



ORIGINAL ARTICLE

African emergency care providers' attitudes and practices towards research



Les attitudes et pratiques des fournisseurs de soins d'urgence en Afrique en matière de recherche

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ARTICLE INFO

Article history:

Received 5 August 2016

Revised 18 October 2016

Accepted 10 January 2017

Available online 28 January 2017

ABSTRACT

Introduction: Emergency care research in Africa is not on par with other world regions. The study aimed to assess the perceptions and practices towards research among current emergency care providers in Africa.

Methods: A survey was sent to all individual members of the African Federation of Emergency Medicine. The survey was available in English and French.

Results: One hundred and sixty-eight responses were analysed (invited $n = 540$, responded $n = 188$, 34.8%, excluded $n = 20$). Responders' mean age was 36.3 years ($SD = 9.1$); 122 (72.6%) were male, 104 (61.9%) were doctors, and 127 (75.6%) were African trained. Thirty-seven (22%) have never been involved in research; 33 (19.6%) have been involved in ≥ 5 research projects. African related projects were mostly relevant to African audiences ($n = 106$, 63.1%). Ninety-four (56%) participants have never published. Forty-one (24.4%) were not willing to publish in open access journals requesting a publication fee; 65 (38.7%) will consider open access journals if fees are sponsored. Eighty responders (47.6%) frequently experienced access block to original articles due to subscription charges. Lack of research funding ($n = 108$, 64.3%), lack of research training ($n = 86$, 51.2%), and lack of allocated research time ($n = 76$, 45.2%) were the main barriers to research involvement. Improvement of research skills ($n = 118$, 70.2%) and having research published ($n = 117$, 69.6%) were the top motivational factors selected. Responders agreed that research promotes critical thinking ($n = 137$, 81.5%) and serve as an important educational tool ($n = 134$, 80.4%). However, 134 (79.8%) feel that emergency care workers need to be shown how to use research to improve clinical practice. Most agreed that insufficient emergency care research is being conducted in Africa ($n = 113$, 67.3%).

Discussion: There is scope to increase research involvement in emergency care in Africa, but solutions need to be found to address lack of research-related funding, training and time.

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ABSTRACT

Introduction: La recherche sur les soins d'urgence en Afrique n'est pas au même niveau que dans d'autres régions du monde. L'étude visait à évaluer les perceptions et les pratiques à l'égard de la recherche au sein des fournisseurs de soins d'urgence en Afrique.

Méthode: Une enquête a été envoyée à tous les membres de la Fédération africaine de la médecine d'urgence. L'enquête était disponible en anglais et en français.

Résultats: Cent soixante-huit réponses ont été analysées (invitation $n = 540$, réponses $n = 188$, exclus $n = 20$). L'âge moyen des personnes interrogées était de 36,3 ans ($EC = 9,1$); 122 (72,6%) étaient des hommes, 104 (61,9%) étaient des médecins et 127 (75,6%) avaient été formés en Afrique. Trente-sept (22%)

Peer review under responsibility of African Federation for Emergency Medicine.

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n'avaient jamais participé à des projets de recherche; 33 (19,6%) avaient participé à ≥ 5 projets de recherche. Les projets relatifs à l'Afrique étaient surtout pertinents pour les publics africains ($n = 106$, 63,1%). Quarante-vingt-quatorze (56%) participants n'avaient jamais publié. Quarante-et-un (24,4%) ne souhaitaient pas publier dans des revues en accès libre demandant des droits de publication; 65 (38,7%) considéreraient les revues en accès libre sous réserve de financement des frais. Quarante-vingt (47,6%) ont fréquemment fait l'expérience du blocage de l'accès aux articles originaux pour des raisons de frais d'abonnement. L'absence de financement de la recherche ($n = 108$, 64,3%), l'absence de formation à la recherche ($n = 86$, 51,2%) et l'absence de temps de recherche alloué ($n = 76$, 45,2%) constituaient les principaux obstacles à la participation à la recherche. L'amélioration des compétences de recherche ($n = 118$, 70,2%) et la publication des travaux de recherche ($n = 117$, 69,6%) étaient les principaux facteurs de motivation sélectionnés. Les personnes interrogées convenaient que la recherche favorisait la réflexion critique ($n = 137$, 81,5%) et constituait un outil éducatif important ($n = 134$, 80,4%). Cependant, 134 (79,8%) avaient le sentiment que les spécialistes des soins d'urgence devaient recevoir une formation sur l'utilisation de la recherche en vue d'améliorer la pratique clinique. La plupart convenait que la recherche sur les soins d'urgence menée en Afrique était insuffisante ($n = 113$, 67,3%).

