Exploration of competency requirements and current training models in remote medical emergency response in the oil and gas industry of Nigeria: a mixed method study.

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EXPLORATION OF COMPETENCY REQUIREMENTS AND CURRENT TRAINING MODELS IN REMOTE MEDICAL EMERGENCY RESPONSE IN THE OIL AND GAS INDUSTRY OF NIGERIA: A MIXED METHOD STUDY

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[MSc (Occupational Health), PgCert (Research Methods)]

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ABSTRACT

Background: Medical Emergency Response (MER) in remote work locations such as the Oil and Gas (O&G) industry industry might encounter challenges with potential delay in response time and negative consequences.

Aims: To explore current practices in remote MER in the O&G industry of Nigeria in order to identify the related training needs of Remote Healthcare Practitioners (RHCPs).

Objectives: To: (i) evaluate evidence of best practice in, and related global benchmark indicators for, MER provision in the worldwide literature; (ii) evaluate the current structure, coverage and capability of remote MER provision in the O&G industry of Nigeria; (iii) evaluate the effectiveness of current practices in remote MER in the oil industry of Nigeria against global benchmark indicators with respect to key outcomes; (iv) achieve a consensus on MER – related competencies of RHCPs, and (v) identify related training needs.

Methods: A mixed method approach was used in realising the above aims and objectives with the research conducted in three inter-related stages.

Stage 1: Systematic Review of the Literature - A Joanna Briggs Institute (JBI) systematic review was conducted to critically appraise the global evidence on MER in remote work locations.

Stage 2: Delphi Study - Outcomes from Stage 1 informed the development of the statements on MER administered to 52 participants as a means of achieving consensus on the training requirements of RHCPs. The responses were analyzed using descriptive statistics with textual analysis of the comments. Statements with 70% consensus were extracted from responses that selected 'agree' and 'strongly agree'.

Stage 3: Exploratory Study- Following the consensus on the MER-related competency requirements that was derived from Stage 2, the integration and application of the identified competencies into the present training programs in remote healthcare practice was explored with a team of discussants from the

American Heart Association training providers of Nigeria using focus group methodology.

Findings – While there is no universally accepted guidance document on training requirement for RHCPs in high risk industries, available evidence differs in content, derivation method, application and evaluation. The assorted nature of medical emergencies in the O&G industry requires a broad range of relevant competencies to diagnose, initiate treatment and stabilize trauma and acutely ill personnel.

Further findings showed: the absence of regional context in the training content of RHCPs; learning outcomes of present RHCP courses are designed for team response as against the reality of lone practice evident in remote locations, and as the time demand is high for RHCPs, different levels of flexible training format is more suitable and efficient. Content of primary trainings obtained by RHCPs should be adept in remote healthcare practice, telemedicine, post-traumatic stress disorder and Emergency Medical Training (EMT).

Conclusion – Remote and hazardous occupational environments require skilled RHCPs to achieve effectual Medical Emergency response (MER). Efficient MERs will save the lives of a highly prized workforce and sustain productivity. Competence development of RHCPs should leverage on the outcomes of this research as a framework for the training of RHCPs.

KEYWORDS

Remote, medical emergency response, medic, offshore, Oil and Gas (O&G), competencies, medevac, telemedicine, injury, illness, remote healthcare, guidance, protocol and policy.

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I also wish to acknowledge the timely intervention and advice of Mr Nicholas Dillon in facilitating the delivery of the Delphi phase of this thesis and also Mr Abraham Olokor for securing the involvement of the American Heart Association training providers of Nigeria in the focus group discussion phase.

Finally but certainly not the least, I wish to thank and acknowledge the sterling support, understanding and encouragement of my family, Rachael Osakwe, Zino Osakwe, Kome Osakwe, Oreva Osakwe and Maro Osakwe, without which this thesis would not have been possible.

DEDICATION

I dedicate this thesis in memory of my father (Samson Adakporia Osakwe). He was inspirational and fundamental to my resilience and 'can-do mind-set' in accomplishing tasks and projects. His academic affectations nutured my craving for a Doctor of Philosophy and will be profoundly glad to see the completion of this doctoral thesis.

EXTERNAL OUTPUT

The doctoral research has resulted in the following output:

Published peer reviewed papers

Osakwe KA[1], Cooper K, Stewart D, Wainwright CL, Klein S. Textual synthesis of policies and guidance statements for remote healthcare practitioners on managing medical emergencies in the O&G industry: a systematic review protocol. 2017, The JBI Database of Systematic Reviews and Implementation Rep.2017 Aug;15(8):1987-1990.

In-progress for publication

(1). Systematic Review on Policies and Guidance Statements for Remote Healthcare Practitioners on Managing Medical Emergencies in the Oil and Gas industry.
(2). Developing consensus on management of Medical Emergency Response in the Oil and Gas industry of Nigeria - A Delphi study
(3). Training and Competency Requirements for Remote Healthcare Practitioners in the Oil and Gas industry of Nigeria: An exploratory study

ABBREVIATIONS

ACLS - Advance Cardiac Life Support

BLS – Basic Life Support

E&P – Exploration and Production

EMT – Emergency Medical Training

FPSO – Floatation and Production Storage and Offloading

FSO – Floating, Storage and Offloading

HSE – Health and Safety Executive

IOGP – International Oil & Gas Producers

IPIECA – International Petroleum Industry Environmental Conservation Association

IRHC – Institute of Remote Health Care

JBI – Joanna Briggs Institute

KC – Kay Cooper

KO – Kennedy Osakwe

MER – Medical Emergency Response

O&G – Oil and Gas

PDO – Petroleum Development Oman

PPE – Personal Protective Equipment

PTSD – Post-traumatic Stress Disorder

RHCP – Remote Health Care Practitioner

RL – Remote Location

TLS – Trauma Life Support

UK – United Kingdom

UKOOA – United Kingdom Offshore Operators Association

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Chapter 1

1.1 Background and Rationale

Worldwide, the Oil and Gas (O&G) industry with its allied maritime industries are significant contributors to global commerce and are predominantly located in remote (difficult and isolated) terrain.[1, 2, 3] Such terrains include the: remote Sakhalin of Russia; Gulf of Mexico; Niger Delta region of Nigeria;[1] North Sea of United Kingdom (UK);[2] Gulf of Guinea in West Africa;[1] desert fields in the Middle East, and similar remotely operated industries across the world.[1] The pursuit for Oil and Gas in these scenarios has made workers to be periodic residents in these terrains with significant operational exposures and emergencies.[2] High-risk activities coupled with remoteness makes a perfect recipe for medical emergencies and difficult response,[1,2] hence the anecdotal inference that medical emergency in the O&G industry is a regular occurrence.[3]

Common causal denominators of medical emergencies in these situations include: incidents and accidents from hazardous operations; acute complications and exacerbation of pre-existing health conditions; toxic workplace exposures; localized crisis, and trauma from volatile operating regions.[1] The collateral impacts on the health of personnel often results in life threatening conditions necessitating medical emergency response (MER).[1,2,3] Besides, the challenges posed by the remoteness and inclement weather makes access difficult and MER expensive.[2] Additionally, the competence of the responders and materials for response remains crucial and has consistently determined the outcome of emergency response in such terrain.[2,3] However, there exists a gap in the availability of a framework in the training of remote healthcare workers. Relatedly, medical evacuation has become a commonplace occurrence in the O&G industry with increasing complexities for trans-boundary international evacuations (Figure 1.1).[3]

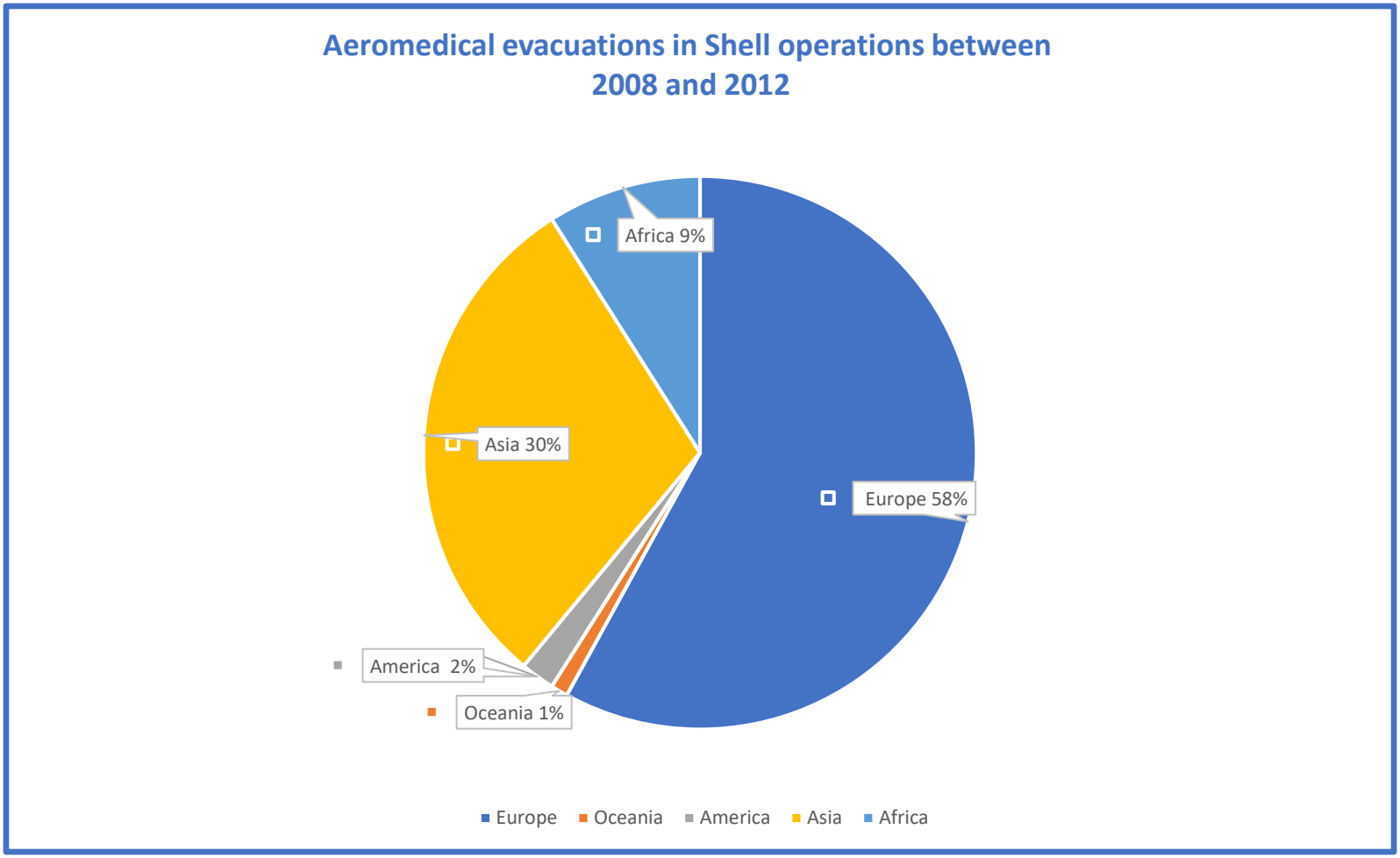


Figure 1.1: Percentage distribution of 130 aeromedical evacuations in Shell operations between 2008 and 2012

(Toner S, Klein S, William H et al., 2017)[3]

Although medical evacuations by air transport are more frequent in Europe (Figure 1.1), the total number of medical evacuations in other regions like Africa, Asia and Oceania may have been under-reported because of a paucity of aviation facilities with more reliance on evacuation by sea using boats and ships. Like the global scenery, the O&G industry of Nigeria has parallel semblance in its remoteness, emergencies and response. It is the main artery of the nation's economy, nestled in the Niger Delta region of Nigeria and spans from a largely swampy coastal terrain to a large offshore water body known as the Atlantic Ocean.[4] The Niger Delta region of Nigeria best typifies the term 'Remote' locations as it is characterised by installations that are a significant distance from mainland onshore (Table 1.1) and is located among a mix of ecological zones, enmeshed in forested swamp delta riverine tributaries, mangroves and the shallow, deep and ultra-deep offshore areas of the Atlantic Ocean (also called the 'Gulf of Guinea').[4] Despite this backdrop, the industrial nexus of the Nigeria O&G infrastructure lies in the Niger Delta region with an estimated workforce of over 15,000 including direct employees, contract personnel and sub-contractors.[1, 4, 5]

The region is operationally divided into 'shallow offshore', 'deep offshore' and 'ultra-deep offshore'.[8] The shallow offshore operations lie in the area with a depth of less than 300m and has the greatest density of O&G facilities (Figure 1.2), followed by deep offshore areas lying in water depths from 300m to less than 1,500 metre's and the ultra-deep offshore lying in water at depths of 1,500 metres[8] or more. The ultra-deep offshore region has fewer O&G facilities because of the sea depth and associated sea waves and inclement weather.[8] The categories of the industries operating in this remote terrain, and the activities they undertake are broad (Table 1.2). It is noteworthy that a parallel exists between the remote terrain of operation in the O&G industry (Figure 1.3) and other sectors, such as the military, mining, maritime and agricultural industries[1]. These activities have inherent hazards and risks that have the potential to expose personnel to occupational illnesses and injuries which, depending on the severity, could result in medical emergencies.[10, 11]

