An exploratory survey: experiences and perceptions of community members who have accessed pre-hospital Emergency Medical Service in Langa, Cape Town

by

Zina Bam

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Supervisor

A/Prof Peter Hodkinson, Division of Emergency medicine, University of Cape Town

DECLARATION

I, Zina Bam……, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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Contents

PART A: LITERATURE REVIEW

List of abbreviations

AFEM	African Federation for Emergency Medicine
AFEM/IAE	African Federation for Emergency Medicine/International Academies of Emergency
EMSCC	Emergency Medical Service Communication Centre
EMS	Emergency Medical Service
ESPSO	Emergency Service and Public Safety Organisation
SA	South Africa
SAHRC	South African Human Rights Commission

Introduction

Accessing pre-hospital Emergency Medical Services (EMS) is vital in building sustainable and strong health care systems (1, 2). This literature review examines how these pre-hospital EMS are accessed in an African context. This paper focuses on pre-hospital EMS services to the Langa community in the city of Cape Town, South Africa. It is followed by a description of the function of provincial Emergency Medical Service Communication Centre (EMSCC), which allows the public to access available emergency medical resources in a timely, safe, reliable manner. The caller-centred framework of access allows the understanding of experiences and resistances faced by individuals who have accessed health care (3). In this research the caller is the person that called to the EMSCC, to access pre-hospital EMS.

This review below focuses on literature from the past ten years, but also includes literature of below ten years (1974) deemed relevant for this review. The literature search was conducted using PubMed (Medline) and Google Scholar. Search terms utilised were: prehospital emergency medical services, emergency communication call-centres, prehospital emergency medical services access in Africa/low and middle-income countries, ambulance services access, and caller satisfaction in health services/ambulance/prehospital emergency care. All retrieved records were assessed for relevancy.

Access to pre-hospital EMS

Emergency care is a primary access point into health care systems in many low-income and middle-income countries (3, 4). In Africa, emergency care access is underdeveloped and it's made worse by diversity in, the multilingual, multicultural and varying socioeconomic statuses of its population (2, 4, 5). Less than 1% of Africa's citizens have formal emergency medical transportation services access (1), and providing access to emergency care is one of the key roles of pre-hospital EMS (1, 4, 6). Subsequently, EMS systems are developing across the continent and looking towards established systems such as SA for direction (2, 4). A change within population demographics brings about an increasing demand in accessing health care systems, and thus raising a major concern about accessibility, as described in studies not within African context. (7, 8).

An improvement in pre-hospital care could deal with most deaths and a third of disability-adjusted life-years, in SA and other middle and low-income countries (4, 9). Access to prehospital EMS is enshrined within the Constitution, in SA (10), yet, there are significant inequalities and inefficiencies in accessing it (10, 11). Most of Cape Town's population, rely on the public prehospital EMS, namely Western Cape Department of Health Metro EMS which provides a 24/7 prehospital care service to the public. Western Cape Department of Health Metro EMS provides three services, the ambulatory service, rescue services and an

inter-hospital facility transport (known as Healthnet). Cape Town is a large urban area, where response time and availability of ambulances are crucial in providing quality emergency healthcare services to all citizens. Ambulance availability per 10 000 population of City of Cape Town is about 0.26, which is below than the provincial average of 0.36 (12).

The South African Human Rights Commission (SAHRC) 2015 hearing found that barriers related to accessing pre-hospital EMS, are made worse by serious shortages or non-existing increased waiting times for emergency ambulatory transportation, especially for the poor (10). Pre-hospital EMS is essential in delivering time-sensitive care especially for paediatrics, barriers to access this care include geographical location and knowledge of emergency access mechanisms such as phone numbers (1). In most Sub-Saharan African countries, barriers to emergency care exist (2, 4, 5, 10, 13). In Gabon, it was found that misperceptions and lack of awareness of EMS were barriers to accessing prehospital resources, similar to two studies in similar sites (2, 4, 5). These studies further noted other barriers such as the absence of emergency transportation, alternative forms of transport, healthcare provider deficiencies, cost and low use of ambulances (2, 4, 5).

All these barriers were found to hinder the right to accessing prehospital EMS and currently, these barriers are evident in SA (10). Timely access into prehospital EMS is a vital factor in survival and avoiding permanent health injuries (14). Communities in the Eastern Cape (mainly rural settlement) in SA, testified that the absence of access to prehospital EMS resulted in devastating consequences for their health and noted that even when they called for an ambulance, frequently it arrived too late or not at all (10). Minimising barriers for public to accessing prehospital EMS is considered important in ensuring appropriate, timely and equitable use of these inadequate, but valuable prehospital EMS resources (2).

Emergency Medical Service Communication Centre

In an emergency, accessing help quickly is of importance and to access this help, an individual needs to phone (access) into the EMSCC. Accessing EMSCC is a representation of a level in the chain of survival into prehospital EMS for those requiring emergency response (9, 15). Telephonic advice for chronic conditions and local healthcare resources information should be provided by the EMSCC, as per the African Federation for Emergency Medicine/ International Academies of Emergency (AFEM/ IAE) Dispatch Working Group recommendations (9). Inclusive of an appropriate prioritization and response of all incoming calls (15). When a member of the public phones for an ambulance by dialling a specific number**,** the call-taker is to determine and transcribe information of callers contact details, scene location and appropriate medical details of the patient (15-17), resulting in the rapid

dispatch of an ambulance to the scene by emergency services. This can be achieved by, the caller and call-taker exchanging in efficient information (9, 15-17). Prehospital EMS is dependent on the quick transition of a call, dispatch, and response of an ambulance to the scene.

The Western Cape Provincial EMSCC receives about 1800 calls per day; either from a first party caller (public) directly calling EMSCC through the national ambulance 10177-emergency number, or from a third party caller (an operator) through a free mobile phone emergency service, who relays information from first party caller to the EMSCC (16). Third party callers can be inclusive of police officers or in many cases a cellular phone company or regional emergency communication centre agents (or nurses in the case of inter-hospital transfers) (16, 17). Prior studies have shown that most calls to the provincial EMSCC are third-party calls via free mobile phone service (16).

The Cape Town area has a mixed language profile including Afrikaans (55.3%), isiXhosa (23.7%) and English (19.3%) language speaking individuals (16, 18). Call- takers at the EMSCC are chosen and equipped to manage this multilingual setting by speaking at least two, and frequently three of the predominant local languages (19). Current call-taker training at provincial EMSCC is done in-house with listening and telephonic skills, legal information, inclusive of emergency first aid (16). However, call-takers in France are professionally recognised with a one-year training eight-unit program (15). In addition, new junior call-taker undergo a four-week training course, and subsequently, are paired with a senior call-taker for a year (15). Amidst the variations in current training, there is no real evidence that a trained medical professional is more effective than a qualified call-taker personnel in an EMSCC environment (9).

One of the serviced area by the EMSCC is Langa and is the oldest urban township which is located just outside the City of Cape Town (20). It has an estimated population of 50 000 within a population density of about 6198 per square km (21). This area is made up of singles quarters, squatter camps, taxi rank, community centres, and formal dwellings. Langa is highly made up of isiXhosa-speaking residents with poor English or Afrikaans (21). The workload of public and private trauma services has increased due to increasing levels of crime and violence within the urban area (21) . Langa is representative of many urban low socio-economic areas where access to prehospital EMS may be a problem.

The caller-centred framework of access

Access relates to the caller's ability to enter into the health care system. It also means that the service is available whenever and wherever the patient needs it through a well-defined point of entry (22). An influential framework for the intended study was found and is based on the experiences confronted by individuals accessing health care (3). This influential framework introduces the dimension of abilities of an individual interacting with Penchansky and Thomas's dimensions of access namely: availability, accessibility, accommodation, affordability and acceptability; additionally, with the addition of approachability and the combination of availability and accommodation (3). The African Federation for Emergency Medicine's (AFEM) Out-of-Hospital Emergency Care (OHEC) Committee reiterates the application of dimensions of accessibility with an addition of a sixth dimension known as awareness (2). The dimension of abilities are known as ability to perceive access; ability to seek access; ability to reach access; ability to pay for access; and the ability to engage in access (3).

Ability to perceive access

The ability to perceive access is dependent on communities being informed of when to seek care, how to seek care, who should seek care and why should an individual seek care (3). It requires transparent information regarding available service and how to access the service as elements that make pre-hospital EMS more or less approachable (3). Highlighting, the importance of community to be aware of available services. This could occur through the awareness of a single toll-free emergency number and is considered to be a vital factor of how one gets to access the prehospital EMS system (2). Lack of awareness is a known barrier in accessing prehospital EMS (4, 5, 10, 13).

The establishment of a centralised emergency access telephone number is one technical aspect of improving access into pre-hospital EMS (1, 23). The use of a centralised emergency number is to take emergency services requests, sort and deliver them to correct emergency services call takers, and providing emergency management capabilities as achieved by the 911 number in the United States of America (24). Similarly, in Australia and New Zealand, where they utilise a centralised multi-channel operation that allows multi-channel communication between the community and the responders (25). Emergency management capabilities allow for data sharing abilities that can improve emergency response, especially in major incidents and the storage of emergency services requests (9, 24, 25). The Emergency Service and Public Safety Organisations (ESPSO) noted that flexibility and agility can be easily achieved when different organisations share the responsibility for emergency services (25). However, the complex framework underlying the

coordination of emergency services can result in misunderstanding and issues with inter-organisational communication (25, 26).

The AFEM/IAE working group also recommend centralised emergency access; noting that it can achieve efficiencies in staff development, equipment acquisition, and continuous quality improvement in EMSCC policies and procedures; providing stability and resilience (9). These may prove advantageous in resource-constrained settings such as in SA [(9)]. Kironji et al (1), through a systemic review that identified barriers in prehospital setting for low and low-middle income countries, reiterated the use of the centralised emergency number. From their results, a centralised emergency number could lead to better coordination between pre-hospital emergency services that can improve health outcomes without necessitating expensive technology models that are utilised in high- income countries (1, 9, 24, 25).