Discussion: Il existe une marge pour augmenter l'implication dans la recherche sur les soins d'urgence en Afrique, mais il convient de trouver des solutions pour répondre au manque de financement, de formation et de temps dédiés à la recherche.

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African relevance

- Research is essential to develop and sustain the emergency care knowledge economy in Africa.
- There is substantial scope to increase research involvement in emergency care in Africa.
- Perceived research barriers include lack of funding, time and training.

Introduction

The development of low- and middle-income countries (LMICs) is closely related to health research [1]. Research capacity differs extensively between LMICs, especially in African countries, and this inequality in health research contributes to inequalities in health [2]. Conditions for research in most African countries are known to be far from ideal and existing research capacity gaps include inadequate or lack of training in research skills, unreliable internet access, lack of knowledgeable and experienced local supervisors, and lack of research funds [3,4].

Research relating to emergency care in Africa is no different and less than 1% of the global emergency medicine literature addresses emergency care in Africa [5]. African countries with the most publications are South Africa, Morocco, Egypt, Nigeria and Tanzania [6,7]. Not only are African Emergency Medicine researchers lagging behind other world regions in terms of the volume of publications, but the quality of the research and the impact thereof also needs to be improved on [7]. This also applies to the broader emergency care community e.g. pre-hospital and nursing. For these reasons it is important to establish information regarding this situation in Africa and the current study aimed to assess the perceptions and practices towards research among current emergency care providers in Africa.

Methods

Study design: A survey was conducted using a web-based service (SurveyMonkey®, <https://www.surveymonkey.com/>) from 1 till 31 December 2015.

Approval for the study was obtained from the Human Research Ethics Committee at Stellenbosch University (reference N15/03/024) and the Executive Committee of the African Federation for Emergency Medicine (AFEM).

Study population: AFEM was founded in November 2009 in Cape Town, and represents a broad coalition of national societies,

organisations, and individuals from over 40 countries – within Africa and abroad. AFEM's individual members comprised of persons with an interest in African emergency care including non-clinicians, pre-hospital personnel, nurses, and physicians [8]. The AFEM membership database is held on a password protected AFEM server with access limited to the AFEM executive committee.

All AFEM's individual members who indicated on their membership form that they could be contacted for AFEM driven research ($n = 540$) were eligible for inclusion.

Data collection and management: All eligible AFEM members were contacted via e-mail with an explanation and invitation to participate in the survey. The invitation included a personalised link to the online questionnaire which was made up of sections concerning demographic data, research project involvement, publications trends, access to original research, barriers to and encouraging factors for research involvement, perceptions regarding formal research training, and perceptions regarding emergency care research (Supplementary data: questionnaire). The listed barriers and encouraging factors were compiled from previous studies [9–11]. Non-responders were reminded by e-mail at 1-weekly intervals until they responded or the 4-week deadline expired. The invitation and the questionnaire were also available in French.

The web-based survey service anonymised all returned questionnaires, before the data were exported to an access controlled electronic spreadsheet (Microsoft Excel®, Microsoft Corporation, Redmond, WA).

Statistical analysis: Analysis was done using Microsoft Excel (2013) and summary statistics of all the variables are reported. Distributions of variables are presented in frequency tables. The mean was used as the measure of central location and standard deviation (SD) as indicator of spread for the age of participants.

Results

A total of 540 invitations were sent, of which 188 were returned (response rate = 34.8%). A further 20 questionnaires were excluded (no consent $n = 1$; incomplete $n = 19$); 168 responses were thus analysed. The mean age of responders was 36.3 years (SD = 9.1). Other demographics are depicted in Table 1.