Table 1.1: Characterisation of Offshore Facilities with Remote Access in Nigeria

Serial No.	Facility	Operator	Terrain	Distance from Nearest Town with Specialist Care	Water Depth	Personnel On Board (POB)
1	Offon Platform[12]	Total E&P Nigeria	Shallow Offshore, Atlantic Ocean, multiple Platforms	65 km from Port Harcourt	40 m	124
2	USAN FPSO[13]	Total E&P Nigeria	Deep Offshore, Multiple Offshore Platforms and Risers	100 km from Port Harcourt	750 m to 850 m	240
3	Erha FPSO[14]	Esso Exploration and Production Nigeria (EEPNL)	Deep Offshore, FPSO	97 km from Port Harcourt	1000 m to 1200 m	100
4	Sea Eagle[15]	Shell Nigeria	Deep Offshore, FPSO	90 km from Warri	23.2 m	240
5	Bonga[16]	Shell Nigeria	Deep Offshore, FPSO	120 km from Lagos	1000 m to 1125 m	70
6	Agbami[17]	Chevron	Ultra-Deep offshore FPSO	5178 km from Lagos	4800 m	100
7	Egina[18]	Total Upstream Nigeria	Ultra - Deep, FPSO; Oil Offloading terminal	200 km from Port Harcourt	1400 m to 1750 m Ultra-Deep	242

8	Aje/Front Puffin FPSO[19]	Yinka Folawiyo Petroleum [YFP]	FPSO	24 km Offshore Lagos	914 m	NA
9	Amenam-Kpono[20]	ELF petroleum	Floating, Storage and Offloading (FSO)Barge	30 km off the eastern coast	30 m	NA
11	Armada Perkasa FPSO[21]	Afren	Shallow offshore	12 km offshore Nigeria	14 m	NA
12	Okwori[22]	Addax	FPSO	90 km from Port Harcourt	140 m	NA
13	Akpo[23]	Total E&P Nigeria	Deep Offshore, FPSO; Oil Offloading terminal	250 km from Port Harcourt	1325 m	240
14	Armada Perdana[23]	Erin Energy	Deep offshore, FPSO	75 km from the eastern coast	200-500 m	87
15	Ukpokiti[23]	Express/ Sheba	Offshore - FPSO	Between 50 km and 75 km from the coast	NA	NA
16	Abo[23]	NAE	Offshore - FPSO			
17	Oyo[23]	Allied/AGIP	Offshore - FPSO			
18	Pennington[23]	Chevron	Offshore - FPSO Offshore - FPSO			
19	Obe[23]	Cavendish				
20	Antan[23]	Addax				

21	Okono[23]	NPDC/AENR				
22	Okoro[23]	AMNI				
23	Odudu/ Amenam[23]	TEPNG	Offshore – FSO			
24	IMA[23]	AMNI				
25	YOHO[23]	AMNI				
26	EBOK[23]	ORIENTAL				
27	Tulja[23]	Sterling		>90 km from Warri		
28	Brittania-U[23]	Brittania-U				
29	Offshore Platforms[24]	EXXON MOBIL	Over 90 Offshore Platforms	>15 km from Eket		

Source: Adapted from https://www.offshore-technology.com/projects, https://www.ship-technology.com/projects

(accessed on January 16th, 2019)

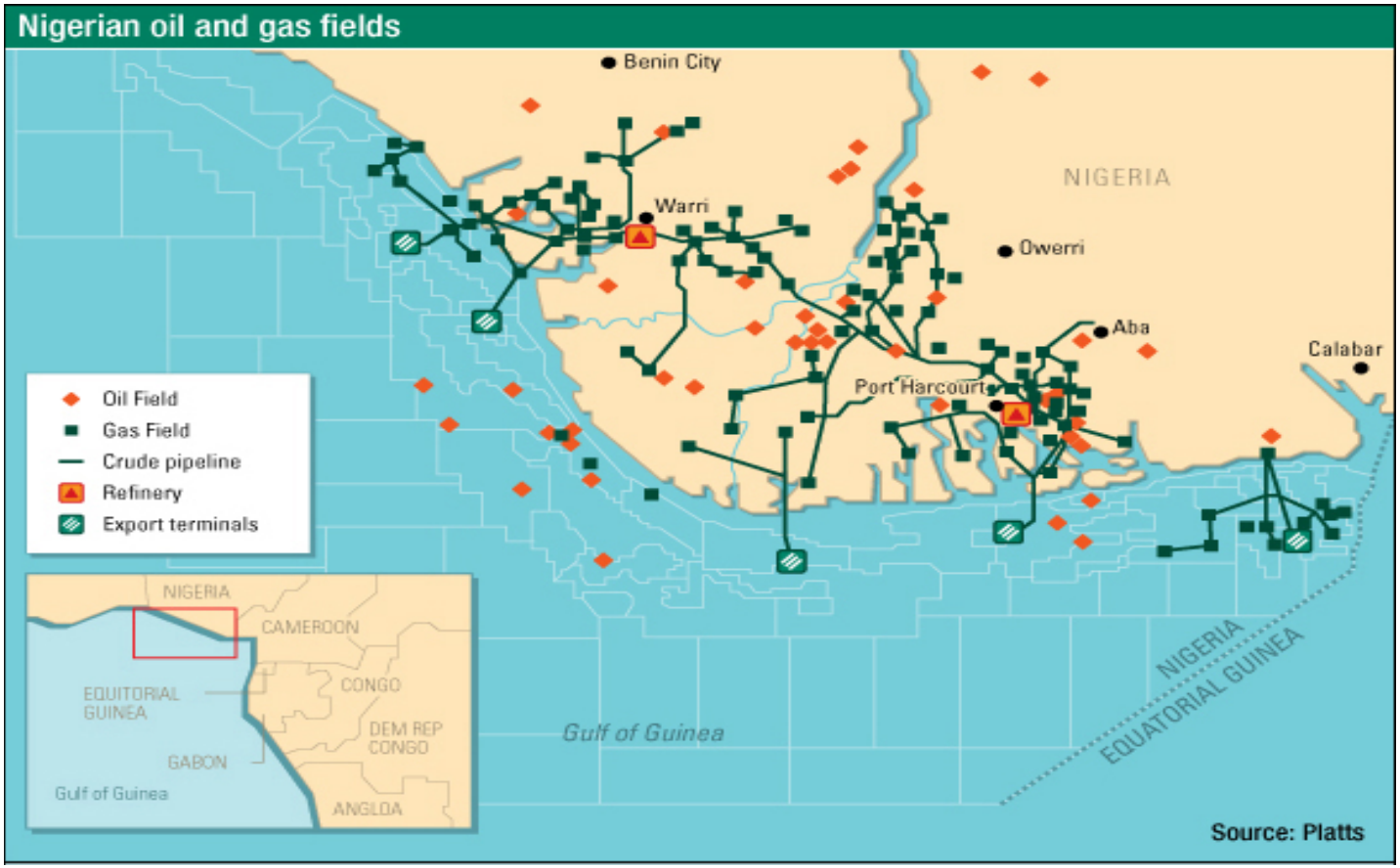


Figure 1.2 : Nigeria Oil and Gas (O&G) fields

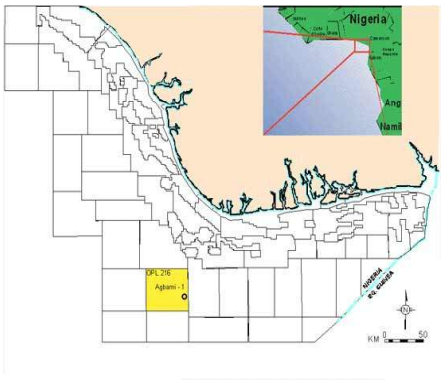
Source – Platts: https://www.usedatanigeria.com/dataset/national-oil-and-gas-map-ni/resource/51bad4aa-d3d8-46a1-86f6-137764b25540/ (accessed on September 20th, 2018)

A common feature resonating from the facilities shown in Table 1.1 is the significant distances between facilities and the nearest towns with resourced medical facilities and specialist treatment. Access to many locations by sea or boat is dangerous, inefficient and time consuming because of militancy, piracy and tidal waves associated with the varying depths and silted channels. Despite these drawbacks, a significant number of personnel (ranging from 87 to 242) are accommodated and work in these facilities at any given time of the year. Moreover, distances from specialist and standard medical care range from 12 - 5178 kilometres and so MERs in these locations (Table 1.1) are further compounded by difficult access, since the most efficient route is by helicopter, which could be further challenged by frequent inclement weather elements and delayed flight.[12,13,16,17,18,20]

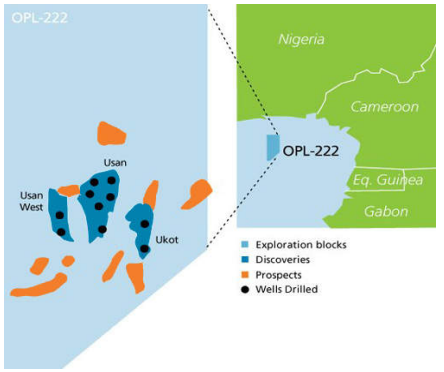
Table 1.2: Industries and Activities with Potential for Medical Emergencies

Category of company	**High Risk Activities**	**Potential for Medical Emergencies**
Oil and Gas Servicing	Diving, engineering and maintenance of O&G infrastructure.	Potential for trauma, drowning and exposure to acute toxic substances.
Exploration companies	Seismic surveys and deployment of powerful sound wave.	Potential for trauma and exposure to accidental radiation.
Drilling services	Subsea access of hydrocarbon reservoirs and construction of subsea Well heads.	Potential for trauma and burns due to exposure to flammable hydrocarbon under pressure and toxic chemicals.
Aviation	Personnel movement by air transport.	Potential for trauma, burns and drowning due to air mishap, explosion and fire outbreak.
Military	Security, combatant and naval activities.	Potential for trauma and gunshot emergencies.
Shipping companies	Maritime support service operations.	Activities with potentials for mishap, man overboard, and drowning.
Marine service provider		
Commercial fishing industry	Offshore fishing activities.	
Local fishing industry	Offshore fishing activities.	
Pipe laying and construction companies	Fabrication and construction, engineering project management, installation, hook-up and commissioning.	Strenuous activities with potentials for trauma. Potential for explosion and burns due to activities in environments with flammable gases. Potential exposure to acute toxic chemicals and hazardous materials.
Oil companies	Exploration and production activities.	

A. Bonga FPSO Location Figure

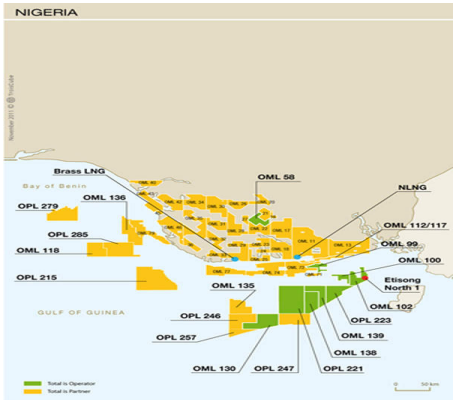


B. Agbami FPSO



C. Usan FPSO Location

D. Egina FPSO Location



E. Ofon field Location

F. Amenan-Kpono Platform

Figure 1.3: Remote locations of some offshore facilities in Nigeria

Sources: https://www.offshore-technology.com/projects, https://www.offshore-mag.com/articles; https://www.ship-technology.com/projects (accessed on November 21st , 2018)

Beside the ultra-deep and deep offshore facilities, there are several facilities located in the remote islands of the oil rich Niger Delta region (also referred to as shallow offshore). These include, but are not limited to, flow stations handling crude oil production, gas stations handling gas production and tank farms for processing both crude O&G production located on islands straddled by swamps, forested mangroves, rivers, creeks, tributaries and estuaries to the onshore environment. These facilities are also known for militancy, hostilities, kidnapping and piracy, thus making it a non-viable option for personnel to commute to the remote locations. Conversely, in other parts of the world the industry faces different challenges. Globally, the offshore and remote work environment[1,2] is replete with inhospitable weather that has the potential to isolate the offshore O&G industry from quality healthcare.[11] As a consequence, these challenges limit responses, affect medical capabilities, renders locations inaccessible to specialist care with high cost of medical evacuation, all of which contribute to potential loss of life and a consequent negative impact on productivity.[2]

1.2 Remote Medical Emergency Response

As offshore personnel are exposed to physical, chemical, biological, ergonomic and psychosocial hazards both in the challenging working environment and in the living quarters of offshore facilities,[9] they are predisposed to different types of occupational illnesses and injuries that might constitute medical emergencies with a potential need for evacuation[9]. Despite the varying logistical challenges and access to these remote locations, medical emergencies are commonplace in the offshore O&G workforce of Nigeria, with some requiring medical evacuation to onshore medical facilities with standard and specialist care.[5,25,26] Medical emergency refers to unforeseen, life threatening injuries and illnesses that require immediate intervention, treatment and stabilization [1,2,5,26] and is a reality in remote work locations[25] including the offshore O&G of Nigeria[2,26,27]. Although existing data are relatively scanty, a 24 - month study (Figure 1.4) carried out in 1998 by Ajayi and Okegbemiro reported on the accident and injury patterns in the western offshore operation of Chevron Nigeria Limited.[26]

A related review in 1996[26] by Ajayi on 735 consultations in Chevron offshore platforms over a 12-month period showed that commonly encountered medical conditions (Figure 1.5) in offshore facilities include: musculoskeletal (33%); respiratory (26%); gastrointestinal (14%); malaria (12%); dermatological (12%); cardiovascular (5%); eye (3%); genitourinary (1.3%), and ear (1.1%).[27] Additionally, Onuba's review in 1991[5], showed a range of common medical emergencies (Figure 1.6) that resulted in helicopter evacuation[5] from an offshore facility in Nigeria.

