equipment		XXX	84.6
	Manage all resources with care		XXX	92.3
1.7 Improvement of Service	Create and use check lists to regularly monitor the activities they are responsible for		XXX	100
1.8 Human Resources Management	Orientate new staff to the workplace explaining standard operating systems and procedures.		XXX	100
	Ensure members of staff have the necessary skills and understanding for safe practice in the event they need to fill a management role due to absence or illness	XXX		100

Table 4. The development of the Professional/Personal competency cluster through three participatory action research cycles.

Professional/Personal competency		Added in PAR cycle 1	Added in PAR cycle 2	PAR cycle 3 Relevance % (n=13)
2.1 Communication Skills	Be truthful and supply accurate information at all times		XXX	100
	Ensure patients are transferred from hospital to clinics with a continuing supply of medicine		XXX	100
	Communicate effectively with nurses and doctors	XXX		100
	Work as part of the pharmacy team	XXX		100
	Work as part of the wider healthcare team looking after the patient	XXX		100
	Communicate with patients ensuring confidentiality	XXX		100
2.2 Critical Thinking and Problem Solving	Prioritise tasks	XXX		100
	Work independently to get the necessary work done	XXX		90.9
	Use time well to get tasks done	XXX		100
	Understand the limit of one's own skills and abilities (when to try a task and when to refer)	XXX		100
	Gather information to solve problems	XXX		100
	Identify problems and consider how to deal with them	XXX		100
	Follow up problems to ensure they are fixed	XXX		100
	Ask other people to help with solving problems	XXX		100
2.3 Continuing Professional Development	Keep up to date in their place of work with input from supervisors		XXX	100
2.4 Legal and Regulatory Practice				
2.4.1 National Policy	Describe the broad concepts of National Medication Policy, Essential Medicines Lists, Essential Equipment lists, Standard Treatment Guides and dangerous drug (DDA) policy	XXX		90.9
	Keep up to date with changes in these documents as informed by managers at the national level		XXX	90.9
2.4.2 National Systems	List the legislation that covers professional practice including medicines, and describe its purpose		XXX	90.9
	Describe how vertical programs work within the health system		XXX	81.8
	Meet the reporting requirements of vertical programs		XXX	81.8
	Outline the structure of the health system at a national level and explain this to others		XXX	81.8
	Describe the structure of the health system at a provincial/regional level and explain this to others		XXX	81.8
2.4.3 Professional and Ethical practice	Follow all standard operating procedures	XXX		90.9
	Work in a safe and legal way		XXX	100
	Accept responsibility for their own work tasks and performance		XXX	90.9
	Contribute to the professional development of others		XXX	90.9
	Practise within the cultural framework of the country using both local and western principles		XXX	90.9

Table 5. The development of the Pharmaceutical public health competency cluster through three participatory action research cycles.

Pharmaceutical public health competency		Added in PAR cycle 1	Added in PAR cycle 2	PAR cycle 3 Relevance % (n=13)
3.1 Medicines Information and advice	Counsel patients when handing out medicines, including explaining the main adverse effects and special considerations for individual medications, including storage and food requirements	XXX		100
	Supply non-prescription medicines, therapies and diagnostic aids to meet the patient's needs		XXX	72.7
	Follow country based treatment guidelines to ensure the appropriate use of medicines	XXX		90.9
	Keep up to date with standard treatment guidelines		XXX	100
3.2 Health Promotion	Assess the primary healthcare needs of patients (taking into account the cultural and social setting of the patient)		XXX	100
	Communicate lifestyle changes to aid patients in managing various diseases		XXX	100

Table 6. The development of the Pharmaceutical care competency cluster through three participatory action research cycles.

Pharmaceutical care competency		Added in PAR cycle 1	Added in PAR cycle 2	PAR cycle 3 Relevance % (n=13)
4.1 Patient consultation and diagnosis	Identify issues with medicines, dose forms and methods of administration that need to be discussed or referred to a pharmacist		XXX	90
	Obtain sufficient information about a patient request to determine if the situation can be managed by the nursing staff member or referred to a doctor or other health professional		XXX	90
4.2 Dispensing	List which medicines are allowed to be prescribed by different prescribers	XXX		90
	Safely supply medication to patients considering packaging, storage and labelling	XXX		90
	Identify which medicines are especially dangerous and need more care when dispensing	XXX		90
4.3 Medicines	Identify medicines by their generic name		XXX	100
	Describe the way medicines work their use (how much, how often and for how long) and their main adverse effects and cautions		XXX	100
	Identify that some signs and symptoms shown by a patient may be the result of adverse effect of medication and these people need to be referred to the nurse or doctor	XXX		100
4.4 Medical Supplies, and Equipment	Describe how individual pieces of medical equipment are used, noting personal and patient safety	XXX		100
	Identify when to dispose of medical equipment or sundries	XXX		100
	Explain to patients how to use any equipment given to them for their care	XXX		100
	Maintain equipment and use any existing maintenance support network	XXX		100