The absence of a centralised emergency number is considered to add extra difficulties with increased anxiety, especially in an emergent situation (1). The World Health Organisation's Global Status Report on Road Safety reported that 56 out of 178 countries surveyed do not have access to a centralised emergency number (1, 23). Countries that do not have a single emergency telephone number had up to three different numbers inclusive of a regional number. In SA, they experience the same; where there is a national emergency for an ambulance of 10177 and a 112 free-cellular emergency telephone number; inclusive of the 10111-SA police national emergency with other multiple emergency services numbers, offered by cellular providers and private ambulatory services (27, 28). Additionally, the City of Cape Town in the Western Cape has a single toll-free emergency number, 107 which can be dialled from a landline (29). Nielsen, et al (23)., noted that multiple different emergency numbers can be confusing and can cause delays for accessing pre-hospital EMS for a community, as the case in SA.

The AFEM/IAE working group recommends that each country should have at least one national, free, public access emergency number that is guaranteed by government, and is specialised for emergency medical care access; and this is the case for South Africa, with the ambulance National 10177 number (9). The community it serves needs to be educated on indications for, devices of access, and reasonable expectations for pre-hospital EMS access number (9). It is considered that 60 % of the sub-Saharan African population have mobile phone coverage, according to the International Telecommunication Union (9). Therefore, most of the population can access pre-hospital EMS via a cellular phone. Public education on the appropriate use of emergency services is vital in the awareness of available emergency services (1, 5).

Ability to engage in access

The ability to engage refers to caller involvement and participatory in treatment decision-making in accessing care (3). Inclusive of psychosocial, cultural, political, religious, and linguistic factors, which has a role in prehospital EMS accessibility to the community it serves (7, 22). Communication is one-way that the community can be able to engage in accessing prehospital EMS and Anest, et al (26), had identified communication as a barrier within prehospital EMS. A prior study conducted in the Western Cape found that for EMSCC call-takers, communicating across a language barrier is more stressful and likely resulting in less-accurate ambulance dispatch (19). The diversity within the EMSCC call-takers and the callers can result in language and cultural barriers (24). They further identified the communication challenges within the EMSCC as; busy emergency phone lines, and miscommunication with the caller regarding patient condition (19, 24, 26).

Delayed emergency response times has been affiliated with language barriers (19). Communication factors that enable the accuracy of retrieved information from the caller can lead to reduced response times for an ambulance to be on-scene (21). The AFEM/IAE dispatch working group recommends call-takers in EMSCC, to be eloquent in the main local language(s), be multilingual or have availability of translation services (9, 19). Inclusive, of standard operating procedure for management of caller and call-taker communication barriers (9, 19). Precise and effective communication within the prehospital EMS system is vital as it could be life-saving.

Ability to seek access

This relates to personal autonomy to select emergency care information options and rights involved with seeking access (3). Accessibility is determined by the timeline of response to callers' requests to enter the system, the appropriateness of the response to caller requests to access, and the effort (how long) the patient must wait for ambulance arrival (7, 22). The appropriate location and positioning of resources play a crucial part in pre-hospital EMS accessibility for patients in Africa (2, 17). Poor location decisions are said to have an effect on the barrier of access to available resources (2, 17). To be precise, patient location is a major barrier in accessing prehospital EMS, especially in arears that are overcrowded and with non-existing formal systems of geographic addressing (1, 2, 17).

Establishing on-scene location for an ambulance, is an important component of emergency calls. It relies on the caller's ability to identify where the incident is and communicating it to the call-taker. In New Zealand, they have an 'emergency+' app that allows their ESPSO to send an SMS to the caller and request access to their GPS data to identify their location (25). At the provincial EMSCC, an electronic form is utilised by the call-taker to fill in the incident

address as per caller. Although, problematic sometimes, due to some street names not existing in the computer system, especially in informal and rural areas (2). This could possibly lead to worsening or fatal consequences for the person in need of an ambulance, as the call-taker is under duress to finalise the call within two minutes (2).

Any distorted location or incident information during the call process could result in the ambulance not reaching the correct location on time or at all (17). Isolated informal and rural areas, where street names and house numbers are disorganised or not visible pose a challenge for ambulance to locate incident location [30]. Ambulance delays can be a problem in urban settings, as in the township of Langa; where traffic volumes especially during on-peak hours which make rapid traveling difficult (1, 17). Adequate resourcing of ambulance service is another element involved with an increased response times (2, 30). Hence, it is crucial for the call-taker and caller to communicate information regarding complicated locations in a clear and careful manner.

Landmarks and geographical knowledge are considered to be a solution to location difficulties in emergency calls as found in a qualitative study by Nattrass et al [17]. The use of landmark strategy has developed, and is the most favourable and commonly utilised strategy (17). The alternative of an established, clearly marked and well-known landmark by the community and the pre-hospital EMS, where meeting with someone to guide an ambulance to the patient's is recommended by AFEM OHEC (2). Kironji et al (1), suggest the use of innovative navigation solutions such as mobile phone and location service in order to improve time for ambulance response. These alternatives require the call-taker to have knowledge, capabilities, and flexibility in identifying the patient location with personal knowledge of the area (17). The use of high technology models from high-income countries can be a discouraging task in under-resourced countries (2). The combined use of computer systems with landmark and local knowledge could be ideal in dealing with challenges of pre-hospital EMS access, and it requires further research (17).

Ability to reach access

This relates to health services that is physically reached by the community in a timely manner (3). It is a critical dimension, as the availability of emergency resources should be aligned with when and how the community needs care (2, 7). This can be achieved by seeking community feedback of members who have accessed prehospital EMS (2, 7). This feedback will also aid in identifying areas of access improvement. Hence, the importance for pre-hospital EMS managers and policy makers to be attentive of the serviced community needs. The AFEM OHEC recommends the community feedback of members that have accessed prehospital EMS, to guarantee an appropriate service based on community

perception ; and if it does not, then to find where improvement is required (2). Caller satisfaction can be defined as the caller's perspective of the services received (31). These callers play an important factor in pre-hospital EMS by providing constructive information about the effective accessibility of the service.

Caller satisfaction can be a quality or quantity of care actually received and is best evaluated in the context of specific, recent and identifiable experiences (32). It is a critical tool in evaluating the services provided, inclusive of caller respect and understanding their needs (22, 32). The information from callers can be used to assess the service they received, and it can help improve health care delivery. The callers are in direct contact with accessing pre-hospital EMS by calling into the EMSCC and have hands-on experience on the gaps and barriers in accessing pre-hospital EMS. When health care users are part of the care they are serviced with, the outcome and the satisfaction levels could improve (32).

A difference in access does not only affect caller satisfaction but also service utilisation and provider practice pattern by how the service is utilised (entry into the service); the service they receive, and service practice patterns affected (when there are no available ambulances or call-takers, the callers will be asked to use alternative transportation or no phones being answers at the EMSCC) (3). Callers dissatisfaction is associated with the following: non-ambulance arrival on-scene when needed, no assistance from emergency call centres, not being kept - informed about ambulance status or what to do while awaiting ambulance arrival (33). Caller satisfaction considerations could either positively or negatively affect the pre-hospital EMS's standing in the community. Frequent measuring of caller satisfaction is required to develop and assess healthcare plans while improving the service based on community wants and needs (31, 34).

Ability to pay for access

The AFEM OHEC notes that prehospital EMS should be freely available to all community members. (2). In SA, prehospital EMS is available at no cost and provided by the government (there is also the availability of private services that provide EMS at a cost). The governmental prehospital EMS receives funding from the state budget and it can be affected negatively if the reputation of prehospital EMS is not aligned with community needs (2). A highly spoken of pre-hospital EMS by the community it serves; yields favourable conditions for funding from government (2).

The study proposed framework is in pursuit of exploring the experience and perception of the community of Langa in accessing pre-hospital EMS; apart from the ability to pay. The proposed framework involves the process of accessing prehospital EMS and relates to factors involved in interacting with prehospital EMS provider and utilising this service (3, 7).

Hence, representing facilitators or barriers to prehospital EMS access (3). Barriers or facilitators can occur from the start of when one seeks emergency care to the actual benefit of receiving the ambulance.

Individuals should have access to EMS at the time and place needed, through a well-defined and known point of entry (7, 22), thus, referring to the ability to seek and reach care (2, 3). The extent to which access to prehospital EMS is available is said to have a variety of consequences on the individuals comprehensive good health, and is influential on the quality of life with the possibility to have an effect on the suppression of poverty and inequality (13, 22). The provided picture of access to pre-hospital EMS through existing indicators does not reflect the experiences and perceptions of those who have acquired access into pre-hospital EMS. Therefore, the need to explore the experiences and perceptions of the community of Langa in accessing pre-hospital EMS, in Cape Town.

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PART B: ARTICLE

In the format of an Original Article Submission to the

African Journal of Emergency Medicine (AFJEM)

An exploratory survey: experiences and perceptions of community members who have accessed pre-hospital Emergency Medical Service in Langa, Cape Town

Zina Bam [a] A/Prof Peter Hodkinson [b]

[a] College of Emergency Care, Western Cape Department of Health, South Africa

[b] Division of Emergency Medicine, Faculty of Health Sciences, University of Cape Town, South Africa

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Corresponding author:

Zina Bam, zina_bam@yahoo.com, +27 820591385

36 Makana Square, Langa, Cape Town, 8001, South Africa

Abstract

Background: Calling an ambulance is the first line for citizens in dealing with many healthcare emergencies. It is crucial for the caller to convey correct information regarding the patient's emergency and on-scene location to the emergency services, resulting in prompt dispatch of correct emergency resources to the exact location. Although there is a good deal of focus on emergency medicine time parameters and outcomes, little is known about the experiences, perceptions and satisfaction level from those who have accessed pre-hospital Emergency Medical Services.