It is worth mentioning that if these cases are not managed by competent Remote Healthcare Practitioners (RHCPs), cases could degenerate to 'acute-on-chronic' emergencies that either require medical evacuation from the platforms or result in death. The treatment and stabilization of patients with these injuries therefore requires skilled and competent RHCPs.[5, 26]

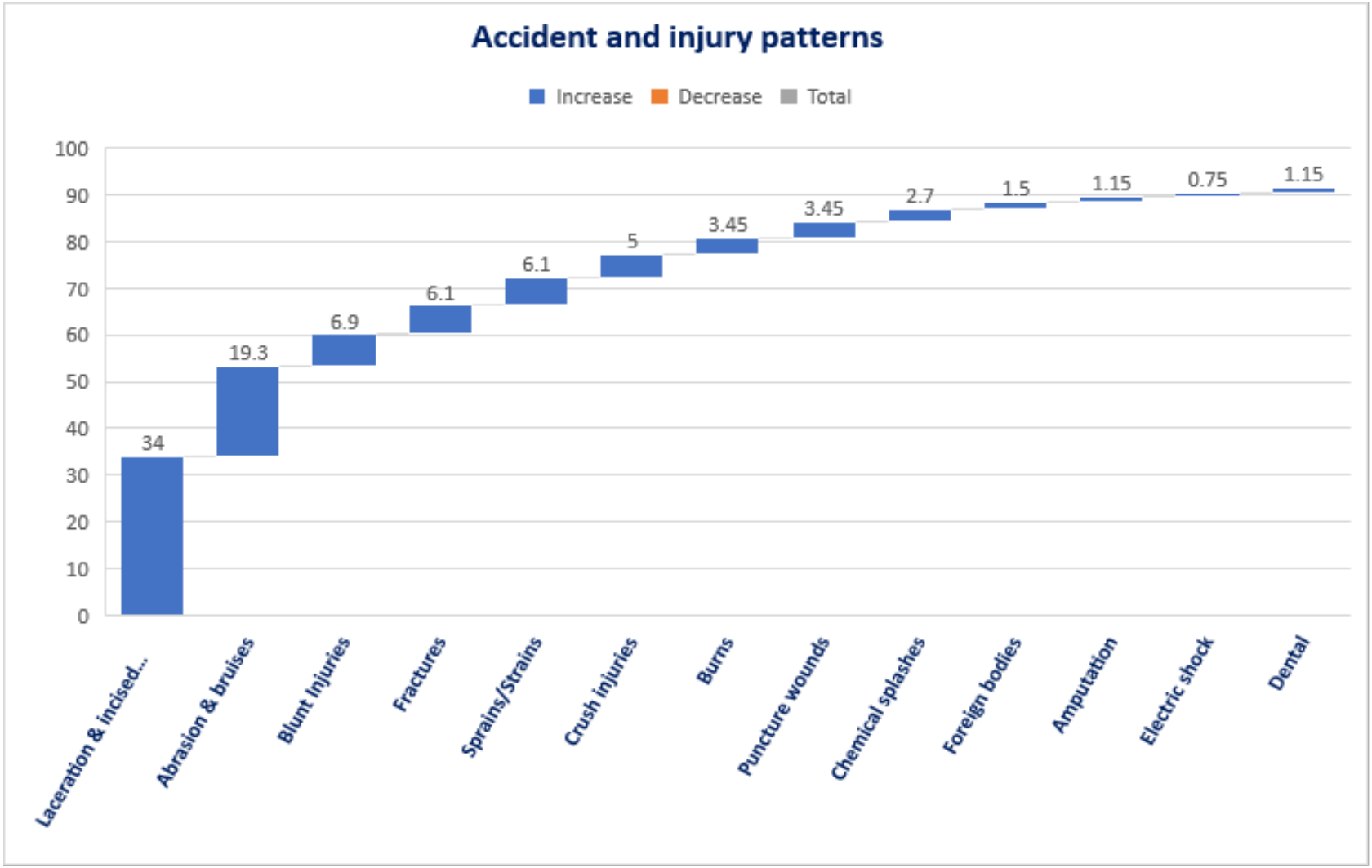


Figure 1.4: Accident and injury patterns in the western offshore operation of Chevron Nigeria Limited.

(Ajayi, P., Okegbemiro, S. 1998)[27]

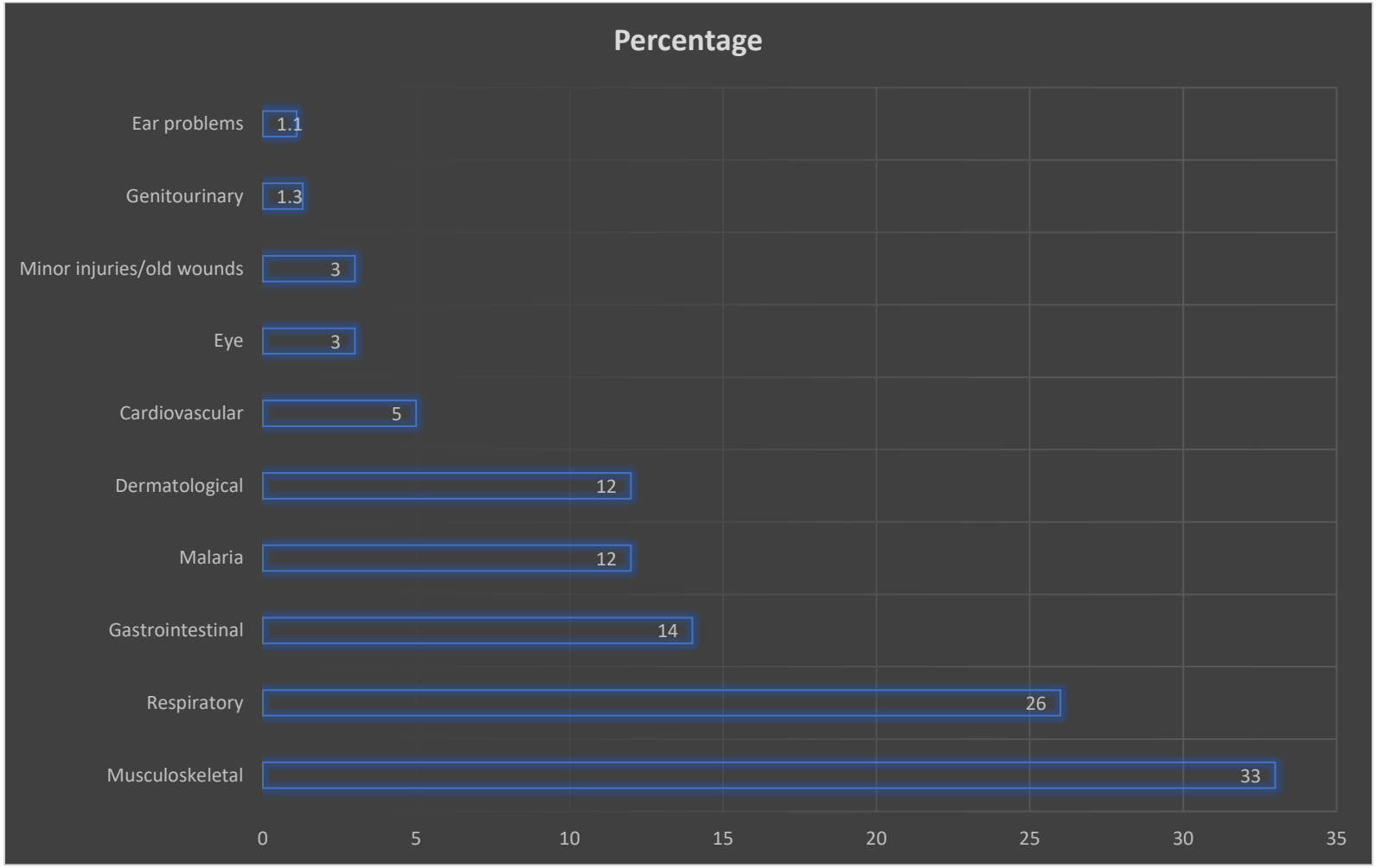


Figure 1.5: Percentage of common medical cases on an Offshore Platform in Nigeria in 1995

(Ajayi P,1996)[26]

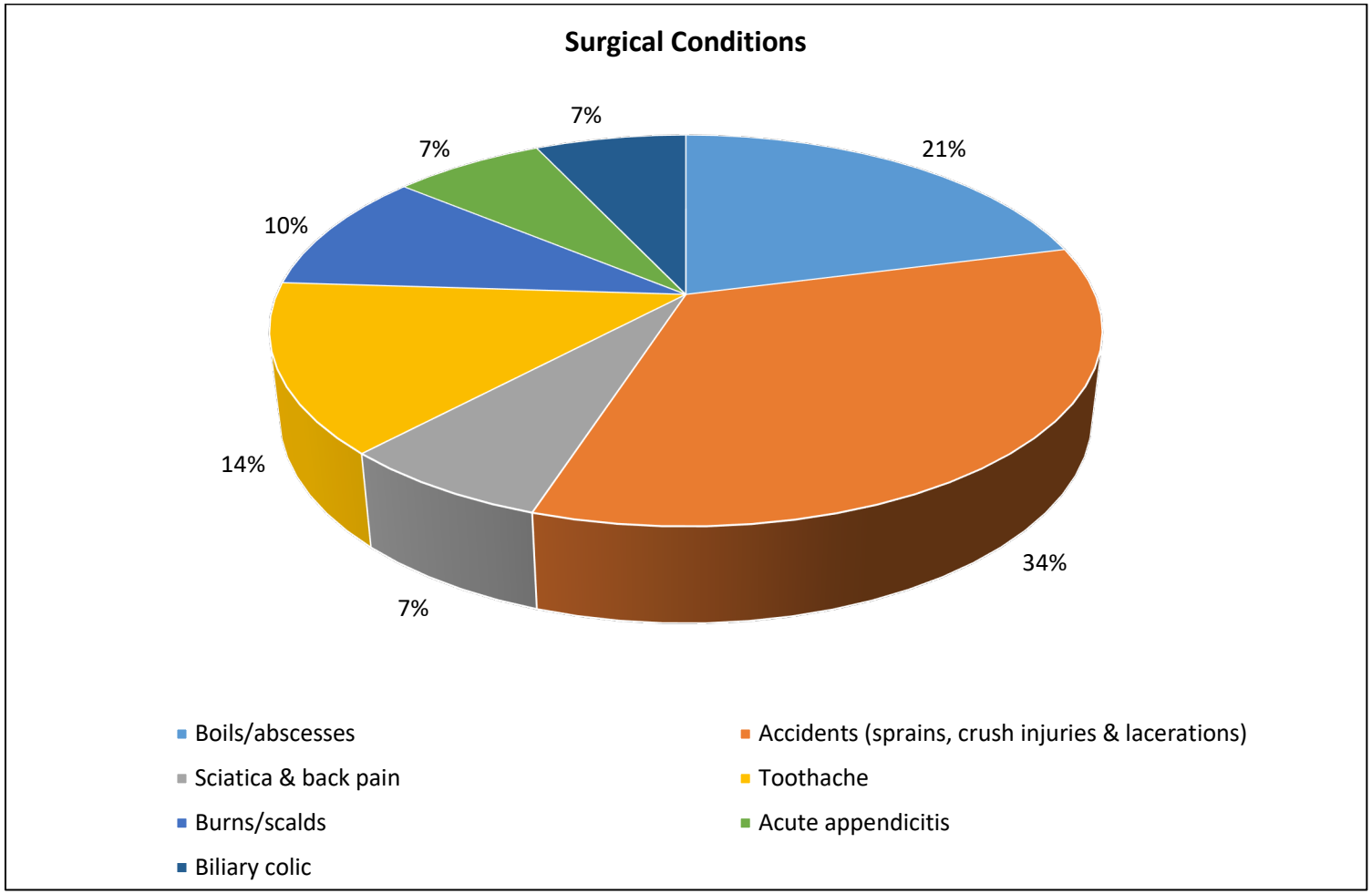


Figure 1.6: Percentage of common surgical emergencies on an Offshore Platform in Nigeria **(Onuba O, 1991)[26]**

While it is important to know the survival rate of medical emergencies in the offshore O&G industry of Nigeria, the precise figures are unknown. However fatalities have been reported in some offshore locations, such as in Chevron Nigeria platform with one reported death resulting from head injuries due to fall from height[27] and a further four fatalities in a drilling rig located offshore from drowning, crush injury or multiple organ injury due to fall from height.[5] Bearing this in mind, this raises the question as to whether these fatalities could have been prevented through the skilful intervention of RHCPs. A comparative scenario to the situation in Nigeria is in the North Sea offshore study in which Norman[30] assessed MER of four O&G companies operating in remote offshore locations in the UK sector of the North Sea. From this report it emerged that, out of 2162 medical emergencies documented between 1976 and 1984[30], the leading cause was digestive system emergencies.[30] In a follow-up review by the UK Health and Safety Executive (HSE), 55% of the 3979 medical emergencies recorded between 1987 and 1992 were due to different illnesses (the most common being musculoskeletal, dental, respiratory, digestive, infection and parasitic, genitourinary, mental health, skin and cardiovascular causes), while 45% of the emergencies were attributable to injuries sustained while at work.[31]

1.3 The Operational Procedure of MER

Although offshore locations can be accessed by air and water,[26] MER and evacuation by helicopter is the main transport route of evacuating ill and injured persons from offshore locations in Nigeria.[5,26] Evacuation from distant locations of up to 5178 kilometres[26] by sea could take over 24 hours using boats, which is a sharp contrast to the air route that could take an average of 30 to 60 minutes by helicopter. However, it is noteworthy that evacuation by air could be delayed by poor visibility and inclement weather forces, while the sea route by boat could be similiarly delayed by rough sea waves and inclement weather forces thereby increasing the response time in an emergency and the stay time of an acutely injured or ill patient in the offshore location.