Research project involvement: Thirty-seven (22%) responders have never been involved in any research project; 41 (24.4%) had never been involved in a research project in Africa. Only 22 (13.1%) responders have been involved in five or more African related research projects (Fig. 1). Involvement in African research projects according to demographic data, is presented in Supple-

Table 1
Demographics of responders.

	n (%)
Age	
<30	36 (21.4)
30–39	88 (52.4)
40–50	27 (16.1)
>50	17 (10.1)
Gender	
Male	122 (72.6)
Female	46 (27.4)
Providers	
Prehospital	21 (12.5)
Nursing	35 (20.8)
Doctors	104 (61.9)
Other	8 (4.8)
Biggest part of work	
Mostly administration	16 (9.5)
Mostly clinical	108 (64.3)
Mostly educational	35 (20.8)
Mostly research	9 (5.4)
Highest qualification	
Diploma or equivalent	27 (16.1)
Bachelor's degree or equivalent	55 (32.7)
Honour's or Master's degree or equivalent	44 (26.2)
Doctoral degree or equivalent	35 (20.8)
Other	7 (4.2)
Emergency training	
In Africa	127 (75.6)
Outside Africa	41 (24.4)
Currently working	
In Africa	130 (77.4)
Outside Africa	38 (22.6)
	168 (100)

mentary Table S1. The general trend is similar to the overall results, i.e. most responders per category were involved in 2 to 4 African research projects. However, responders older than 50 years, those with a mainly clinical work distribution, and responders with an

Honours degree or lower had high percentages of no project involvement (41.2%, 31.5%, and 35.2% respectively).

Research project relevance: Overall, 106 (63.1%) responders indicated that their research was mostly relevant to a mainly African audience, compared to 21 (12.5%) who's involvement had a mainly international scope. Africa trainees' work were more related to African audiences (n = 87, 68%), than work from those trained outside Africa (n = 19, 46.3%). Projects of 16 (42.1%) health-care professionals not currently working in Africa relates primarily to an African audience (Supplementary data: Table S2).

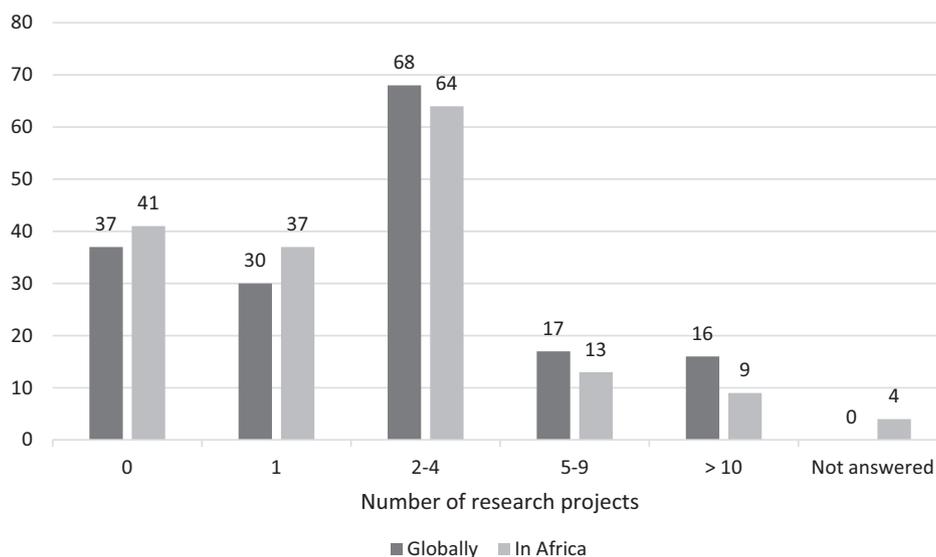
Publication of emergency care research related to Africa: Ninety-four responders (56%) have never published. The selected journals of those who had published were equally spread between regional journals (n = 25, 14.9%), international journals (n = 20, 11.9%), and both regional and international journals (n = 29, 17.3%).