Methods: A telephonic survey was conducted on individuals who had recently called for an ambulance, from the urban township of Langa, Cape Town. Surveys were conducted in the caller's home language, using a standardized tool for collecting quantitative data around the call process, caller satisfaction, outcomes of the call, and issues experienced.

Results: During June 2018, 50 callers completed the survey (69% response rate). Most callers (88%) used a personal mobile phone, and 83% called predominantly for medical problems in the daytime. Callers accessed the service by dialling a variety of emergency phone numbers. Callers were largely satisfied with the call (66%), and there were fewer language mismatches than expected. A need for better communication regarding ambulance status and over the phone medical advice was identified. A substantial number of inconsistencies were reported between callers' outcomes and those from emergency communication centre which require further analysis. These inconsistencies, pointed into gaps within the emergency communication centre's collecting and database system

Conclusion: The study provided the first insight into pre-hospital emergency caller experiences and perceptions, highlighting important aspects perhaps not revealed through other metrics. Measurement of caller satisfaction can be a useful quality improvement tool, and would seem feasible without substantial resources. Further investigation into data capturing system and identification of call outcomes are recommended.

Background

Emergency care is associated with a reduction in morbidity and mortality, especially in low and middle income countries (1), yet the majority of the African population does not have access to formal pre-hospital care (2, 3). For most South African (SA) households, who use the public health sector (4), access to an ambulance is the first link in obtaining emergency care, be it due to lack of access to a vehicle, lack of after-hours public transportation, or the inability to pay for transportation to hospital (5).

Emergency Medical Services (EMS) in the Western Cape have made great strides and are arguably one of the better public sector services in SA (if not in Africa) (6), yet as elsewhere, the public sector EMS remains under-resourced, understaffed and not always equipped to provide a quality service (7). There is a national ambulance emergency number, 10177 and a 112 free-cellular emergency telephone number, and in Cape Town 107 is a toll-free emergency number; as well as a confusing array of other emergency services numbers, offered by cellular providers and private ambulance services (many of which will merely route a caller to the national call centre anyway) (8-10). In Cape Town, public sector medical emergency calls are directed to the Emergency Medical Service Communication Centre (EMSCC), which is staffed by call-takers who obtain the necessary information from callers, and judge the urgency and resources required, and then by dispatchers who allocate each call to an ambulance crew according to their location, crew resources, and the perceived call prioritisation (Priority 1 emergency calls have a target response time of 15 minutes, and Priority 2 less urgent calls within an hour) (11).

The influential framework of the dimension of abilities known as ability to perceive access, ability to seek access, ability to reach access, ability to pay for access, and the ability to engage in access; was utilised in order to understand the experiences confronted by individuals accessing health care. The identification and reduction of barriers to accessing pre-hospital EMS by the public is to warrant suitable, timely, and impartial use of these inadequate and valuable resources (12). Currently, the main quality improvement focus (and research) is largely on response times, and to some extent outcomes (13), but there is a paucity of available evidence regarding community experiences or perceptions of healthcare in SA (14), and particularly around pre-hospital EMS. This study seeks to describe the callers experience and perceptions following a phone call to request an ambulance in the Cape Town suburb of Langa.

Methods

Study population and sampling

Langa is an urban township (previously designated as a “non-white” area by apartheid legislation) within the City of Cape Town, with an estimated population of 50 000 and population density of about 6198 people per square km (15). This study enrolled callers from Langa, who had called the public-sector EMSCC requesting an ambulance, over a one-month period. The inclusion criteria were adults (more than 18 years old), who verbally agreed to take part in the study and were able to speak English or Xhosa, the predominant languages in this community. From the electronic database of calls received by EMSCC, an extract of calls made from Langa was compiled each week. A sample of these assigned calls was achieved through three-phases of screening, within a week of the call being made to EMSCC. The first phase screened the database for all calls from Langa and excluded inter-hospital transfers; and calls classified as hoax and for declaration of death. An EMSCC employee (to avoid any infringement of protection of personal information obligations to callers by the researchers) then called each eligible number, gave a brief explanation of the study, and obtained verbal consent for study participation. These consenting individuals’ contact details and database information were passed onto the researcher, who conducted the final screen by excluding calls if there was no answer after three consecutive attempts (at at different times of day), numbers which did not lead directly to the person that made the emergency call, or the caller indicated it was inconveniently to participate. All eligible calls from this screening process were included over one calendar month. Approval to conduct the study was granted by the University of Cape Town Health Research Ethics Committee (HREC Ref 131/2018), and Western Cape Provincial EMS management.

Data Collection and analysis

Following a pilot study, of five callers (not included) to refine recruitment and survey processes, a structured, standardised telephone survey questionnaire (Appendix A) was conducted in English or Xhosa as preferred by the caller for a duration of maximum 20 minutes, within a week of their emergency call. It was calculated that a sample size of at least 40 callers, to achieve 95% confidence interval, confidence limit of 15% around an expected proportion of 50%) was required (16). Descriptive analysis was performed to characterise callers and their perceptions, with use of Microsoft Excel and basic measures of association with a confidence interval of 95%. Open-ended questions were analysed and grouped into emerging themes.

Results

Enrolment data results

Over the month of June 2018, 82 calls from Langa were screened, resulting in 50 calls enrolled into the study (Fig 1), a response rate of 69%, and an 85% cooperation rate.

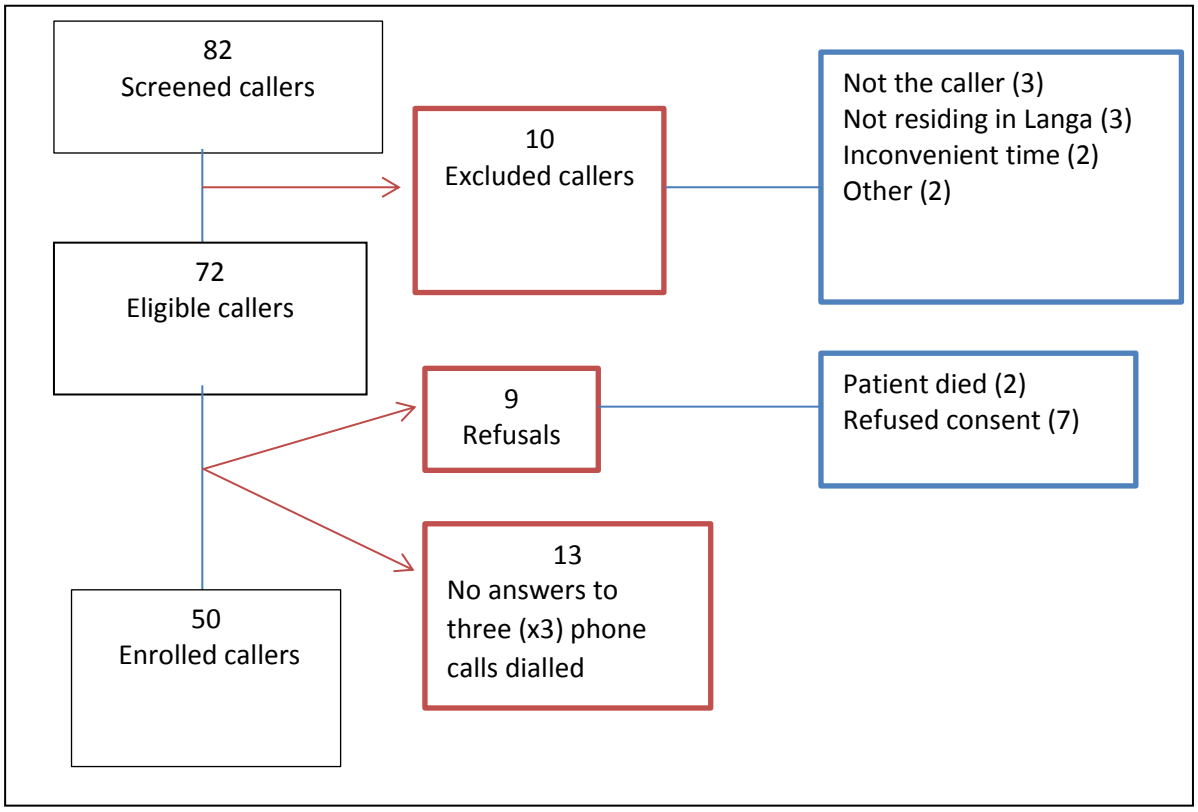

Figure 1 Enrolment data results

Demographic characteristics of the callers

Callers were predominantly female, aged under 40 years, had high-school education and were unemployed (Table 1). Most callers requested an ambulance on behalf of a family member, utilising their own personal phone; and 43 (83%) had no personal vehicle access.

Table 1 Demographic characteristics of callers (N =50)

	Frequency	Percentage
Gender		
Female	33	66%
Age (years)		
18-29	13	26%
30-39	14	28%
40-49	8	16%
50-59	8	16%
60 and over	7	14%
Education level		
Primary school	6	12%
High school	31	62%
Tertiary education	13	26%
Employment Status		
Unemployed	33	66%
Permanent	17	34%
Caller relationship to the person in need of an ambulance		
Self	6	12%
Family	29	58%
Non-family	15	30%
How call was made		
Own phone	44	88%
Someone else's phone	6	12%

Callers' experiences and factors involved in accessing prehospital EMS

Callers related that the outcome of the call to EMS resulted in an ambulance actually arriving to assist with the emergency in just 29 (58%) of calls. Caller's reasons for accessing EMS were predominantly for medical related problems and most calls were made during daytime, with the use of several different emergency phone numbers (Table 2). When an ambulance did arrive, it was more likely to be for a trauma patient, a Priority 1 call, or at night.