In the event of an offshore medical emergency, standard procedure (Figure 1.7) requires that there is an initial response by a first responder, who could be a witness of the medical emergency, or a bystander who may have been offered awareness

training in recognising a medical emergency.[28] The first responder is responsible for alerting the team, removal of the patient from danger and ensuring proper positioning until help comes in the form of a first aider who is trained to administer basic first aid treatment; this procedure should all happen within 4 minutes[2]. Thereafter, the offshore medics onboard such installations respond within 1 hour, stabilize the patient, and communicate with the duty doctor and medical team in an established topside (specialist onshore medical team including the doctor and nurses) medical facility using telemedical interventions via telephone, video, or other IT equipment where available. The term 'offshore medic' refers to remote healthcare professionals with different levels of basic medical backgrounds and varying additional competence, and includes: emergency medical technicians; paramedics; nurses, and doctors.[2, 5, 26] While some installations have resident offshore medics, [2] other installations have first aiders instead of offshore medics.[26]

Following the response by the offshore medic, the patient's condition is assessed by both the site and topside teams to reach a decision on whether the patient needs referral, should be evacuated from the installation or can remain on the installation for continued management in the facility. This decision is not only dependent upon whether the case is severe or life-threatening, but also on the skills and resource availability. In situations where medical evacuation is unavoidable, the facility manager and aviation lead are both informed, they assess the weather situation before authorising departure. Medical evacuation is carried out by a team of specialized medical personnel flying to site by helicopter to evacuate the patient and provide *en-route* medical support. On arrival at an established medical facility, the patient is further assessed for either specialist intervention or transfered to a more specialised medical centre for further treatment.[1,2,28,29] As time is of the essence in medical emergency interventions, a 'safe response time' for emergency treatment to be administered (in order to prevent fatality) has been defined as '4 minutes from the time of emergency to the arrival of the first responders', '1 hour from time of the emergency to the patient being seen by the offshore medic' and '4 hours from the time of emergency to arrival at the hospital or resourced medical centre'.[28]

1.4 Telemedicine in Remote MER

In the event of a medical emergency requiring remote support from an onshore facility, the bi-directional exchange of voice and data information is crucial to a successful outcome.[2,32] This exchange of information underpins the role of telemedicine in the remote MER especially since it is faced with associated challenges such as delayed aeromedical evacuation due to inclement weather, volatile waterways, limited skill and resources. The American Association of Telemedicine aptly defined telemedicine as 'the use of medical information exchanged from one place to another to improve a patient's health status'.[33, 2] As a technology, telemedicine is supportive in: laboratory and diagnostic investigations; implementation of treatment; communications; logistic arrangements; conducting invasive procedures; monitoring, and evacuation.[2] Although the use of telemedicine is in its infancy in Nigeria, it is however commonplace in the UK, Canada and Australia, where it has been found to reduce the need for medical evacuation from remote locations, improve the outcome of emergency care, and enhance the skill of the RHCP.[2] In contrast, a study conducted by Banjoko and Omoleke in 2009 on healthcare workers in Nigeria[34] revealed that information and knowledge of telemedicine is sketchy and in its infancy, with scarcity of skills and resources for deployment. Nevertheless, it was recommended that RHCPs should be trained and up-skilled in the use of telemedicine through distance learning,[34] thus making this skill an identified competency and training need for RHCPs in Nigeria.

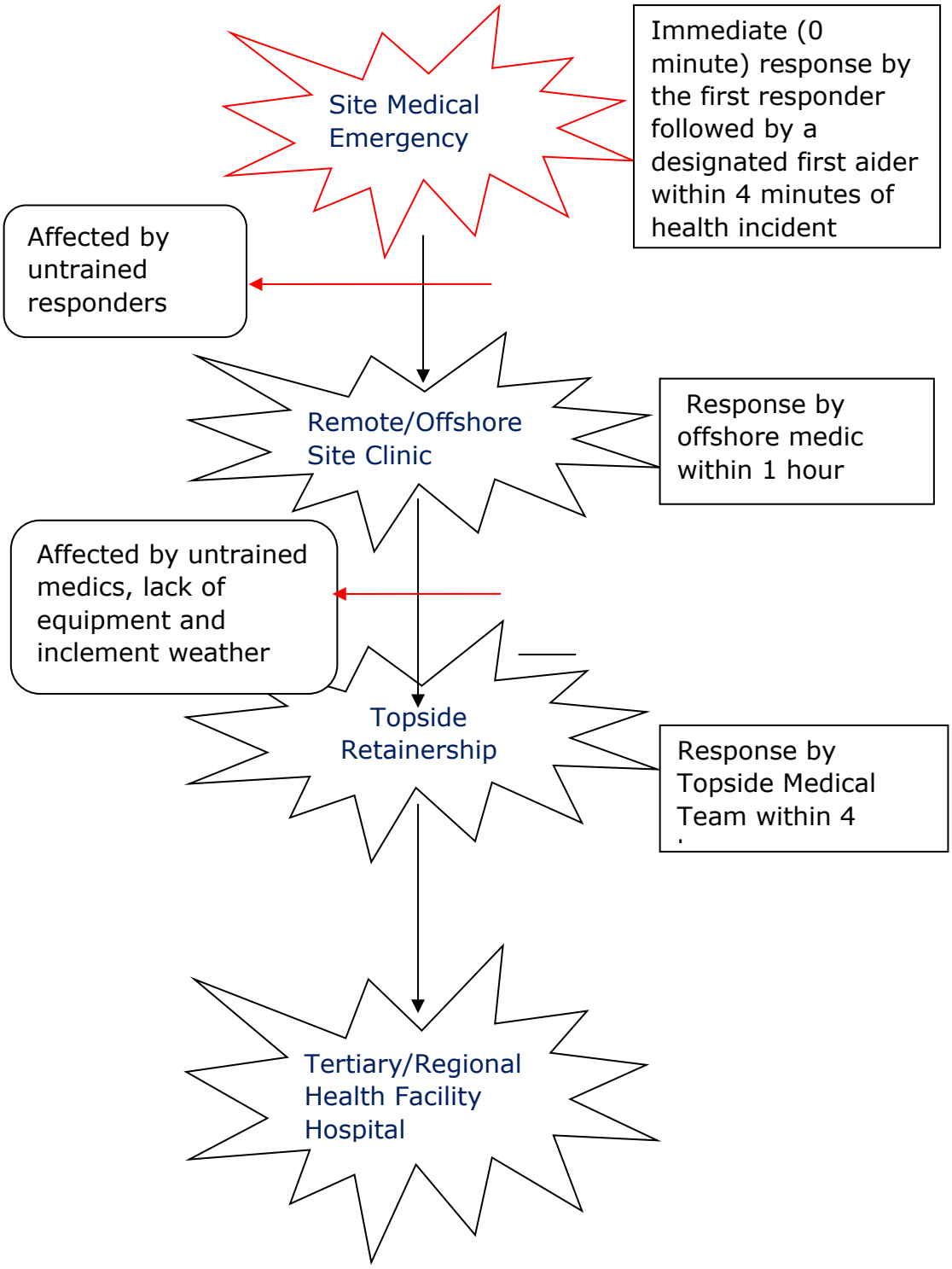


Figure 1.7: Standard Operating Procedure for Medical Emergency Responses in the Offshore Environment[1,28]

Source - (Author generated)

1.5 Competence Development

The assortment of work-related injuries and illnesses, injuries from piracy and militancy, and inclement weather encountered while working in remote and distant O&G locations of Nigeria requires an efficient MER system substantially hinged on adequately trained and skilled RHCPs. This is perhaps particularly important as RHCPs often work alone before the arrival of support from onshore medical facilities and may not have access to advanced medical facilities; consequently they require additional training and competence development[2].

A successful MER is highly dependent on the level of training the different levels of responders (e.g. first aiders, medic, specialist) have. The present practice in Nigeria is for a first aider to have a 1-2 week training administered by the International Red Cross approved trainers, while the offshore medics possess a basic medical or nursing school training with an additional post basic training in Basic Life Support (BLS) or Advance Cardiac Life Support (ACLS).

The dearth of well trained and competent RHCPs[26] in Nigeria has resulted in companies adopting the practice of intermittently sending skilled medics from distant facilities to remote locations to support on-site medics as an interventional stop gap measure.[26] This situation is in stark contrast to practices in developed countries such as the UK, where the competencies of medics working in the North Sea O&G worksites are well developed,[2, 28] thus highlighting the shortfalls in the MER capabilities in the O&G industry of Nigeria.[4, 5] Presently, most offshore medics in Nigeria hold basic nursing or medical school qualifications with periodic training on BLS and ACLS. Given the epidemiology of the medical conditions highlighted in the study by Ajayi and Okegbemiro in Figures 1.3 and 1.4, additional competencies will be required to treat surgical cases, deal with mental health issues, and use telemedicine for laboratory and diagnostic purposes. Moreover, competent medics aboard remote facilities might help to circumvent the challenges in achieving a rapid and successful management of the patient presented against the backdrop of harsh terrain.[1,2] As a former medic with 5-years of relevant experience, I understand the complexities of medical

emergencies and how to use broad-based skills but lack the understanding of the specific skills necessary to manage life threatening medical emergencies in remote locations, and how to acquire these skills through training.

1.6 Rationale

Whilst natural elements continue to make remote locations isolated, the dearth of vital competencies and absence of an evidence-based institutional framework for RHCP skill development will worsen the quality of MER in remote work locations. [30] Thus, a new integrated approach to remote medical emergency management, in which the RHCP is sufficiently skilled to work independently and efficiently, is required. The paucity of knowledge in remote healthcare practice in Nigeria and dearth of other requisite skills mentioned above will require the development of a competence framework model in Nigeria that will facilitate the identification of training and competency needs and requirements of the RHCP. To achieve this requires research to gain a complete picture of current practice in respect of MER and to answer the following questions:

1. What are the challenges encountered by RHCPs in remotely located O&G facilities in Nigeria?
2. What common strategies can manage the identified challenges?
3. What are the common medical emergencies encountered in remote work locations of Nigeria?
4. What are the competency requirements for RHCPs working in remote locations?

1.7 Aims and Objectives

The overall aims of this research was to explore current practices in remote MER in the O&G industry of Nigeria, with the goal of identifying the related training needs of RHCPs. In fulfilment of these aims, this doctoral research had the following five objectives:

i. To identify, from the wider published literature, evidence of best practice in, and related global benchmark indicators for MER provision (Stage 1) .
ii. To explore the current structure, coverage and capability of remote MER provision in the O&G industry of Nigeria by performing a systematic review of text and opinion literature (Stage 1).
iii. To evaluate the effectiveness of current practices in remote MER in the O&G industry of Nigeria against global benchmark indicators in respect of key outcomes (Stages 1 & 2).
iv. To achieve a consensus on the MER – related competency requirements of RHCPs by a panel of participants who are experts in the field of remote healthcare practice including and within the O&G industry (Stage 2).
v. To identify related training needs for RHCPs in Nigeria (Stages 2 & 3).

Chapter 2

Stage 1: A Systematic Review on Policies and Guidance Statements for Remote Healthcare Practitioners on Managing Medical Emergencies in the Oil and Gas (O&G) industry.

2.1 Introduction

Policy and guidance statements on remote MER practice by RHCPs in the O&G industry are notably lacking as highlighted in Chapter 1. To fully understand the current practices of remote MER in the Oil & Gas industry of Nigeria, and evaluate its structure first requires a systematic review of the extant policies and guidance (both published and unpublished) documents on remote MER.

2.2 Justification for Choice of Methodology

According to Parẽ et al., a literature review is a research method used to either: identify information about a rare subject; collate empirical findings about a topic with paucity of evidence, or explore topics requiring further investigation[35]. Types of literature reviews include: systematic; narrative; scoping; critical; descriptive; umbrella, and the realist literature review[35,36]. The distinguishing features of each of these reviews, along with their respective advantages and disadvantages are presented in Table 2.1.