Forty-one (24.4%) responders were not willing to publish in open access journals who request a publication fee, while 65 (38.7%) will only consider open access journals if these fees were sponsored.

Access to original research articles: Ninety-five (56.5%) responders read original research articles frequently, 54 (32.1%) only occasionally, and 12 (4.2%) seldom or never. Online bibliographic databases (e.g. PubMed) were most often used to find original research articles (n = 121, 72%), followed by non-academic search engines (e.g. Google Scholar) (n = 68, 40.5%), and preferring to follow links in synthesised and pre-appraised resources (n = 47, 28.0%).

Open access journals (n = 118, 70.2%) were most frequently used to access original articles, followed by institutional subscription (n = 77, 45.8%) and personal subscription (n = 23, 13.7%). Responders who trained outside of Africa and responders not working in Africa used institutional subscriptions more than open access (18.5% vs. 16.1% and 17.9% vs. 14.9%).

Eighty responders (47.6%) were frequently unable to access original articles due to subscription charges. A further 54 (32.1%) struggled occasionally with access, while 27 (16.1%) seldom experienced access block to research articles due to subscriptions. Responders older than 50 years, responders with at least a Master's degree, those who received emergency training outside of Africa, and those currently working outside Africa experienced less of an access block (Supplementary data: Table S3).

**Fig. 1.** Responders' involvement in research projects, globally and in Africa only.

Barriers to research: Lack of research funding was the most frequent barrier to being involved in research (n = 108, 64.3%). Lack of research training (n = 86, 51.2%) and lack of allocated research time (n = 76, 45.2%) were also frequently listed (Table 2).

Encouraging or motivating factors to get involved in research: Improvement of research skills (n = 118, 70.2%) and having research published (n = 117, 69.6%) were the most frequent factors selected that might result in more responders being involved in emergency care research (Table 3). Improving clinical care and patient-centred outcomes were additionally listed by more than one responder. Older responders (>50 years) valued the fulfilment of research interests (10/17, 58.8%) and publications (9/17, 52.9%) more than improving their research skills (7/17, 41.2%). Involvement in research in order to add a positive achievement to resume was selected by males (64/122, 52.5%) and nurses (19/35, 54.3%); all other groups listed improvement of skills, publishing and fulfilling research interests as most important factors for involvement in research activities (Supplementary data: Tables S4a–S4g).

Research as part of formal training: Most responders (n = 130, 77.4%) agreed (combination of 'agree' and 'strongly agree') that the teaching of research methodology should form part of the undergraduate curriculum. However, more responders were neutral (n = 24, 14.3%) or disagreed (combination of 'disagree' and 'strongly disagree') (n = 19, 11.3%) for undergraduate students to actually be involved in a research project. The teaching of research methodology and mandatory involvement in a research project as part of a postgraduate curriculum were strongly supported (Supplementary data: Fig. S1).

Perceptions of emergency care research: Responders agreed that research promotes critical thinking (n = 137, 81.5%) and that research is an important educational tool (n = 134, 80.4%). Furthermore, responders agreed that research is essential in the practice of evidence-based emergency care in Africa (n = 137, 81.5%) and that emergency care practitioners in Africa need to stay up to date with the latest clinical research (n = 138, 82.1%); however, emergency care workers need to be shown how to use research to improve clinical practice (n = 134, 79.8%). A lesser number of responders (n = 114, 67.9%) indicated that research helps to further your career. Although most agreed that insufficient emergency care research is being conducted in Africa (n = 113, 67.3%), the scores were more even when asked about the ability of emergency care professionals to conduct and interpret clinical research (Table 4).

Table 2
Barriers to emergency care research in Africa.