Table 2 Callers experience and factors involved in calling for EMS

	Ambulance reaches patient?			
	Yes (n=29) *(row % of each characteristic)*	**No (n =21)**	**Total (n=50)** *(column % (out of 50)*	**Odds Ratio (Confidence Interval)**
Call type				
Trauma	12(86%)	2 (14%)	14 (28%)	6.7 (1.3-34.4)
Medical	17 (47%)	19 (53%)	36 (72%)	
Call Priority [a]				
Priority 1	16 (80%)	4 (20%)	20 (40%)	5.2 (1.4 – 19.4)
Priority 2	13 (43%)	17 (57%)	30 (60%)	
Time of call [b]				
Day	18 (56%)	14 (28%)	32 (64%)	0.8 (0.3 – 2.6)
Night	11 (22%)	7 (14%)	18 (36%)	
Emergency telephone number called				
10177 (National)	8 (67%)	4 (33%)	12 (24%)	
107 (Provincial)	3 (60%)	5 (40%)	8 (16%)	
112(network provider)	9 (53%)	8 (47%)	17 (34%)	
Other [c]	9 (69%)	4 (31%)	13 (26%)	

a Priority 1 call involves a time critical emergency, and Priority 2 involves a less urgent emergency.

b Day time = 07H00 -19H00, Night time = 19H00 – 07H00

c The other category represented the following; caller not recalling the number, someone else dialled the number, one number was a direct landline telephone number to the EMS communication centre, and one number was a private number.

Callers experience with call taker/EMSCC:

Callers reported that their request for an ambulance was understood by the call-takers, and that call-takers were largely polite, professional and friendly, and mostly spoke a language they could understand (or if not were accommodated in their language by being transferred to another call taker) (Table 3). It was found that there was seldom any information provided regarding ambulance status, or medical advice given. In just over half of calls, a subsequent call was made by the EMSCC back to the caller, enquiring if the ambulance was still required 14 (28%), asking for more specific directions 7 (14%), informing the caller that there were no available ambulances 6 (12%), or suggesting they find alternative transportation 1 (2%). Further comments with regards to the call-takers included call-taker inconsistency (i.e. conflicting statements from different operators) 3 (6%); lack of professionalism 2 (4%); and the need for call-taker training 1 (2%).

Table 3 Callers' experience and process involving the call-taker (n=50)

	Yes	No
Was the call-taker polite, professional and friendly?	47 (94%)	3 (6%)
Did the call-taker speak a language you could understand?	41 (82%)	9 (18%)
Did the call taker understand your request?	50 (100%)	0
Did the call taker explain when the ambulance will arrive?	9 (18%)	41 (82%)
Were you put on hold during the hold?	2 (4%)	48 (96%)
Did you receive any medical advice or input?	2 (4%)	48 (96%)
Did someone from the control room call you back?	25 (50%)	25 (50%)

Caller's satisfaction level with calling EMS

Two thirds (33 (66%)) of callers found the process of calling EMS to be satisfactory or above satisfactory (Table 4). More callers were satisfied when an ambulance did arrive on-scene, but satisfaction was statistically higher for trauma calls, daytime calls, and Priority 1 calls. Unsurprisingly, when callers were not polite and professional there was negative satisfaction, but 14 callers were dissatisfied even in the face of polite and professional call-takers.

Table 4 Caller's satisfactory level with accessing pre-hospital EMS (n=50)

	Satisfaction level			Total	Odds Ratio [a] (Confidence Interval)
	Above Satisfactory	Satisfactory	Below Satisfactory		
	13 (26%)	20 (40%)	17 (34%)		
Ambulance arrival					
Yes	11 (38%)	15 (52%)	3 (10%)	29 (68%)	17.3 (3.9-7.7)
No	2 (10%)	5 (24%)	14 (66%)	21 (42%)	
Call type					
Trauma	3 (22%)	9 (64%)	2 (14%)	14 (28%)	4.2 (0.8-2.0)
Medical	10 (27%)	11 (31%)	15 (42%)	36 (72%)	
Time of call [b]					
Day	8 (25%)	10 (31%)	14 (44%)	32 (64%)	1.8 (0.7-4.7)
Night	5 (28%)	10 (56%)	3 (16%)	18 (36%)	
Call Priority					

P1	8 (40%)	7 (35%)	5 (25%)	20 (40%)	2.0 (0.6-7.0)
P2	5 (17%)	13 (43%)	12 (40%)	30 (60%)	
Was call-taker polite, professional and friendly?					
Yes	13 (27%)	20 (43%)	14 (30%)	47 (94%)	
No	0	0	3 (100%)	3 (6%)	

a *Odds ratio calculated by grouping "Above satisfactory" with "Satisfactory" compared to "Below satisfactory"*

b Day time = 07H00 -19H00, Night time = 19H00 – 07H00

Discussion

Pre-hospital EMS is often the first point in accessing healthcare, especially when most callers have no access to a vehicle. Callers largely experienced the EMSCC to be accessible and aligned with the linguistic diversity of the community, yet we identified several unexpected and important findings, many apparently amenable to improvement without necessarily requiring vast resources. The main findings are discussed below in context of caller's experiences and perceived perceptions.

Despite the predominantly positive satisfaction reported with the call taking process, a surprising number of callers related that an ambulance had not arrived, following their call and request to EMSCC. This warrants further investigation into service load and resources, and is likely to be attributed to high call volume at the EMSCC, limited ambulance availability at specific times, and callers who could not wait any longer for the ambulance and opted to use private transportation (12, 17-19). A report from the Eastern Cape suggests that this is not an uncommon occurrence, particularly in rural communities (18). Our data showed that an ambulance was more likely to arrive for trauma cases, at night and for P1 type calls. Given that this study was not powered to identify the true causality of whether an ambulance arrived or not, we can only hypothesise whether there was some preference given to these call types, and whether at the call taker level, the dispatcher or the responding ambulance crew. Theoretically, all individuals should have access to prehospital EMS at the time and place of need in any emergency situation (20, 21). We know that trauma calls are a leading cause of ambulatory transportation and an operational priority in Africa (6). Nattrass et al (22) suggested that distorted incident addresses provided by callers during the caller-taker process could be a reason for ambulances not reaching scene-location (17, 18). Interestingly, some callers where the ambulance did not arrive, nevertheless found accessing pre-hospital EMS to be satisfactory. Although, the reasons for this were not sought by the study, another study with similar findings suggested that ambulance arrival on scene is not the only determining factor for caller satisfaction (23). An ambulance not arriving on-scene

has a negative effect on accessibility, affecting the ability of a population to seek access from prehospital EMS, as well as their perceptions and experience of the healthcare system. There are many unanswered questions which can only be answered by further research – for example is this high proportion of un-met calls found across sites in Cape Town, or specific to this suburb, language group or time of the year? And is there no routine quality assurance that collects this information for EMS management short of actually asking call takers the outcome of their calls? These findings would have to be considered relative to the reasons for calling an ambulance – perhaps there were an excess of less urgent or non-urgent calls made which were even "appropriately ignored" in an overburdened system?

We found that callers were more often women, as elsewhere considered the care-givers and help seekers in communities (24), and also that most had formal schooling, suggesting their ability to communicate and comprehend to instructions. Yet most callers did not have access to a private vehicle, highlighting the community's need for publicly provided ambulance transport in emergencies, as seen in two other studies conducted at similar sites (1, 12).

Calls were made using mainly personal mobile phones to dial the emergency number, using a range of different emergency numbers. The use of mobile phones has been reported in Ghana; where it was associated with lack of awareness of public emergency numbers; but it is considered an important element in a well-integrated and sustainable emergency dispatch system (1, 25). The 112 and 10177-emergency numbers can be dialled from a mobile phone at no cost, however, the study failed to ascertain whether the callers were concerned of costs involved when phoning for an ambulance, confused by the many numbers, or unaware as to the best number to use. The absence of a single emergency number is known to add difficulties when a caller is anxious and worried in an emergency situation (3), and these findings highlight the need to introduce a single, national emergency service number (3, 25-28). Misperceptions around telephone access and perhaps low awareness of emergency numbers highlights a paucity of community emergency education, and as in several other studies, advocates to developing community awareness programmes to improve access to emergency healthcare (3, 29-31).

Previously described language barriers in SA call-takers in this setting (32), were apparently not perceived by call takers in this study which found that call takers do largely operate in a language that callers could understand, and if not they were rapidly accommodated by another call taker. Penn and Watermeyer (33) also found a low occurrence of language mismatches at the same site, with 76% of calls demonstrating seamless accommodation and management around language mismatches (25). Most callers found call-takers to be friendly and professional; confirming that they are accommodative to the callers they serve.

Ongoing communication with callers is important - most callers would have liked to be informed regarding ambulance status, an international finding backed by several studies (24, 25, 34, 35). We found that medical advice was seldom given by the call takers in this study, as opposed to the practice (and expectation) in many international call centres (24, 34, 35). Most EMSCC call takers have little medical knowledge and training, there are no systems in place to prompt or guide call taker responses or guidance for specific patient scenarios and this is certainly an area for development, as suggested by our data (11). On further analysis of the missing data, it was found that of the 21 cases of no ambulance arrival; a third of the cases an ambulance was dispatched and upon arriving on-scene the ambulance was not required or private transportation was used. In two thirds of cases there was no real evidence to show whether the call was actually cancelled or not, and this would seem to reflect gaps in the emergency medical service communication center collecting system and database.

Strengths and Limitations

This is the first SA study of its kind, exploring emergency caller experiences and perceptions following an emergency call. The study sample is likely representative of many urban low socio-economic urban areas in SA (and Africa) and we believe the findings are likely applicable to other sites. The response and co-operation rate were good, and this can be attributed to the telephone survey occurring shortly after the emergency call was made, and at the caller's convenience (which also allowed good recall of caller's experiences). The survey was conducted by an IsiXhosa speaking researcher (ZB) thereby elucidating good communication with the callers during the telephone survey. It was also made clear through the consent process and third-party survey that there was no link or recriminations to the caller or patient by the research.