Overall, compared with other types of literature review, a systematic review method is considered the "gold standard" research method to rigourously evaluate both published and unpublished literature by virtue of being a 'robust, reproducible and structured critical synthesis of existing research'[37]. Unlike other types of literature reviews as highlighted in Table 2.1, it involves: the application of specific inclusion criteria aligned with the target population, topic of interest and context; the assessment of methodological quality and risk for bias, and the use of a standardised and validated tool to critically appraise selected literature.

Table 2.1 - Types of Literature Reviews (adapted from Parẽ et al., 2015).

Review type	Description	Disadvantage	Advantage
Systematic review	Collates, critically appraises and synthesizes all empirical evidence that meet a set of pre-specified inclusion criteria.	Rigorous literature search of published and unpublished sources. The scope might be limited by search terms, and the selection criteria.	Asesses risk of bias and methodological quality using validated instruments. Involves meta and narrative analysis of included studies. Reproduceable.
Umbrella review	Seeks to compare and contrast findings from multiple systematic reviews.	Involves exhaustive literature search to identify all available systematic reviews. There is no search for primary studies. It uses a priori inclusion and exclusion criteria.	Assesses eligible literature for risk of bias and methodological quality using validated instruments.
Realist review	As a theory-driven review, it seeks to inform, enhance, extend, or supplement systematic evidence.	Quality or risk of bias assessment must be addressed but with different instruments and/or frameworks.	Qualitative evidence synthesis which could be aggregative or interpretive.
Critical review	Seeks to present a critical assessment of existing literature on a topic. Seeks to disclose the strengths, weaknesses, disagreements, vis-à-vis hypotheses, research methods and findings.	Search might or might not include comprehensive searching. No structured assessment of quality and bias in primary studies.	Applies a variety of analytical methods.

Review type	Description	Disadvantage	Advantage
Narrative review	Summarizes what has been written on a topic but does present generalization or cumulative knowledge on the outcome.	Selective in approach. Process of narrative review does not entail all published and unpublished literature. No assessement of methodological quality and risk for bias. Not reproduceable.	Narrative technique could involve thematic analysis, chronological order, conceptual frameworks, content analysis or other classification criteria.
Descriptive review	Attempts to identify generalisable patterns and gaps in the literature. Aims to identify a representative number of works on a topic. May or may not involve a comprehensive literature search.	No structured assessment of quality and bias in primary studies.	Can be either quantitative or qualitative using descriptive statistics (e.g., frequencies), and content analysis methods.
Scoping review	Seeks to provide an initial potential size and scope of the extant research literature. Identifies the nature and extent of research evidence with a view to determine the value of undertaking a full systematic review.	No structured assessment of quality and bias in primary studies.	Presents numerical analysis of the extent, nature and distribution of primary studies included in the review.

Additionally, in terms of appraising evidence, the systematic review method is widely regarded as being the most reliable because it has the highest level and strength of evidence as demonstrated by its leading position on the hierarchy of evidence triangle (Figure 2.1)[36,38]

Figure 2.1 Hierarchy of evidence (adopted from Guyatt et al., 1995)[37]

The triangle of hierarchy of evidence ranks the strength of different evidence-based research methodologies[35,36,37]. **On this basis, systematic reviews are regarded as having a higher level of evidence than randomised controlled trials (RCTs), cohort studies, case-control studies, case series, case reports, editorials and expert opinions[37]. Generally, most systematic reviews seek to identify empirical evidence by using pre – defined inclusion criteria to collate, appraise and synthesize that evidence.** It requires an early development of protocols[1] using pre-specified method and objectives. The review process entails the: development of a protocol; formulation of questions; application of inclusion and exclusion criteria; search and **identify evidence; collation, appraisal, extraction, analysis, synthesis of empirical evidence,** and presentation of results with

interpretations[1,35,36]. Hence, the systematic review method was selected as being the most suitable for undertaking Stage 1 of this doctoral research and achieving objective ii.

Different organisations and bodies, however, have a different approach to conducting systematic reviews and, they employ different protocols to underpin their systematic review method[35]. These include the Campbell Systematic Reviews, Cochrane Collaboration Systematic Reviews and the Joanna Briggs Institute (JBI) Reviews[35]. Campbell Collaboration Reviews focus commonly on social interventions in global development, social welfare, academics, justice and criminology[35]. Cochrane Collaboration Systematic Reviews focus on health policy, primary research and healthcare intervention, but are deemed more suitable for quantitative than qualitative evidence[35]. JBI Reviews, however, are suitable for robustly appraising the evidence of both quantitative and qualitative interventions as well as those that use mixed research methods such as this doctoral research[39]. Moreover, it applies to several types of literature including text, opinion and policy which aligns with the subject of this doctoral research[1,39]. JBI Reviews are widely regarded as the best evidenced healthcare decision making tool because they seek to explore the meaning, effectiveness, propriety and applicability of healthcare practice[35,1].

Although, scanty literature and documents on remote medical emergencies exist, to date no systematic review of the state of the art around medical emergencies has been undertaken. Similarly, no review has focussed on MER in the O&G industry. Furthermore, an initial search[1] of the Database of Systematic Reviews and Implementation Reports(https://journals.lww.com/jbisrir/Pages/default.aspx),[18] the Cochrane Library and the Centre for Reviews and Dissemination showed that there was neither a systematic review published nor underway on managing medical emergencies in the O&G industry. The preliminary search highlighted several relevant documents such as those by: IPIECA; Sakhalin Energy (Russia); Petroleum Development Oman (PDO); The Oil Industry International Exploration and Production Forum (E&P Forum); Institute of Remote Health Care (IRHC); UK Health and Safety Executive (HSE); UK Offshore Operators Association (UKOOA)[1].

2.3 Objectives and Review Questions

The objective of this review was to collate, synthesize and present the available evidence on the policies and guidance statements for RHCPs on managing medical emergencies in the offshore O&G industry.

More specifically, this review sought to answer the following questions:

i. How is the derivation of these policies and guidance statements described?

ii. What is the content and areas of similarity and difference of the policies and guidance statements?

iii. What emphasis is placed on implementation and evaluation within the policies and guidance statements?

2.4 Inclusion Criteria

2.4.1 Population

This review considered policies and guidance statements relating to RHCPs managing medical emergencies of offshore workers in the O&G industry.

Remote Healthcare Practitioners refers to 'A health professional who is responsible for providing healthcare in remote locations'.[40] Remote Location (RL) is a 'site where the medical evacuation of an injured or ill person to a hospital cannot be guaranteed to be achieved within 4 hours in foreseeable circumstances (e.g. inclement weather)'.[40]

2.4.2 Phenomena of Interest

This review considered publications and documents with policies and guidance statements for RHCP and MER in remote locations in the offshore O&G industry. Medical Emergency Response refers to the 'emergency management of an ill or injured person'.[40] Offshore O&G industry refers to a global industry including several high risk activities such as drilling, exploration, production and maintenance operations in the sea'.[40]

2.4.3 Context

This review considered policies, guidance statements and documents on MER in offshore O&G industry or remote locations from global and regional organizations (including institutions and companies), training providers, statutory bodies, and government regulatory agencies.

2.4.4 Types of Publications

This includes text, such as institutional policies, guidance statements and documents published in the English language.

2.5 Search Strategy

The search strategy aimed to find both published and unpublished documents limited to the English Language. Identified databases were searched from 1989 to 2019 using a three-step search strategy. The rationale for commencing the search from 1989 is because this was the year when the UK Health and Safety Executive published a guide on offshore medic training and qualifications[41]. An initial limited search of institutionalized websites (The Australian Petroleum Production and Exploration Association, Institute of Remote Health Care, International Petroleum Industry Environmental Conservation Association) was undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe each paper. A second search using all identified keywords and index terms was then undertaken across all included databases. Thirdly, the reference lists of all identified policies, guidance statements and documents were searched for additional papers. The initial key words included: 'injury', 'illness', 'remote', 'offshore', 'remote healthcare', 'Oil and Gas', 'medical emergency', 'policy', 'guidance', 'protocol', 'medevac' and 'telemedicine'.

The databases and websites searched included: Institute of Remote Health Care (IRHC); Science Direct; CINAHL; World Health Organisation; International Labour Organisation; International Maritime Organisation; International Oil Companies (Shell, Chevron, Petroleum Development of Oman, Sakhalin Energy (Russia); UK

Health and Safety Executive; International Petroleum Industry Environmental Conservation Association (IPIECA); The Oil Industry International Exploration and Production Forum (E& P Forum) Health and Safety Executive (HSE); UK Offshore Operators Association (UKOOA) and World Wide Science (WorldWideScience.org). Grey literature searched included: Google Scholar and OnePetro. The full search strategy is presented in Appendix I with dates of search culminating in April 2020.

2.6 Method of the Review

This review was conducted in accordance with JBI guidance for systematic reviews of text and opinion.[39] The methodology for text and opinion reviews used a transparent and systematic process to identify the best available evidence drawn from text and opinions to provide practical guidance to practitioners and policy makers.[39] It included evidence search and retrieval, screening and selection, critical appraisal, data extraction and synthesis. Policies, guidance statements and documents were first assessed by reading the title and abstract. Full-text documents were obtained for those deemed relevant to assess whether they met the inclusion criteria. Two reviewers (Kennedy Osakwe - KO, Kay Cooper - KC) independently screened titles/abstracts and full-text papers for inclusion; conflicts were resolved by discussion for methodological credibility prior to inclusion using the standardized critical appraisal instruments from the JBI Qualitative Assessment and Review Instrument.

2.6.1 Assessment of Methodological Quality

The policies, guidance statements and documents retrieved from database search were firstly assessed for alignment to the review protocol through title, abstract and textual screening. These were assessed by two independent reviewers (KO, KC) for methodological validity (see Table 2.1) prior to inclusion in the review using the standardized critical appraisal instrument from the JBI Narrative, Opinion and Text Assessment and Review Instrument (https://reviewersmanual.joannabriggs.org/).[39] This instrument consists of several screening questions used to appraise each selected document (see legend of Table 2.1).

2.6.2 Data Extraction

Textual data were extracted from papers included in the review by two independent reviewers (KO, KC) for methodological validity (see Table 2.2) using the standardized data extraction tool.[39] The data extracted included specific details such as type of opinion (an expert opinion, a consensus guideline, conference proceedings, policy reports or reports accessed from web pages of professional organizations); population; context of the data; conclusions of significance to the review objectives (verbatim statements) along with an argument supporting each conclusion.[39] Each conclusion was assigned a level of credibility according to the JBI guidance for the review of narrative, opinion and text (https://journals.lww.com/ijebh/Fulltext/2015/09000/Innovations_in_the_systematic_review_of_text_and.11.aspx/?trendmd_shared=0); these were unequivocal (evidence beyond reasonable doubt), credible (conclusions that are, albeit interpretations, plausible considering the data and theoretical framework) or unsupported (findings are not supported by the data). Grading is essential as it aids the identification of robust findings that would constitute an overall finding. Disagreements between the two reviewers were resolved through discussion.

2.6.3 Data Synthesis

The conclusions were pooled in accordance with the JBI guidance for the review of narrative, opinion and text (https://journals.lww.com/ijebh/Fulltext/2015/09000/Innovations_in_the_systematic_review_of_text_and.11.aspx/?trendmd_shared=0). This involved the aggregation of similar conclusions to generate a set of statements ('categories') based on similarity in meaning.

These categories were then subjected to a meta-synthesis to produce a single comprehensive set of synthesized findings that can be used as a basis for evidence-based practice. The primary reviewer (KO) examined each conclusion and grouped them into draft categories. These were then reviewed by a second reviewer (KC) and discussed until consensus was reached. The final synthesized findings were graded

according to the ConQual approach for establishing confidence in the output of qualitative research synthesis [39], adapted by the authors of this review for assessing the dependability of textual synthesis (i.e. considering the textual synthesis critical appraisal tool questions).

2.7 Results

2.7.1 Search results

The initial search conducted in July 2017 was updated in April 2020 using pre-determined search methods specific to each database yielded 18,634 documents. Following removal of duplicates, a total of 5835 documents with potential relevance remained. The titles and abstracts were screened for relevance to the inclusion criteria and objectives of the review by both the primary and secondary reviewer; the numbers were further reduced to 22 papers with 5813 excluded for non alignment with inclusion criterias. The full-texts of the 22[2,3,10,40-59] papers were retrieved for detailed assessment against the eligibility criteria. After detailed assessment of the 10 full-text papers[41-49], most met the criteria (see Table 2.2) and were thus selected for assessment of methodological quality against the JBI critical appraisal instrument checklist with 12 papers (see Appendix II) further excluded. On critical methodological appraisal of the 10 selected papers, one paper was further excluded for not meeting a minimum of three out of the seven criteria in the standardized critical appraisal instrument from the JBI Narrative, Opinion and Text Assessment and Review Instrument, thereby resulting in nine papers for inclusion in the JBI (see Appendix III & IV) [40,44-50]. The references of the nine papers were hand-searched for papers not previously identified with no additional relevant papers identified for critical appraisal. The search process for the review is depicted in Figure 2.2.