No.	Barrier to emergency care research in Africa	n (%)
1	Lack of research funding	108 (64.3)
2	Lack of research training	86 (51.2)
3	Lack of allocated research time	76 (45.2)
4	Lack of positive research culture	69 (41.1)
5	Lack of financial incentives	66 (39.3)
6	Lack of statistical or research support	63 (37.5)
7	Work-related stress	58 (34.5)
8	Poor accessibility to databases	58 (34.5)
9	Lack of mentorship	53 (31.5)
10	Lack of supervision	41 (24.4)
11	Lack of motivation	36 (21.4)
12	Difficulty in following-up of patients	34 (20.2)
13	Difficulty of getting papers accepted in peer-reviewed journals	28 (16.7)
14	Difficulty obtaining approval for the study	23 (13.7)
15	Home-related stress	11 (6.5)
16	Unavailability of samples or patients	11 (6.5)
17	Gender	1 (0.6)

Table 3
Factors that might encourage or motivate emergency care research in Africa.

No.	Motivation factor	n (%)
1	To improve research skills	118 (70.2)
2	To have research published	117 (69.6)
3	To fulfil research interests	89 (53.0)
4	To add a positive achievement to resume	75 (44.6)
5	To facilitate acceptance in a subspecialty fellowship programme	57 (33.9)
6	Financial incentives	50 (29.8)
7	It was mandatory in the postgraduate programme	45 (26.8)

Discussion

Our study aimed to assess the perceptions and practices towards research among current emergency care providers in Africa. One in five (22%) responders have never been involved in research, 56% have never published and 48% regularly experience access block to original research articles. This is further reflected by the main barriers to research involvement (lack of research related funding, training and time) and in factors that could potentially enhance research involvement (improving skills, getting published, fulfilling research interests). The study exposed the knowledge and experience gap in emergency care research in Africa and indicate the need to strengthen emergency care research capacity in Africa.

Inequalities in African health research has long been debated [2], but studies have never specifically focused on emergency care research. Evidence-based emergency care improves morbidity and mortality and ongoing research is needed to ensure best practices. Historically, publications from Africa lagged far behind other world regions [12]; even more so with regards to emergency care [13]. However, a steady rise in the annual number of African emergency care publications has been noticed over the last five years, from 92 publications in 2010 to 183 publications in 2015 [6]. Regardless of the doubling in the number of publications, there are still numerous barriers to research and subsequent publication. The major perceived barriers relate to lack of research related funding, training and time. These barriers are not unique to Africa or emergency care research but represents a global inclination in various health-related disciplines [9,10,14–16]. A number of strategies have been implemented to motivate practitioners to get more involved in research [17]. These strategies were associated with a positive change in the attitude towards research (for both the individual and the environment they work in), the ability to acquire research skills, and ultimately producing more (and better) publications [17]. Remarkably, motivation towards research involvement mainly related to intrinsic (improving research skills and clinical practice) rather than extrinsic factors (financial incentives, obligatory for degree). The mentioned barriers and motivational factors should drive the optimisation of emergency care curricula in order to enhance emergency care research productivity within Africa.

Formal emergency medicine programmes in Africa are fairly new and limited to only a handful of countries. It can therefore be appreciated that the initial focus will be on clinical medicine and the training thereof. One can expect that more time and energy will shift towards research activities once this initial building phase is over and the programme have reach a saturation point allowing them to expand. This is clearly evident in countries with established emergency medicine education systems such as South Africa and Tanzania who are current leaders in terms of emergency medicine research on the African continent [7]. The current immature state of most emergency care programmes in Africa could therefore be a plausible explanation for the low level of research involvement; however, the previously mentioned bloom in emer-