A bigger study sample and larger area, as well as linking to patient outcomes would allow for the experiences and perceptions to direct future research. The study explored call-takers from the provincial EMSCC, and many of these calls may have been routed through other call centres, thus caller's answers regarding call-takers may have reflected on the overall process rather than just EMSCC call-takers. Sampling covered all time and staffing shifts, and a larger than calculated sample size was included, so it was likely representative. It is not impossible that excluded callers (largely where the patient died, it was not convenient to call, and those not interested in survey) could have had other experiences and perceptions, but there were adequate numbers to negate this. Finally, it needs to be borne in mind that only those who did successfully call EMS were included in the study, so we cannot comment on those unable to find the correct number or to get through to the call centre.

Conclusion and Recommendations

This study characterises the public's experiences with accessing pre-hospital EMS, which is an under-studied area, but offers a platform for several important unanswered aspects such as how community members call for an ambulance, ambulances not arriving when requested, ambulance availability, information and medical advice sharing by EMS call takers.

The study found a substantial proportion of calls where an ambulance did not arrive following the call to EMS. This is an alarming finding and requires more research as to why. The callers surveyed were largely positive about the call process, and it would seem that the needs of the community are met, although there is room for improvement particularly in addressing the best number to dial in an emergency, better communication about the status and timing of ambulance responses, and provision of medical advice over the phone. Many of these issues could be addressed by call taker training, systems to aid in giving medical advice for specific complaints, and community awareness campaigns. Frequent assessment of caller satisfaction would seem to be a useful tool to develop to aid in assessing ongoing quality assurance of EMS and improving the service based on the needs of the public.

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APPENDIX A: Survey Instrument **(***also translated into Xhosa)*

A. DEMOGRAPHIC CHARACTERISTICS OF THE CALLER

1. What is the gender of the participant?
   - MALE ☐ FEMALE ☐
2. What is the age of the participant?
   - AGE _____
3. What is the level of education of participant?
   - PRIMARY (≤Gr7) ☐ HIGH (≥Gr8) ☐ TERTIARY ☐

4. What do you do for a living?
   - UNEMPLOYED ☐ ELF-EMPLOYED ☐ CASUAL ☐ PERMANENT ☐

5. Was it an adult or a child that required EMS?
   - ADULT ☐ CHILD < 18years old ☐

6. What is your relationship to the person who needed EMS?

SELF ☐ PARENT ☐ SIBLING ☐ CHILD-OF FAMILY ☐ NEIGHBOUR ☐ FRIEND ☐ STRANGER ☐

7. Does the respondent have access to a motor vehicle?
   - NIL ☐ PRIVATE ☐ BLIC ☐ IGHBOUR ☐ FAMILY ☐ FRIEND ☐ OWN-CAR

B. The survey questions will be pertinent to the research question and follows;

1. How did you call for an ambulance?
   - DID YOU PAY FOR CALL ☐ OWN PHONE ☐
   - SOMEONE ELSE PHONE ☐ FREE CALL ☐
2. Why did you have to access the pre-hospital Emergency Medical Service? *Respondent needs to clarify why they required ambulance.*
   - TRAUMA ☐ MEDICAL ☐
   - (SPECIFY_____)
3. Which number did you call to access the ambulance service?
   - 10177 ☐ 147 ☐ 10111 ☐ 107 ☐
   - OTHER_____
4. Did you provide the exact address of the incident, if not describe how you provided the address of incident?
   - EXACT STREET ADDRESS/YES ☐ NEARBY LANDMARK ☐
   - DIRECTIONS ☐ OTHER_____

5. EMS CALL-TAKER:

a. Was call-taker polite, professional, and friendly?
   - YES ☐ NO ☐ PARTIAL ☐
   - SPECIFY_____

b. Did call-taker speak a language you could understand?
   - YES ☐ NO ☐ TRANSLATER ☐
   - TRANSFERRED TO LANG SPEAKER ☐
   - OTHER _____

c. Did the call taker understand your request?
   - YES ☐ NO ☐ PARTIALLY ☐

d. Did they explain when an ambulance would arrive?
   - YES ☐ NO ☐ PARTLY ☐

e. Were you put on hold during the call?
   - YES ☐ NO ☐

f. Did you receive any medical advice or input?
   - YES ☐ NO ☐ PARTLY ☐
   - TRANSFERRED FOR ADVICE ☐

g. Did someone from the call-centre, call you back?
   a. YES ☐ NO ☐
   b. IF YES, SPECIFY _____

h. Any other comment on the call taker? _____

6. Did the ambulance arrive?
   - YES ☐ NO ☐ PHONED-AGAIN ☐

7. Approximately how long did take for an ambulance to arrive, after making the call to the ambulance service?
   - <15MIN ☐ < 30 MIN ☐ < 1HOUR ☐ 1-2 HOURS ☐
     2-4 HOURS ☐ >4 HOURS ☐ UNKNOWN ☐

8. Do you know if it was easy for the ambulance crew to find the address of incident?
   - YES ☐ NO ☐ WITH HELP ☐
   - PHONED FOR DETAILS ☐ UNKNOWN ☐

9. How was your overall experience in accessing pre-hospital EMS?
   - EXCELLENT ☐ GOOD ☐ OK ☐ POOR ☐ BAD ☐

10. Is there any suggestion that you can add in order to improve access to pre-hospital services in your community? _____ (FREE TEXT)

PART C: APPENDICES

1. Health Research Ethics Committee Approval
2. Western Cape Departmental Approval
3. AFJEM Author Information
4. Proposal

Appendix 1: Health Research Ethics Committee

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E53-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 404 7682
Email: [illegible]@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

07 March 2018

HREC REF: 131/2018

Dr P Hodkinson
Emergency Medicine
F51, Old Main Building

Dear Dr Hodkinson

PROJECT TITLE: AN EXPLORATORY SURVEY: EXPERIENCES AND PERCEPTIONS OF COMMUNITY MEMBERS WHO HAVE ACCESSED PRE-HOSPITAL EMERGENCY MEDICAL SERVICE IN LANGA, CAPE TOWN (MPHIL CANDIDATE - MS Z BAM)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

Before formal approval can be granted, please address the following issue/s raised:

1. The proposal argues that as this is a preliminary study, no sample size calculation was undertaken. The researcher will obtain the list of numbers weekly for a month for calls made from the area, and use random sampling to select 12 people to call each week. Altogether the sample size aimed for is 40. A sample size calculation for a cross-sectional study such as this with an unknown proportion (this case good satisfaction) could be calculated. If there are 256 Langa calls per month. Please comment.
2. The questionnaire asks about the experience with the call centre but does not include experiences with the ambulance personnel themselves. In view of the motivation for the study – to enquire into the pre-hospital EMS, it is not clear why questions related to the courtesy of the ambulance personnel, and satisfaction with the way they managed the patient is not probed. Please clarify.
3. We think that this study would benefit from a pilot study to check whether the recruitment strategy works, particularly in view of loaning of cell phones for emergencies, and consequently failure to locate the person who made the call.

Please note that no research may occur without formal written HREC approval.

Please quote the HREC reference number in all your correspondence.

Yours sincerely

signature removed to avoid exposure online

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

HREC 131/2018

Appendix 2: Western Cape Department Approval

Western Cape Government
Health

DIRECTORATE: EMERGENCY MEDICAL SERVICES
ENQUIRIES: Dr Shaheem de Vries
shaheem.devries@pgwc.gov.za
☎: +27 21 508 4523

Attention: Ms Zina Bam

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH – *AN EXPLORATORY SURVEY: EXPERIENCES AND PERCEPTIONS OF COMMUNITY MEMBERS WHO HAVE ACCESSED PRE-HOSPITAL EMERGENCY MEDICAL SERVICE IN LANGA, CAPE TOWN*

Dear Ms Bam,

Your request on the above matter refers

Thank you for the request to conduct research within the Western Cape Government Emergency Medical Services. Your proposal has been evaluated by the Emergency Medicine Division Research Committee and has been recommended for approval by this office.

I am therefore pleased to inform you that such approval is hereby granted.

I wish you well in your endeavor and trust that you will keep this office and its department informed of your findings when these become available. I am so looking forward to the insights that your research will afford us.

Yours sincerely

signature removed to avoid exposure online

Dr Shaheem de Vries
Head: Emergency Medical Services
Western Cape Government Health

Date: 2nd May 2013

WCG Health: EMS – Office of Director, 11 Alexandra Road, Pinelands, 7405
Private Bag X24, Ballville ☎ (+27) 21 508 4523 🖷 (+27) 21 931 8490
www.capegateway.gov.za

Appendix 3: AFJEM Instructions for Authors

AFRICAN JOURNAL OF EMERGENCY MEDICINE

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AUTHOR INFORMATION PACK

https://www.elsevier.com/journals/african-journal-of-emergency-medicine/2211-419X/guide-for-authors

INTRODUCTION

The African Journal of Emergency Medicine (AfJEM, ISSN: 2211-419X) is the official journal of the African Federation for Emergency Medicine. It is an international, peer-reviewed journal aimed in particular at supporting emergency care across Africa. AfJEM publishes original research, reviews, brief reports of scientific investigations, case reports as well as commentary and correspondence related to topics of scientific, ethical, social and economic importance to emergency care in Africa. Articles will be of direct importance to African emergency care, but may have originated from elsewhere in the world.