Table 2.2: Assessment of methodological quality of included studies

	Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7
1	Ponsonby et al.[2]	Y	Y	Y	Y	Y	Y	Y
2	Sakhalin Energy Investment Company Ltd. [45]	Y	Y	Y	Y	Y	Y	Y
3	The Institute of Remote Health Care (IRHC) - 2013[46]	Y	Y	Y	Y	Y	Y	Y
4	The Institute of Remote Health Care (IRHC) – 2017[40]	Y	Y	Y	Y	Y	Y	Y
5	Health & Safety Executive (HSE) L123[48]	Y	Y	Y	Y	N	N	Y
6	Health & Safety Executive (HSE) Offshore - 2009[47]	Y	Y	Y	Y	N	N	Y
7	Health & Safety Executive (HSE) OTO 98171[49]	Y	Y	Y	Y	N	N	Y
8	International Petroleum Industry Environmental Conservation Association (IPIECA) & International O&G Producers (IOGP). Multiple casualty planning and preparation: Checklist for medical emergency response planning for the O&G industry. International Oil & Gas Producers (IOGP) Report 578; 2017[50]	Y	Y	Y	Y	N	N	Y
9	IPIECA (International Petroleum Industry Environmental Conservation Association). Managing health for field operations in O&G activities – a guide for managers and supervisors in the O&G industry. OGP Report Number 3432011[44]	Y	Y	Y	Y	Y	Y	Y
	%	100	100	100	100	56	56	100

Legend: Y = yes, N = no, U = unclear

Review Questions:

Q1 - Is the source of the opinion clearly identified?
Q2 - Does the source of the opinion have standing in the field of expertise?
Q3 - Are the interests of patients/clients the central focus of the opinion?
Q4 - Is the opinion's basis in logic/experience clearly argued?
Q5 - Is the argument developed analytical?
Q6 -Is there reference to the extant literature/evidence and any incongruency with it logically defended?
Q7 - Is the opinion supported by peers?

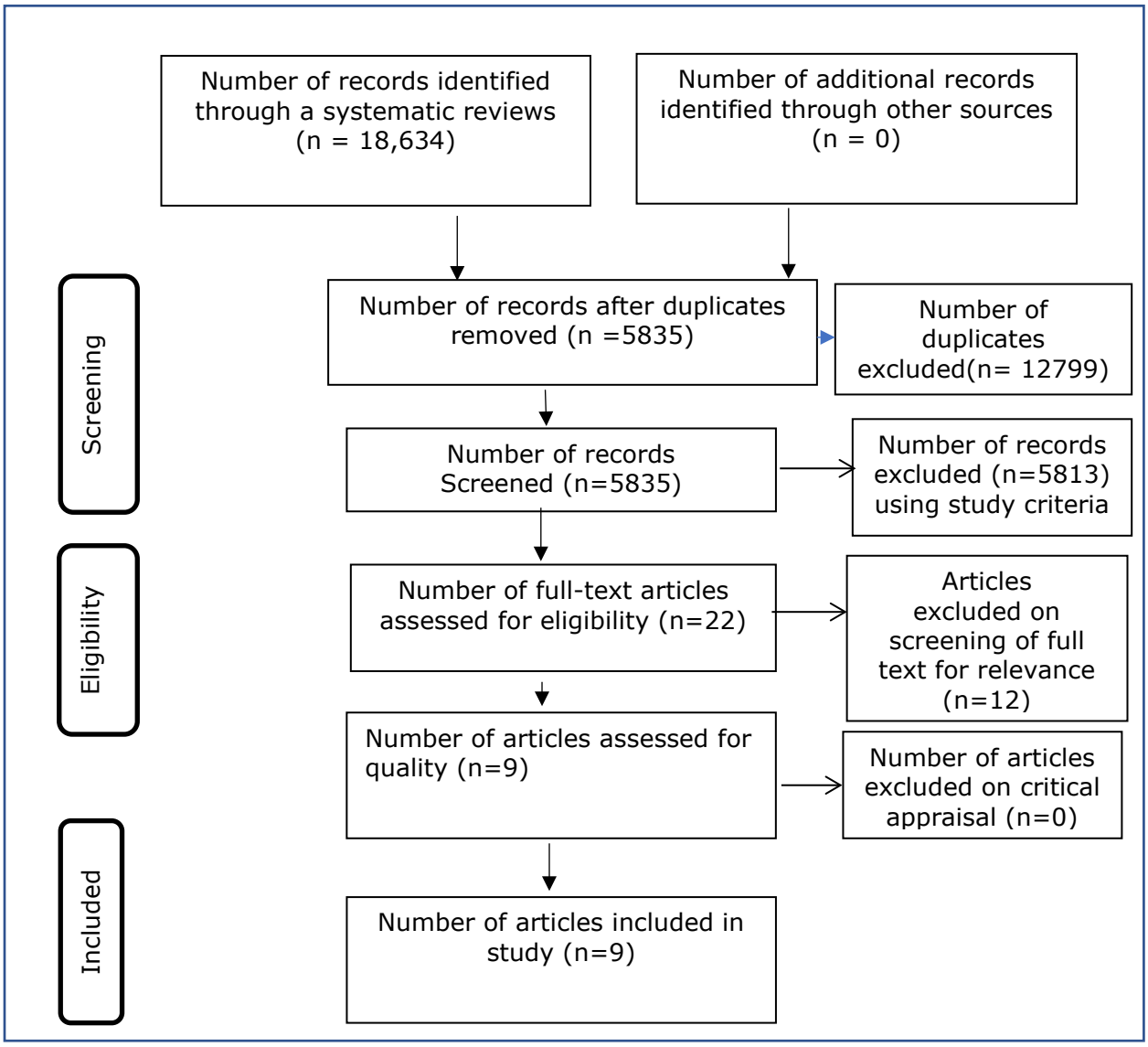


Figure 2.2: Flowchart of the search and study selection process

Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097.[60]
From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews

2.7.2 Methodological quality

Following methodological assessment by the primary and secondary reviewers (see Table 2.2, one [48] of the 10 papers (see Appendix II) identified did not meet three of the seven criteria in the standardized critical appraisal instrument from the JBI Narrative, Opinion and Text Assessment and Review Instrument, thus nine papers were progressed. The nine papers included met more than five (56% to 100%) of the seven criteria thus study quality was found to be strong, while the excluded paper was rejected because; it had no clarity on the source of opinion (criterion 1); the source of the opinion did not have standing in the field of expertise (criterion 2), and the outcome and opinion were not based on a logical and analytical process (criterion 4).

2.7.3 Description of included and excluded papers

The papers chosen for inclusion in the review were selected on the basis of their relevance to the review. The document by Ponsonby[2] was derived from a review of documents on MER in the offshore O&G industry. The two documents by IRHC[40,46] were derived by the Delphi survey method. The three documents by the HSE[47-49] were derived by a combination of literature review and selection of industry practice. The document by Sakhalin Energy[45] was derived by a selection of industry practice. The two documents by the International Petroleum Industry Environmental Conservation Association (IPIECA) and International Oil & Gas Producers (IOGP)[44,50,52] were derived by a selection of industry practice. A summary of characteristics pertaining to each of these documents is provided in Appendix III .

The initial search yielded 18,634 papers but following the removal of 12,799 duplicates, the titles and abstracts of 5,835 papers were screened for alignment with the inclusion criteria. This screening process led to the exclusion of 5813 papers, which left 22 papers to progress. Further screening of full texts for methodological quality led to the exclusion of 12 papers (see Appendix II) as they did not meet the inclusion criteria (section 2.3) and the JBI critical appraisal instrument checklist requirements (Table 2.2).

On appraisal of the 10 remaining papers, one paper was excluded for not meeting a minimum of three out of the seven criteria in the standardized critical appraisal instrument from the JBI Narrative, Opinion and Text Assessment and Review Instrument, thus 9 papers were included in the study (see Appendix III & IV) [40,44-50] The central focus of the document by IPIECA[44,50,52] was irrelevant to the review objective and had no named author. The context(s) of the the remaining documents[50-59,48] did not meet the phenomenology of interest of this review since they were not policy or guidance documents (see details on excluded papers in Appendix II).

2.7.4 Meta-synthesis and findings of the review

From the 9 included documents, 45 conclusions were extracted, and 3 findings synthesized. These conclusions have been assigned levels of credibility as detailed in Tables 2.2 to 2.4. The 45 conclusions were collated to form 13 categories created based on similarities of meaning, and from these, 3 synthesized findings (meta-synthesis) were produced. Each synthesised finding and its relationship to the review objectives is presented below:

Synthesized finding 1

Policies and guidance statements on MER for RHCP have to date been derived through consensus of expert opinions, engagement of subject experts, outcomes of narrative literature review, collection of industry best practices, extraction from relevant publications and outcomes of various industry studies.

This finding was created from three categories, 'Delphi', 'Narrative Literature Review' and 'Compendium of Industry Practice'; which were derived from 9 conclusions. The levels of credibility as detailed by the JBI-NOTARI were also included for each conclusion (Table 2.3) and were all unequivocal meaning that the evidences were beyond reasonable doubt thus strong. This finding relates to the first research question on the derivation of policies and guidance statements. While the guidance

statements by the Institute of Remote Health Care were derived through a Delphi process which entails pooling of opinions of subject matter experts on statements bordering on management of MER, the UK Health & Safety Executive developed the policies and guidance statement through a combination of literature reviews and review of statutory publications. The guidance document by the Sakhalin Energy was derived by a collation of industry best practices. Some of the documents were silent on the derivation process involved in the development of the policies and guidance statement. While the three methods outlined above each had respective advantages, a derivation process that involves consensus, comprehensive literature review and inclusion of industry practice would be broad based and, thus, effective.

Table 2.3: Results of meta-synthesis of qualitative research findings (synthesized finding 1)

Conclusions	Categories	Meta - synthesized findings
This document was derived through a consensus of expert opinion (U)	Delphi	*Policies and guidance statements on MER for RHCPs have to date been derived through consensus of expert opinions, engagement of subject experts, outcomes of narrative literature review, collection of industry best practices, extraction from relevant publications and outcomes of various industry studies.*
Guidance document was derived from engagement of RHCPs and a Delphi study (U)		
This guidance document is a collection of literature review on industry best practice (U)	Narrative literature review	
Guidance document derived as an extract from HSE publications (U)		
Guidance document derived as an extract from health and safety regulations (U)		
Training standards can be derived by studies and researches in the field (U)		
Document was derived from a descriptive retrospective and prospective study of medical evacuations in the North Sea (U)		
This guidance document is derived from the Approved Code of Practice and regulations (U)	Compendium of Industry Practice	
The guidance document adopted industry best practice using a risk-based approach (U)		

Legend: U = unequivocal

Synthesized finding 2

The documents largely present the diverse nature of remote medical emergencies and challenges to remote MER however, similarities were evidenced by the need for a broad spectrum of competences and MER resources, but the documents differed in the required type and development of competences thus necessitating the need for this review.

This finding relates to the second research question on the content, areas of similarity and differences in the reviewed policies and guidance statements. It was created from 8 categories: 'Remote Terrain'; 'Skillset'; 'Competence development'; 'MER plan'; 'MER resources'; 'Telemedicine';, 'Harmonization standards, 'and 'Preventive Health Measures'. All of these categories derived from 32 conclusions. The levels of credibility as detailed by the JBI-NOTARI were also included for each conclusion (Table 2.4). The relevant content of most of these documents focused on: the challenges of MER in remote locations; MER resources; MER plan; skill sets required by RHCPs training and re-training; types of medications, and equipment needed by remotely located facilities, telemedicine and preventive health.

In all, the documents highlight the challenges of MER in remote locations and the need to harmonize documents but differed in the description of : MER plan; skill sets; equipment and medication list; training needs and curriculum and preventive health measures; implementation and evaluation. Absence of these factors could negatively impact the outcome of a MER in a remote location. The content of the IRHC, HSE and Sakhalin energy documents was more comprehensive in terms of comprising the essential factors deemed appropriate for an effective guidline on managing MER.