Table 4
Perceptions of emergency care research.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	N/A*
	n (%)					
Research promotes critical thinking	99 (58.9)	38 (22.6)	5 (3.0)	0 (0)	7 (4.2)	19 (11.3)
Research is essential in the practice of emergency care in Africa	92 (54.8)	45 (26.8)	6 (3.6)	0 (0)	7 (4.2)	18 (10.7)
It is important for emergency care practitioners in Africa to stay up to date with results from clinical research	89 (53.0)	49 (29.2)	6 (3.6)	0 (0)	6 (3.6)	18 (10.7)
Research in emergency care is an important tool for learning about the effectiveness of specific emergency care techniques and treatments	86 (51.2)	49 (29.2)	5 (3.0)	3 (1.8)	7 (4.2)	18 (10.7)
Emergency care workers need to be shown how to use research in improving their clinical practice	79 (47.0)	55 (32.7)	8 (4.8)	3 (1.8)	6 (3.6)	17 (10.1)
Research helps further your career	60 (35.7)	54 (32.1)	21 (12.5)	5 (3.0)	8 (4.8)	20 (11.9)
There is sufficient research done within emergency care area in Africa	6 (3.6)	9 (5.4)	21 (12.5)	54 (32.1)	59 (35.6)	19 (11.3)
Emergency care professionals are sufficiently skilled to carry out research	5 (3.0)	27 (16.1)	39 (23.2)	57 (33.9)	21 (12.5)	19 (11.3)
Emergency care professionals are sufficiently skilled to interpret research	7 (4.2)	32 (19.0)	48 (28.6)	50 (29.8)	13 (7.7)	18 (10.7)

* Not answered.

gency care publications is evidence of the recent growth and expansion of emergency care programmes delivering sufficiently skilled people. One can foresee that emergency care research in Africa can only improve with time if the perceived barriers and potential motivational factors can be addressed in a sustainable and affordable way.

Research has the potential to be an important educational tool and to enhance the clinical skills of emergency care practitioners. In time, knowledge will be converted into action, thereby strengthening health systems and improving health care overall. Increasing research capacity is therefore vitally important and efforts have been ongoing. An African-led initiative, the Initiative to Strengthen Health Research Capacity in Africa (ISHReCA) has identified key requirements to increase health-research capacity by improving the research environment and supporting both individuals and institutions [1]. Other initiatives focusing on building sustainable health research capacity in Africa include the Consortium for Advanced Research Training in Africa (CARTA) and the African Doctoral Dissertation Research Fellowship Programme [18,19]. Another viable option is to establish and extend research partnerships that could even include joint degrees between low- and high-income countries [20]. Emergency care research in Africa is highly supported by collaborative efforts with South Africa and the US the main collaborators [21]. Tanzania, Egypt and Ghana are also involved in various collaborative efforts [21]. AFEM and the broader emergency care community should take note of these examples and adapt some of the practical strategies to the emergency care environment in order to expand research capacity across the rest of Africa.

The AFEM Nurses Group has started to work on developing the research capacity of nurses involved in emergency care in Africa through two initiatives. The first is the development of the African Emergency Nursing Curriculum (ANEC) which provides theoretical and clinical standards of emergency nursing across Africa and also highlights the importance of knowledge and practice regarding research methods and conducting research [22]. The second is the African Emergency Nursing Mentorship programme which is currently being piloted and much of the interaction between the mentors and mentees is related to various aspects of research development. These initiatives have started to look at the development of research capacity but still have a long way to go.

The main strength of the current study is that it surveyed a broad group of healthcare practitioners involved in emergency care in Africa; however, the study had various limitations. Firstly, the

sample was limited to practitioners affiliated with AFEM and combined with the low response rate excluded many potential contributors. Secondly, we did not capture the specific country where responders are working, therefore the interpretation as well as the generalisability of the results should be done with care as significant variations between countries are possible. Lastly, the survey intended to provide baseline knowledge on the perceptions of emergency care personnel towards research in Africa, and follow-up studies are needed to acquire more in-depth knowledge regarding the topic.

This study evaluated the perceptions and practices towards research among current emergency care providers in Africa. There is scope to increase research involvement in emergency care in Africa. Strategies to overcome perceived research barriers, specifically lack of funding, time and training, should be put in place to ensure the development of mature African emergency care programmes that can enable African emergency care researchers to find appropriate solutions for African emergency care problems. An action plan is needed to determine the ideal research capacity needed and how to fill the current exposed gaps.

Conflicts of interests

The authors were tasked by the Scientific Committee of the African Federation of Emergency Medicine to do the survey on their behalf. No other conflicts of interest are declared.

Acknowledgements

We thank Jenn Pigoga for her technical support and Paul Kim for translating the survey into French.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.afjem.2017.01.003>.

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