TYPES OF ARTICLES

Original Article: Original studies of basic or clinical investigations in areas relevant to emergency medicine. Reference to the relevance of the research in a resource poor setting is essential and should be alluded to in the discussion section. References and a structured abstract (see Preparation below) are required. Maximum length: 3,000 words, 5 tables and/or figures, plus the abstract (300 words) and references (max 50). The checklists found on the following websites should be used to structure your manuscript (a copy of the checklist indicating which elements of the reporting format you adhered to, a signed conflict of interest form and Author statement form - see below- should be submitted with your manuscript):

a. For randomised control trials: http://www.consort-statement.org
b. For cohort, case-control, and cross-sectional studies: http://www.strobe-statement.org/
c. All other studies: http://www.equator-network.org/

2. *Review Articles*: Extensive reviews of the literature on a narrow clinical topic. References must include, but need not be limited to, the past 3 years of the literature. A structured abstract is required (see Preparation below). Maximum length: 3,000 words, plus the abstract (max 300 words) and references (max 50). **Please contact the editor in chief before you submit a**

review. The following reporting checklists should be used to structure your manuscript (a copy of the checklist indicating which elements of the reporting format you adhered to, a signed conflict of interest form and Author statement form - see below- should be submitted with your manuscript):

a. A Resourced-tiered review checklist is the standard reporting format for publication in AfJEM:http://www.afjem.com/resource-tiered-checklist.html

b. If your topic does not lean itself towards a resourced tiered review consider alternativereporting checklists for systematic reviews and meta-analyses such as Prisma checklist (http://www.prisma-statement.org) or similar. **Please check with the editor-in-chief before using a checklist other that the resources-tiered checklist.**

3. *Case Reports*: Brief descriptions of a previously undocumented disease process, a unique unreported manifestation or treatment of a known disease process, or unique unreported complications of treatment regimens. Case reports should be structured as follow: Introduction, Case report and Discussion. It should not contain an exhaustive review of the literature. Consider consent for patient identifiable information (download from website). A structured abstract (see Preparation below) is required. Maximum length: 1,000 words, plus abstract (max 150 words) and references (max 10), and 1 table or figure a copy of the checklist indicating which elements of the reporting format you adhered to, a signed conflict of interest form and Author statement form - see belowshould be submitted with your manuscript). Case reports listed for publication after 2015 are published online only and compiled within a virtual issue once a year.

4. *Practical Pearl(upload as Technical note)*: Descriptions of novel approaches to provision of emergency care; and practical "tricks of the trade" describing aspects of emergency medicine management. An abstract is not required (enter: Not required, practical pearl when prompted). Maximum length: 800 words, 5 tables and/or figures and references (max 5). A manuscript template is available at http://www.afjem.com/#author and can be used for submission (a signed conflict of interest form- see below- should be submitted with your manuscript). Note that author details should be included in the manuscript.

5. *Abbreviated paper (previously Brief Research Reports)*: Reports of preliminary data and findings or studies with small numbers demonstrating the need for further investigation. References and a structured abstract (see Preparation below) are required. Maximum length: 1,500 words, plus the abstract (max 300 words) and references (max 10) and 3 tables and/or figures. Checklists described for original research above should be used to structure your manuscript (a copy of the checklist indicating which elements of the reporting format you adhered to, a signed conflict of interest form and Author statement form - see below- should be submitted with your manuscript)

6. *Commentary*: Descriptions of clinical and nonclinical problems and solutions; descriptions of novel approaches to planning, management, or provision of emergency services; and practical " how-to" articles describing aspects of emergency medicine management (includes African country acute care profiles) . A narrative abstract (see Preparation below) is required. Maximum length: 3,000 words, plus the abstract (max 300 words) and references (max 50). A signed conflict of interest form- see below- should be submitted with your manuscript.

7. *Editorials (commissioned and including op-ed*): Authoritative comments or opinions on major current problems of emergency physicians or on controversial matters with significant implications for emergency medicine; or, qualified, thorough analysis and criticism of articles appearing in AfJEM. Maximum length: 1,500 words plus references (max 5). An abstract is not required. A signed conflict of interest form- see below- should be submitted with your manuscript.

8. *Correspondence*: Discussion, observations, opinions, corrections, and comments on topics appearing in AfJEM; very brief reports or other items of interest. Maximum length: 500 words, plus references (max 5). An abstract is not required. Please enter: Not applicable, Correspondence when prompted to enter an abstract. Letters discussing an AfJEM article should be received within 6 weeks of the article's publication. The article must be included in the references. Authors of articles about which letters are received will be given the opportunity to reply, which will not be shared with the letter writer prior to publication. Letters of political or other topics unrelated to the science of medicine, as well as those containing personal criticisms, will not be published. A signed conflict of interest formsee below- should be submitted with your manuscript

9. *Erratum*: Corrections on topics appearing in AfJEM. Maximum length: 300 words, plus references (max 5). An abstract is not required. Please enter: Not applicable, Erratum when prompted to enter an abstract. Letters discussing an AfJEM article should be received within 6 weeks of the article's publication. The article must be included in the references. Authors of articles about which letters are received will be given the opportunity to reply, which will not be shared with the letter writer prior to publication. Letters of political or other topics unrelated to the science of medicine, as well as those containing personal criticisms, will not be published elsewhere including electronically in the same form, in English or in any other language, without the written consent of the copyright-holder. A signed conflict of interest form- see below- should be submitted with your manuscript.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Please submit your article via https://www.evise.com/profile/api/navigate/AFJEM

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

- E-mail address
- Full postal address

All necessary files have been uploaded:

Title page
Cover letter
Manuscript:

- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable) Conflict of Interest Form Supplemental files (where applicable): Author Statement document and relevant reporting checklist
Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including theInternet)
- A competing interests statement is provided, even if the authors have no competing interests todeclare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

Article Structure Ensure that author identifiers are not included in the main manuscript file submitted. Inclusion of an abstract in the manuscript is not required. Consult the guidance and checklists described in Types of Articles above to structure your manuscript correctly. All article types will require the signed conflict of interest form to be submitted as a supplementary file. Original articles, abbreviated papers, case reports and review articles will require the reporting checklist and Author statement form to be submitted as e-component. Where these have not been supplied, the manuscript will be returned to the author.

Subdivision

Divide your article into clearly defined sections as per the guidance given in Types of Articles above. Numbers are not to be used for sections or subsections. Section headings should be in **bold**. Subsection headings should be in italics. Each heading should appear on its own separate line. Subsections in addition to the sections described in Types of Articles above should be used sparingly.

Clinical trial results

In line with the position of the International Committee of Medical Journal Editors, the journal will not consider results posted in the same clinical trials registry in which primary registration resides to be prior publication if the results posted are presented in the form of a brief structured (less than 500 words) abstract or table. However, divulging results in other circumstances (e.g., investors' meetings) is discouraged and may jeopardise consideration of the manuscript. Authors should fully disclose all posting in registries of results of the same or closely related work.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, it should be identified starting with Appendix B, C, etc. Do not use Appendix A. Formulae and equations in appendices should be given separate numbering: Eq. (B.1), Eq. (B.2), etc.; in a subsequent appendix, Eq. (C.1) and so on. Similarly for tables and figures: Table B.1; Fig. B.1, etc. All appendices will be considered online material only.

Appendix 4: Research Proposal

An exploratory survey: experiences and perceptions of community members who have accessed pre-hospital Emergency Medical Service in Langa, Cape Town

STUDENT: Zina Bam

BTech in Emergency Medical Care

BMXZIN001

SUPERVISOR: Dr Peter Hodkinson

University of Cape Town

Division of Emergency medicine

This study is in partial fulfilment of the MPhil in Emergency Medicine degree

Declaration:

I, Zina Bam, hereby declare that the work contained in this assignment is my original work and that I have not previously submitted it, in its entirety or in part, at any university for degree purposes.

signature removed to avoid exposure online

Signature: Date:

18/03 /2018

Background (Literature Review)

Access by definition is an entry (1) and in the document, access is applied in a past tense; where the study seeks to explore experiences of community members that have accessed pre-hospital Emergency Medical Service (EMS). In all communities, accessing medical care for emergency or life-threatening conditions is vital and often the first point of contact in the health system (2) and yet the majority of the world's population does not have access to formal pre-hospital care (3). Health care system design and the needs of the community are considered to play a role in whether access is achieved. The achievable standard of community health is highly influenced by the healthcare design; this puts emphasis on service quality improvement, for example, timely response to acute illness and injury (4). Improving access to services for existing, new and previously disadvantaged groups, is said to have a direct effect to the constitutional principle of service delivery that is impartial, fair, equitable and without bias, as endorsed by the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996, section 195, 1, d) (5). The importance of access to healthcare is further reiterated in the Patient's Bill of Rights formulated in 1999 by the Government of South Africa (6). The right to access healthcare services includes receiving timely emergency care, treatment, and rehabilitation.

The characteristics of health care services and community satisfaction forms the framework for the study of access (7). Access is not measured only by the availability of resources and services but also by community satisfaction. Community satisfaction can denote the attitudes as experienced by the users of the medical care. It is probably best assessed in the perspective of a specific, recent, and identifiable episode of medical care seeking (7). This brings about the need for the respective EMS organisations and hospitals to be increasingly aware of how the community perceives their services. Community experiences are the essence of organisational success with the understanding that if consumers perceive the brand according to its essential identity then the organisation's aim has carried across to their consumers (8).

Pre-hospital care is made up of accessibility, rapid transportation, and dispatching of emergency care trained personnel (3). The pre-hospital EMS functions primarily to provide access to emergency care, and during transportation of the patient, it gives care until arrival to a receiving health care facility (2). The public EMS services are usually under-resourced, understaffed and are equipped poorly in order to provide a service in their respective areas (9). This can be brought about the unequal quality of EMS provided in South Africa to which can be further brought about by the effect of Apartheid practices, characterised by social

inequalities and a great lack of resources, particularly in marginalised communities (5). The issue of racial diversity in Cape Town also poses a great challenge to the EMS system as it has a direct bearing on cultural and language barriers that impact on service delivery. An ambulance can be the first line of contact for the majority of people, in accessing health care, and is often the only means of getting to hospital. This can be due to lack of access to a vehicle, the inability to pay for transportation to hospital, or absence of adequate roads as in informal settlements (2).