Table 2.4: Results of meta-synthesis of qualitative research findings (synthesized finding 2)

Conclusions	Categories	Meta - synthesized findings
Remoteness of offshore facilities presents unusual challenges for MER (C)	Remote Terrain	*The documents largely present the diverse nature of remote medical emergencies and challenges to remote MER however, similarities were evidenced by the need for a broad spectrum of competences and MER resources, but the documents differed in the required type and development of competences thus necessitating the need for this review.*
Remote locations present many challenges to MER (C)		
The diverse epidemiology of injuries and illnesses necessitate a broad range of skill set (C)	Skill set	
Offshore medical emergencies consist of a variety of injuries and illnesses necessitating evacuation (U)		
Broad range of skill sets are required to work in remote locations (C)		
Training, qualification, competence and resource availability are significant consideration needed for remote healthcare provision (C)	Competence development	
The competence development of the topside team should be factored into remote MER (C)		
First responders need training; skill development and maintenance (C)		
Designated First Aiders need training skill development and maintenance (C)		
Tier 2 MER resources need training, skill development and maintenance (C)		
The standard qualification for offshore medics should have an in-depth training which should include management of medical emergencies of conditions involving body systems with appropriate interventions (C)		
Remote Healthcare Practitioners would require requalification training for competence development (C)		
Competence development is a challenge that requires additional training for offshore medics (C)		
A plan of MER should be integrated into the overall site emergency plan (C)	MER plan	
MER plan makes response to emergency effective (C)		
The key elements in a MER plan should include: Risk assessment; Organization, Structure and Roles; On-site facilities; External facilities; Triage equipment; Training; Drills; Communication; Notification to		

employees, dependents and psychological support and Documentation, reporting and tracking (C)		
A MER Plan should be put in place to manage medical emergencies in remote location effectively (C)		
A wide range of medical equipment might be required in remote healthcare depending on site peculiarity (C) Types and amount of equipment and drugs should be suitable for primary health care MER and stabilization (C)	MER Resources	
MER resources a significant consideration in remote MER (C)		
Tier response approach to MER based on Tier 0,1,2,3,4 (C)		
Several resources are needed for MER (C)		
Offshore medics and offshore first-aiders will need to communicate with topside medical team (C)		
The RHCP should include the first aiders in addition to the nurses, doctors and specialist (C)		
MER resources needed in a remote location should include competent medical personnel, medical equipment, communication and telehealth facilities (C)		
Telemedicine may improve remote healthcare delivery to offshore locations (C)	Telemedicine	
Telemedicine has a positive multiplier effect in remote healthcare (C)		
There is the need for a harmonized competence development standard (C)	Harmonization of Standards	
The need for a harmonized guidance document is rife in remote healthcare delivery (C)		
By virtue of the consensus, a harmonized guidance document should include: Responsibility; Mindset; Competency and Training; Formal RHCP Training and Assessment for Prevention of Skill Decay; Training in Emergency Medicine; Common Medical Emergencies; Common Surgical Emergencies; Common Psychiatric Emergencies; Common Traumatic Emergencies; First Aid and Defibrillation; Primary Health Care; Preventative Medicine, and Health Service Administration (C)		

Preventive health controls are essential to the prevention of medical emergencies in remote offshore locations (C)	Preventive health measures	
Preventive control measures will make an effective health management system in O&G operations (C)		

Legend: C= credible, U= unequivocal

Synthesized finding 3

The effectiveness of the MER standards, policies and guidance statements is made possible by the implementation of the MER specifications with periodic evaluation of the various components of the MER sequence.

This finding was created from 2 categories, 'Implementation' and 'Evaluation', which were derived from 4 conclusions. The levels of credibility as detailed by the JBI-NOTARI were also included for each conclusion (Table 2.5).This answered the third question on implementation and evaluation within the policies and guidance statements. Although, this was grossly omitted by the majority of the guidance documents, the positive outcome of the MER would greatly depend on the implementation and evaluation of all the MER process components.

Table 2.5 : Results of meta-synthesis of qualitative research findings (synthesized finding 3)

Conclusions	Categories	Meta-synthesized findings
The effectiveness of standards should be monitored (C)	Implementation	*The effectiveness of the MER standards, policies and guidance statements is made possible by the implementation of the MER specifications with periodic evaluation of the various components of the MER sequence.*
Emphasis on implementation of the MER specification (C)		
MER management to be reviewed annually in remote locations (C)	Evaluation	
Every part of the MER sequence should be evaluated (C)		

Legend: C= credible, U= unequivocal

2.8 Discussion

This systematic review was undertaken to collate, synthesize and present the available evidence on the policies and guidance statements for RHCPs on managing medical emergencies with the offshore O&G industry as a focus. Firstly, findings from this review showed that policy documents were derived from various methods leveraging on engagement with stakeholders, consensus of expert opinions, narrative reviews of the literature, extractions from relevant publications, collection of industry best practices and outcomes of various industry studies, thus addressing the first research question on derivation of documents. Secondly, the contents of a few documents presented the diverse types of remote medical emergencies and challenges to remote MER however, some common denominators included the need for a broad spectrum of skill set and MER resources. There were differences in the required skill set and approach to competence development thus necessitating the need for these findings to be further explored by expert practitioners. Lastly, it was found that for the policies and guidance documents to have desired outcomes there should be implementation of the MER specifications with periodic evaluation of the various components of the MER sequence. However this critical factor was largely omitted in a some of the documents.[44,47,49]

Although the documents had some positives such as MER being a central focus, leadership commitment, and a broad epidemiological picture of remote medical emergency, there were obvious weaknesses in respect of what the components of an effective response should be. The lack of institutional policy and guidance documents was a major challenge, several documents were excluded due to either deficient or poor methodological quality with no logical evidence of data extraction that should have funnelled findings into the synthesis of policy and guidance statements. Besides, the majority of the documents[44,47,49,50,] neglected to address competence development in the topside team, which is significant to the eventual survival of any referred patient from a remote location, and were skewed to on-site happenings only. The review shows that while the documents by IRHC[35,45] and Ponsonby et al.[2] were derived through the conduct of a Delphi study and comprehensive literature review, the

remaining documents[1, 48, 50 -60] were not explicit on the method of derivation and were not logical.

While it might be prone to gaps and lack of comprehensiveness, the use of the Delphi method in addition to other approaches gives robustness and injects a degree of industry experience into the content and, thus, reflects tested and tried practical concepts that are essential in MER. The content of the documents largely presented the challenges and diverse kind of medical emergencies in the remote locations, consequently established the framework and training needs for RHCPs who require a broad skill set to work efficiently. The second finding corroborates the IRHC[35] position on the need for RHCPs to have a raft of specialist skills due to the diverse epidemiology of medical emergencies. This further compliments the HSE[47] position on the value of periodic training in mitigating skill decay among remote healthcare workers. A common denominator in the source documents was medical emergency conditions and skills needed in remote medical emergencies; this relates to the second review question which sought to know the similarity of the source documents.

However, there were salient differences in the content of the reviewed documents as only a few documents specified the: required skills;[40,46] approaches to competence development; essential equipment and medication; telemedicine implementation and evaluation; training curriculum and format; and preventive measures. While few documents emphasized implementation and evaluation[40,46], the majority[44-48] were not explicit on how the policy and guidance statement would be implemented and evaluated. This is a significant driver to achieving effectiveness in policy and guidance statements. Evaluation not only plays an assurance role but further spells out the key performance indicators of the policy. The strong point in this review lies in the standardized JBI, peer review method adopted in the review process as it involved two reviewers working independently in the title and textual screening, methodological assessment and data extraction phases. While this review established a paucity of policy documents and approaches to derivation of policy documents on management of MER by RHCPs in remote industries, it

could not identify the implementation and evaluation of policies or the required skill and training needs for RHCPs in remote and allied industries.

2.8.1 Further research phases

Based on the findings of the systematic review, the lack of evidence of implementation and evaluation of competency frameworks and training clearly necessitated the need for further research. Additionally, the paucity of policy documents on MER by RHCPs in remote industries alongside poor methodological synthesis and derivation of scarcely available evidence leaves some lacunae in the body of knowledge around competence development of RHCPs and management MER in remote work locations. High quality research is therefore needed to tease out the competence requirement for remote healthcare workers in remote work locations in different geographical locations.

2.8.2 Conclusion

This systematic review revealed the use of different derivation methods to synthesize the policies and guidance statements. Of particular note, however, was the use of a group approach, which leveraged on consensus opinion. In addition, although further differences were found in terms of the content of available evidence, the best practice evidence [40,46] that focussed on remote MER was derived through a group – decision making method. By virtue of these synthesized findings the next chapter presents the use of a group decision making tool to inform the development of guidance document on the competency requirement for RHCPs in the O & G industry of Nigeria.

Chapter 3

State 2: Developing Consensus on the Management of MER in the O&G Industry of Nigeria - A Delphi Study

3.1 Introduction

The paucity of guidance evidence for RHCPs in the O&G industry identified in the systematic review confirmed the need for the development of an appropriate guidance document. The purpose of this chapter is to describe the group decision making process that was adopted to enable the development of guidelines on competency requirements and training needs for RHCPs in the O&G industry.

3.2 Justification for choice of methodology

According to the World Health Organisation (WHO), the preferred approach to developing guidelines or guidance document is through a group decision-making method which should be preceded by a systematic review of available evidence as seen in Chapter 2.[61] ''Group decision-making is a cognitive, collaborative process. In the context of guideline development, it results in the formulation of a recommendation…..''[61]

Available approaches used for group decision making methods include the: Unstructured open discussion; Delphi method; Nominal group technique; Consensus development, and Voting. The strengths and weaknesses associated with each of these approaches is summarised in Table 3.1

In this doctoral research, the Delphi technique was adopted to seek a consensus of opinion on the competency requirements and training needs for RHCPs in the O&G industry of Nigeria. As highlighted in Table 3.1, the Delphi technique provided a number of advantages when compared with other possible methods. Moreover, because it can be administered by means of a virtual platform this was of particular benefit in view of the diverse geopraphical spread of experts in Nigeria.

Table 3.1 Summary of the strengths and weaknesses of various decision-making methods (adapted from WHO)[61]

	Methods	Description	Strengths	Weaknesses
Informal approaches				
1	**Unstructured, open discussion**	Involves an informal open forum discussion	Allows for articulation of views and opinions	Inhibit some members from speaking freely. Strong individuals become dominant.
Formal approaches				
2	**Delphi method**	Entails anonymous expression of opinion on a priori developed statements by selected expert group.	Anonymity prevents undue influence of strong individuals	No opportunity to seek clarification of other participants ideas
3	**Nominal group technique**	Participants come together face to face to discuss development of guidance	Face-to-face sessions reduces risk of misunderstanding and gives reasons for differences of opinion	Small group may produce unrepresentative judgements.
4	**Consensus development conference**	Entails a structured open forum discussion using a priori developed decision rules.	Face-to-face sessions reduces risk of misunderstanding and gives reasons for differences of opinion	It is time consuming, costly and hard to organize
5	**Voting**	Voting using a priori developed decision rules	It is unambiguous	Final recommendation may not represent group opinion

This Delphi study focused on emergency care immediately after an injury or occurrence of an acute illness to the point when it is no longer acutely life-threatening. In Chapter 1, the narrative explored current MER practices in the O&G industry of Nigeria and presented emergency scenarios associated with the acute life-threatening phase as presented in Figures 1.1, 1.5, and 1.6. Relatedly, it was necessary to identify the available evidence on the policies and guidance statements for RHCPs on managing medical emergencies in the offshore O&G industry of Nigeria. This was the focus of the JBI systematic review in Chapter 2, which appraised available institutional and corporate policies and guidelines. It identified and synthesized key competence requirements for RHCPs in the O&G industry of Nigeria. However, to appraise the relevance and application of these competences to remotely located work settings, consensus of opinion by remote MER experts was needed. To achieve an acceptable level of consensus required the Delphi technique because it recognizes the evidence-based value of experts' opinions and experience when full scientific knowledge is lacking.[61]

The Delphi method is a globally accepted systematic and iterative research design used to secure a consensus of opinions by subject matter experts.[62] The principle is based on the fact that convergence of two or more structured opinions by a panel of experts is scientifically significant to make a logical assumption and decision.[63, 64, 65] Since this technique values the opinion of experienced practitioners in the subject field, which in the case of this Delphi study were mostly remote healthcare experts, a Delphi approach was used in conducting the study via an online platform with participants being semi-anonymous.

3.3 Aim and Objectives

The principal aim of the study was to achieve consensus of expert opinion on statements pertaining to competency requirements for MER in the O&G industry of Nigeria upon which an accepted standard of training and

competency development of RHCP can be built. This study focused on emergency care immediately after an injury or occurrence of an acute illness to the point when it is no longer acutely life threatening; thus, the Delphi statements excluded: maintenance care; chronic diseases; occupational health, and primary healthcare.

Specifically, the objectives were to:

1. synthesize Delphi statements on competency requirements for MER in the O&G industry of Nigeria;
2. validate the content and face validity of the statements;
3. establish the levels of consensus of members of the panel on each statement, and
4. extract further statements from the panel participants as a feedback on competence requirement and reasons for not achieving consensus.

3.4 Materials and Method

3.4.1 Delphi Research Design

The Delphi research method is a structured research technique used to build consensus on topics or statements by a panel of selected expert through an iterative exploration of questions or statements using an online survey monkey as a platform.[63] It is underpinned by the coalescence of two or more valid opinions of a group of experts which are scientifically substantial enough to make a rational decision and postulation.[63,64,65] The Delphi process involves development of statements or questionnaires, validation of the statements, selection of expert panel, administration of statements in several rounds, data analysis and provision of controlled feedback after each rounds.[63] It is a multistage[66] and iterative process as evidenced by the controlled feedback communication between the researcher and the panel following each round[61]. Figure 3.1 summarizes the detailed Delphi process.