Langa is the oldest township in Cape Town and signifies an example of an African struggle to become an integral part of City of Cape Town (10). Langa is an urban township, located just outside the city of Cape Town, with the population estimation of 50 000 within a population density of about 6198 per square km (11). Langa Township is an area made up of infamous singles quarters, hostels for migrant workers of the apartheid era (the majority of these houses have turned into family units), squatter camps, a vast taxi rank, community centers, and formal dwellings. Escalating levels of crime and violence have increased the workload of public and private sector trauma services (11). Langa is representative of many urban low socio-economic areas where access to EMS may be a problem.

Motivation

Access to quality emergency services is an essential component of health services and a basic human right (4). The existing indicators of access to healthcare lack a reflection of the comprehensive picture of experiences and perceptions by those who have accessed health care (12). Socio-economic status of vulnerable communities can be influential in creating barriers to accessing pre-hospital EMS. As such, this warrants for an in-depth research especially about the actual experiences and perceptions by the end-users of pre-hospital EMS. Emergency medical services are in high demand in disadvantaged communities this can be attributed to namely, high levels of violence and crime that can lead to traumatic injuries (11). The identification of barriers in a specific area will lead to better understanding of pre-hospital EMS in relation to the community it serves (2). Currently, there is a paucity of available evidence regarding community experiences or perceptions of pre-hospital EMS especially in the South African context; therefore, this study is aimed at exploring additional baseline data for pre-hospital EMS research.

Research Question

What are the experiences and perceptions of Langa community members, Cape Town, in accessing pre-hospital EMS?

Specific Aims

The aim of the study is to explore the experiences and perceptions in accessing pre-hospital EMS by Langa community members.

Objectives

- To identify and survey a representative cohort of the community who have recently utilised pre-hospital EMS services
- To describe how the community of Langa have accessed pre-hospital EMS
- To determine factors involved in accessing pre-hospital EMS as experienced and perceived by community of Langa in Cape Town
- To determine overall satisfaction levels of those who have recently accessed EMS

Rationale

The findings of the study can play a role in giving direction to policy planners, especially in the management system of Western Cape Provincial EMS. This will enable the management of Western Cape Provincial EMS to make informed decisions when dealing with policy guidelines and operational measures. To be more specific and precise, pre-hospital EMS providers shall have a better insight into dynamics and challenges on the ground. The findings of the study will, therefore, reflect and highlight key areas that need to be addressed to improve pre-hospital EMS access. And lastly, this study is to also stimulate further research in a broader capacity of pre-hospital EMS. The enhancements of a health care system's responsiveness to people's expectations result in improved utilisation of services and better patient outcomes (2).

Method

Study design

For the purpose of this research, an exploratory telephonic survey design will be utilised, to describe the existing experience of Langa community. An exploratory research is utilised to gain an understanding of how Langa community members have experienced and perceived accessing pre-hospital EMS, at the specified duration of the study. A survey design enables for a quantitative description of trends in the experiences of a population by studying a sample of that population. (13)

Study population and sampling

The study will enroll Langa community members who have recently called and used EMS for an ambulance. The study will survey the callers in order to explore experiences and

perceptions of those who have accessed pre-hospital EMS (in the majority of cases, the caller may not be the patient requiring EMS services). Western Cape Provincial EMS Communication Centre, through their electronic database of all EMS calls, is able to provide an extract of their database for calls from Langa for any specified dates. This will provide the researcher with a list of potential candidate's telephone numbers to survey soon after the call to EMS. This will be done with permission granted by the Western Cape Provincial EMS management, upon approval of research ethics. A non-random purposive sampling will be conducted from Western Cape Provincial EMS Communication Centre telephone numbers database, where a specific population is identified and only its members will be included in study survey (14). This will be facilitated by the stipulated inclusion and exclusion criteria. Any participants that meet the above-mentioned criteria will be contacted telephonically by the principal investigator (PI) (ZB) within a week of the call to Western Cape provincial EMS Communication Centre.

Initial participant recruitment will occur for one month. It is estimated that about 256 primary calls (EMS database July 2017) from Langa are transferred by EMS every month, of which we estimate 150 are likely eligible. The researcher will obtain regular database updates with the pertinent information from the Western Cape Provincial EMS Communication Centre. This will occur on a weekly basis, where the researcher will go and collect the call log for the week. The researcher will then sort the calls based on the inclusion and exclusion criteria. The calls that meet the study criteria will each be assigned a number. A number one will be assigned for the first phone number on the list and a number two will be assigned to the second phone number on the list and so on, up until the last number for the last phone number (e.g. 1 for phone number 083 123…. and 45 for phone number 061 345…..). A sample of these assigned calls will then be randomly chosen (with use of Microsoft Excel), such that 12 randomly selected callers will be recruited each week to take part in the study. Over the study period, with 12 callers a week, we will recruit well over 40 eligible callers, also allowing for those who are either uncontactable or decline to participate. The eligible participants will be contacted telephonically by the researcher to briefly explain the research and for the verbal agreement; if they agree to take part in the telephone survey, the researcher will continue with the survey (or agree to a mutually convenient time for the telephonic survey).

Although there is no clear outcome of the study to conduct a power calculation for this type of research, we will use the hypothesis that 50% of callers will be satisfied with the call to give an indication of sample size. In cases of exploratory research, a sample size of 10-30 is considered to be sufficient (13). The OpenEpi sample size calculator provides a formula for a

descriptive study. This indicates that to achieve a 95% confidence interval, and a confidence limit of 15% around an expected proportion of 50% (with the expectation that 50% will be satisfied with the call as the main outcome), will require a sample size of 37. This will provide reasonable assurance that between 35% - 65% of the sample would give the answer revealed by the study (15). A sample size of 40 participants (which is around 26% of the total eligible population) would thus seem to be meaningful and feasible for this research study and incorporate these calculations. After one month, a preliminary analysis will be performed, but the intention is to continue recruitment until 40 interviews have been conducted.

Inclusion criteria for respondents to be included in the study population will be:

- Respondents that verbally agree to take part in the study via telephone
- Adults ≥ 18 years old during the time of the study
- Respondents will be included provided that they are able to understand and speak English or Xhosa
- Respondents that requested an ambulance in Langa while they were visiting or driving through Langa
- Respondents that will be available for the survey within 2 weeks of accessing pre-hospital EMS.

Exclusion criteria will be respondents that will be excluded from the study population and are as follows:

- Respondents that are under the age of 18 years old (due to ethical consideration for children being the vulnerable group)
- Interhospital transfer ambulatory calls
- Hoax Calls
- Declaration of death calls
- Researcher is not able to talk to the caller (insurmountable language barrier).
- The inability to locate the person who made the emergency call

A pilot study will be conducted prior to data collection; this is to ensure that the recruitment strategy works and that the researcher will provide consistency with conducting survey. This will also allow the survey instrument to be tested prior to data collection in yielding responses that are sought by the research study. The pilot respondents will be calls from a week prior to data collection, on a purposive sample of 5 respondents and the pilot study results will not be included in the analysis.

Study setting

The study will be conducted through a structured telephone survey. The telephone survey will be conducted by the researcher in English or Xhosa as preferred by the respondents. The telephone survey will have prescribed questions which will also be available in Xhosa (Appendix 2). This is done in order to provide consistency of the telephone survey. Any unanswered calls will be called again up to three times on different times of the day and then they will be abandoned. If some telephone numbers do not lead directly to the person that made the emergency call, these cases will be excluded from the study; and the study will continue until we reach our estimated sample size. The telephone survey will take approximately 20 minutes.

At the beginning of the telephone survey, the respondent will be informed on what the study is about, that the respondent's number was selected because they met the criteria for participating in the study, and that the respondent does not need to state their name throughout the telephone survey. The respondents will be asked for verbal consent to take part in the telephone survey with the assurance of no penalty involvement for not participating. The respondents' continuation with the telephone survey will be taken as agreeing to take part in a telephone survey. Respondents will be informed that all answers provided would be kept confidential and would be utilised for research purposes only. Following the telephone survey, the researcher will assign a number of the survey transcripts. This is done in order to facilitate anonymity and confidentiality of the respondents.

Instrument

This study instrument is a structured prescribed telephone survey mostly with close-ended questions and minor open-ended questions (included in Appendix 2). This instrument allows for repeated data collection and to be utilised in exploratory research where the primary researcher obtains answers from the research. The respondents will be reached telephonically, promoting anonymity since telephone survey is an ideal instrument for obtaining respondents experiences (7). These ties into the research aim of the survey which is to retrieve a genuine insight into the respondent's experience in accessing prehospital EMS. The telephone survey is customised for this particular study in order to answer the research question. The first part of the telephone survey will include simple demographics of the research respondents. The second part of the survey will be questions sought to answer the research question. All questions will be read from the standardised prescribed telephone survey questions. Respondent's responses will be handwritten in by the researcher on the

prescribed telephone survey questions form. The survey will be conducted in English or Xhosa as preferred by the respondents. The primary researcher will be able to explain in Xhosa if the need arises. The prescribed telephone survey questions are included in appendix 2. The standardised introduction and consent (as well as the survey questions) will prior to the start of the study be translated into Xhosa and translated back by someone else to check the meaning.

Measurements

Data management

The respondent's survey transcripts will be coded by numbers and not by names in order to maintain confidentiality. The numbering on the survey transcripts will be according to the sequence of when the survey was conducted. The data collected with survey transcripts will be entered into a database and stored in electronic format within password-protected files that only the researcher and supervisor will have access to. The transcripts will be stored in a locked office by the primary researcher, and then at UCT offices for 3 years after the study has been concluded. This will ensure privacy and anonymity of the participants. Password protected data will be backed up on an external USB storage and an external hard drive which will be accessible to the researcher and upon the request of the supervisor.

Statistical Considerations, incl. Data Analysis Plan

Data analyses will be done with the use of standard descriptive statistical analyses, primarily; this is due to the purpose that descriptive statistics enable the researcher to meaningfully describe the distribution of scores or measurements. Descriptive analyses will be used to analyse the characteristics of the study sample. Responses from the survey will be tabulated and added into the database, with the use of Statistical Package for the Social Sciences (SPSS) for Windows software, available from University of Cape Town (UCT). The SPSS will be used to perform straight tabulations, cross tabulations, statistical significance tests, and nonparametric analyses of how survey responses relate to demographic, behavioural and research question characteristics. The open-ended questions will be analysed into emerging themes that will be put into coding categories onto excel sheet. The pattern, trends and main issues arising will be analysed with the use of descriptive text with the inclusion of narratives directly from the respondents.

Ethical consideration

Permission will be sought from the Human Research Ethics Committee at UCT to conduct this study and following this from the Director of Western Cape EMS. The respondents will be clearly informed of the purpose of the study, as well as of the procedures involved; telephonically. Confidentiality will be of high priority as the respondents will be assured that their identities, as well as anything that will be revealed in the survey, will be kept anonymous. Only the researcher and the supervisor will have access to the raw data and any personal information. Anyone who feels that they will not be willing to comply with the research terms will be reserved the right to withdraw from the study at any stage. The respondents will be informed of possible risk and benefits pertaining to involvement in this study. Benefits of taking part in the study include an opportunity for the respondents to raise concerns regarding accessing pre-hospital EMS to them as community members, as well as a chance to make suggestions for improving the service.

Study Strength and limitation

The research population is limited to one community, therefore providing experiences from just one community and making the research findings not easily generalizable, yet the population size and the demographics of community members of Langa are likely to be representative of many similar townships in urban areas of South Africa. The researcher is from Langa which a potential for bias can be, this will be limited by the use of telephone survey with prescribed questions that will not allow the researcher to deviate away from and with the stipulated limited time of the survey.

One of the advantages of quantitative studies is the ability to make use of small groups of people to make inferences about larger groups that would have been expensive to study (16). The telephone survey will be conducted after the respondents have accessed the service: some participants would have forgotten certain things; to mitigate this; the survey will be conducted within a week from when they called the Western Cape Provincial EMS communication center. The non-probability sampling leads to sampling error that is unknown. This will be limited in that in cases of exploratory research, a sample size of 0-30 is considered to be sufficient (13)

Telephone surveys allow the researcher to deal directly with the individual who phoned in. A telephone survey makes it easier for respondents to refuse someone over the phone. This will be dealt with by informing the respondent what the research is about and what role the respondent can play in the research. A standardised introduction will be mentioned to each and every individual (included in Appendix 1). The possibility of response bias, where only

the number of respondents that took part in the survey is calculated and those that declined is not calculated in the research; will be eliminated by measuring the co-operation rate. The calculation of co-operation rate is an addition of a total number of completed and refused surveys. The total completion will be divided by combined completion and refusal. The researcher will have a call sheet (included in Appendix 3), a means of recording information about the status of each telephone number; this will assist in ensuring that each number is called back an adequate number of times (3 times); if there is no answer, maximising validity.

Data dissemination plan

The findings of the investigation of the research will be compiled into a document and copies of these findings will be distributed to the tertiary institution currently attended by the primary researcher namely UCT, as well as the Western Cape EMS organisation. The results obtained from this study will be shared with the management of the pre-hospital EMS in such ways as to protect the identities and the welfare of the respondents, as well as dissemination to UCT EM Division and publication in an appropriate peer-reviewed journal.

Project timeline

2017 -2018	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Ethics approval	**X**	**X**									
Obtaining permission from Director of Western Cape EMS			**X**								
Approval of survey tool		**X**	**X**								
Pilot Study			**X**								
Data Collection				**X**	**X**						
Data Analysis						**X**	**X**				
Compilation of Final Report							**X**	**X**	**X**		
Submission										**X**	

Budget				
FEB 2018 – NOV 2018				
Item	**Description**	**Unit cost**	**N^{o} of Units**	**Total cost**
Consumables				
1. materials and supplies	paper	R50 per ream	2	R100
2. printing	Reproduction for interview paper and reports	R0.50 /page	1000	R500
Communication				
1. Cell phone	Phone calls to participants	R1.50/min	1800 min	R2 700
TOTAL				**R 3 300**

The researcher is in a process of looking for funding and possible sources of funding. If there is no availability of possible funders, the researcher will able to fund the research.

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Appendices to Proposal

1. Appendix 1 Telephone Survey Introduction
2. Appendix 2 Survey Tool
3. Appendix 3 Call Sheet Log

Appendix 1: Telephone Survey Introduction

(also to be translated into Xhosa)

My name is Zina Bam. I am a student in Emergency Medicine at the University of Cape Town. I am doing research to find out the experiences of community members who have called for an ambulance service in Langa, Cape Town. Your number was accessed from Western Cape Provincial EMS Communication Center when you called in for an ambulance service recently and we would like to talk to you briefly about that call.

The purpose of the study is to find how it was for you (caller) in getting hold of an ambulance when you called in (accessing pre-hospital EMS)

Is this a convenient (suitable) time to talk to you?

1 – Yes, continue

2 – No go to Better time

The survey would last approximately 20 minutes and can be arranged for a time convenient (suitable) to your schedule (you). Is now ok or is there another better time we could contact you (by phone)?

1 – Yes schedule appointment

2- No Thank you for your time

Taking part in this survey is entirely out of your own will. You may choose not to answer any of the interview questions you do not wish to answer and may stop the interview at any time. All the answers you provide will be kept anonymous and in no way linked to you or the patient or ambulance crew involved.

This study has been approved by the Human Research Ethics Committee at UCT. Should you have any comments or concerns resulting from your participation in this study, I can provide the phone number of Ethics committee.

Are you ready to continue?

1 – Yes go to begin the survey

2 - No go to better time 3 – Wants more info go into details

Details

The purpose of the study is to find how it was for you (caller) in getting hold of an ambulance when you called in (accessing pre-hospital EMS). The information collected from the survey will be shared with the management of the pre-hospital EMS in such ways as to not mention who the respondents are and the welfare of the respondents, as well as the UCT EM Division. Individual respondents will not be identified by name, address or patient details.

Are you ready to continue?

1- Yes go to begin the survey

2 – No go to better time

Begin survey

I will begin the survey now.

Appendix 2: Survey Tool (also to be translated into Xhosa)

A. **DEMOGRAPHIC CHARACTERISTICS OF THE CALLER**

1. What is the gender of the participant?
   - MALE ☐ FEMALE ☐
2. What is the age of the participant?
   - AGE _____
3. What is the level of education of participant?
   - PRIMARY (≤Gr7) ☐ HIGH (≥Gr8) ☐ TERTIARY ☐
4. What do you do for a living?
   - UNEMPLOYED SELF-EMPLOYED ☐ CASUAL ☐
     PERMANENT ☐
5. Was it an adult or a child that required EMS?
   - ADULT ☐ CHILD < 18years old ☐
6. What is your relationship to the person who needed EMS?

SELF ☐ PARENT ☐ SIBLING ☐ CHILD-OF FAMILY ☐
NEIGHBOUR ☐ FRIEND ☐ STRANGER ☐

7. Does the respondent have access to a motor vehicle?
   - NIL ☐ PRIVATE/HIRE ☐ PUBLIC ☐ NEIGHBOUR ☐
     FAMILY ☐ FRIEND ☐ OWN-CAR ☐

B. The survey questions will be pertinent to the research question and follows;

6. How did you call for an ambulance?
   - DID YOU PAY FOR CALL ☐ OWN PHONE ☐
   - SOMEONE ELSE PHONE ☐ FREE CALL ☐
7. Why did you have to access the pre-hospital Emergency Medical Service? *Respondent needs to clarify why they required ambulance.*
   - TRAUMA ☐ MEDICAL ☐
   - (SPECIFY_____)
8. Which number did you call to access the ambulance service?
   - 10177 ☐ 147 ☐ 10111 ☐ 107 ☐
     - OTHER_____
9. Did you provide the exact address of the incident, if not describe how you provided the address of incident?
   - EXACT STREET ADDRESS/YES ☐ NEARBY LANDMARK ☐
   - DIRECTIONS ☐ OTHER_____

10. EMS CALL-TAKER:

i. Was call-taker polite, professional, and friendly?
   - YES NO PARTIAL
   - SPECIFY_____

j. Did call-taker speak a language you could understand?
   - YES NO TRANSLATER
   - TRANSFERRED TO LANG SPEAKER
   - OTHER _____

k. Did the call taker understand your request?
   - YES NO PARTIALLY

l. Did they explain when an ambulance would arrive?
   - YES NO PARTLY

m. Were you put on hold during the call?
   - YES NO

n. Did you receive any medical advice or input?
   - YES NO PARTLY
   - TRANSFERRED FOR ADVICE

o. Did someone from the call-centre, call you back?
   a. YES NO
   b. IF YES, SPECIFY _____

p. Any other comment on the call taker? _____

11. Did the ambulance arrive?
   - YES NO PHONED-AGAIN

12. Approximately how long did take for an ambulance to arrive, after making the call to the ambulance service?
   - <15MIN < 30 MIN < 1HOUR -2 HOURS
     2-4 HOURS >4 HOURS UNKNOWN

13. Do you know if it was easy for the ambulance crew to find the address of incident?
   - YES NO WITH HELP
   - PHON OR DETA UNKNOWN

14. How was your overall experience in accessing pre-hospital EMS?
   - EXCELLENT GOOD OK POOR BAD

15. Is there any suggestion that you can add in order to improve access to pre-hospital services in your community?

    _____ (FREE TEXT)

Appendix 3: Call Sheet Log

Telephone number: ……..

Questionnaire number: …….

Contact attempts: ……

Date: ……..

Time: ……

Disposition: …….

Notes:

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Disposition

1. Completed

2. Refusal

3. Non-working number