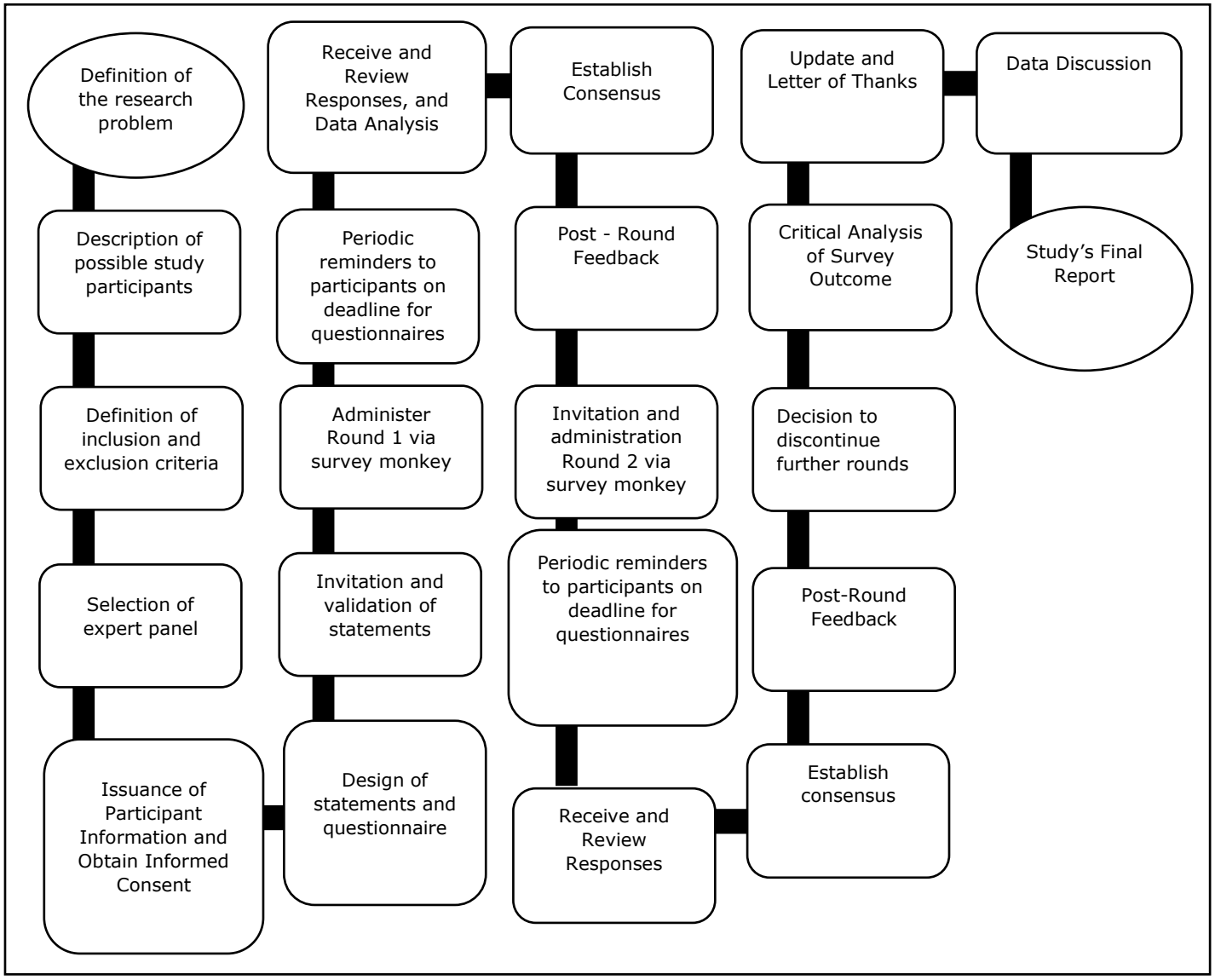


Figure 3.1: Detailed Delphi process

Source: Adapted from Massaroli et. Al.[66]

The basic characteristics underpinning the Delphi research technique include: anonymity or semi-anonymity of participants, the involvement of an expert panel in the subject area, provision of controlled feedbacks to participants, progression of participant interaction through a series of rounds, obtaining consensus on each statement or subject and the iterative process.[60, 61]

Typology of Delphi Research Method

While both the Classical and Modified Delphi techniques remain the traditional types of Delphi research method, many other variants and subtypes have emerged over the years. These are Policy Delphi; Mini Delphi; Decision Delphi; Argument Delphi; Online Delphi; Electronic Delphi; Technology Delphi; Real Time Delphi; Estimate Feedback Talk Estimate Delphi; Disaggregative Policy Delphi, and Ranking Type Delphi.[66, 67] Although, the basic characteristics and similarities are underpinned by the features presented in Figure 3.2, inherent strengths and limitations exist in all of these methods, as presented in Figure 3.3

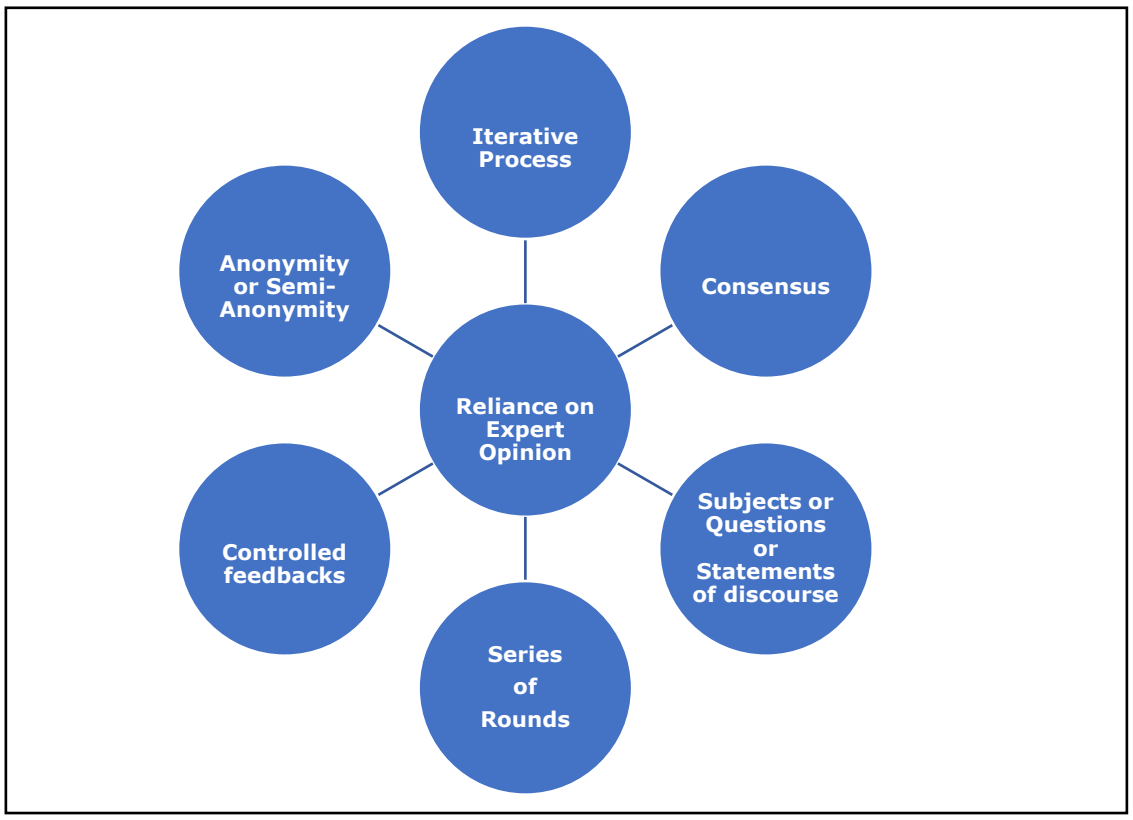


Figure 3.2 : Basic Characteristics of Delphi Research Method

Source – Author generated

Figure 3.3: Typology of Delphi Research Methods

Source: Adapted from Strasser[67]

All of the variants identified have some of the basic Delphi characteristics (see Figure 3.2), namely: involvement of an expert panel; consensus formation; iterative controlled feedbacks, anonymous or semi - anonymous , series of rounds and use of discourse of Delphi statements. Only the Modified Delphi, however, used mixed methods thus affording it a broad approach with a comprehensive outcome.' In addition to comprising the basic Delphi characteristics, the Modified Delphi offers additional benefits in that it can be combined with other research methods, virtually compatible, semi - anonymous, and involves use of experts.

Research Paradigm of Delphi Research Method

Research paradigm refers to the basic assumptions, beliefs, norms and values that underpins and guides the philosophy of research.[68] According to Kivunja and Kuyini, 'It is the conceptual lens through which the researcher examines the methodological aspects of their research project to determine the research methods that will be used and how the data will be analysed'.[68] Basic four elements of a research paradigm include ontology, methodology, axiology and epistemiology.[68] Epistemiology refers to the assumptions we make about the nature of human knowledge. It focuses on the relationship between the researcher and what can be known (reality), its comprehension, how to acquire the knowledge, how we come to know something; and how we know truth or reality [68, 69]. Ontology refers to the underlying assumptions or beliefs we make in order to conclude that something (knowledge) makes sense or is actual.[68] It aids the process of conceptualisation of reality and facilitatate making of meaning from collected data. Axiology denotes the moral and behavioural elements, right or wrong issues or ethical considerations to be taken into account while planning or undertaking a research. Methodology is a broad concept referring to the logical and systematic process followed in conducting a research or developing knowledge.[68,69] It includes: research design; participants or research subjects; procedures adopted; data generation; data presentation; data analysis; assumptions and limitations of the investigation.[68, 69] The above mentioned elements are further grouped under different research paradigms, namely pragmatist, positivist (postpositivist), interpretivist (constructivist) and transforming[70] (see Figure 3.4).

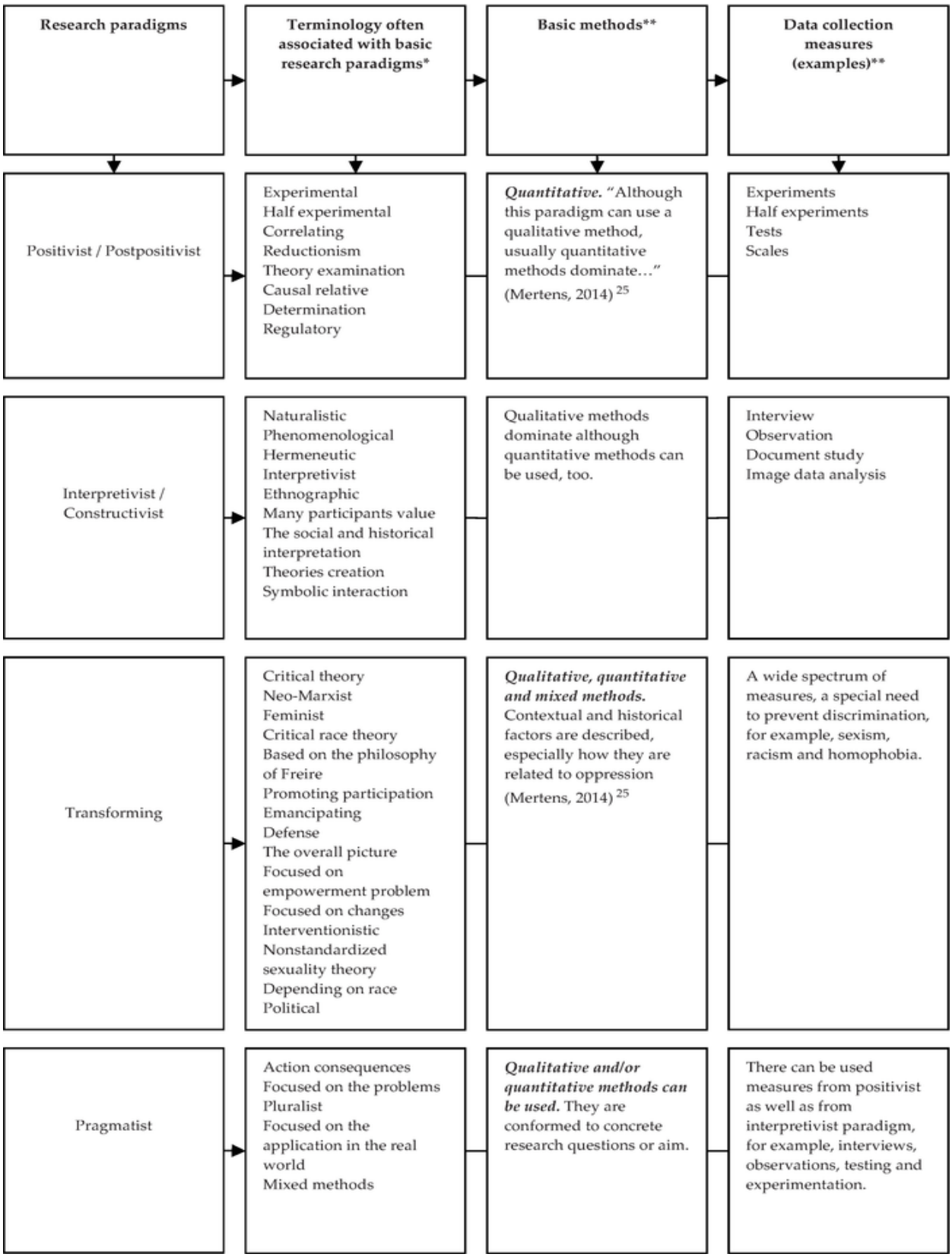


Figure 3.4 : Paradigms: terminology, methods, and means of data collection

Source: P., Vveinhardt, J. & Andriukaitienė, R.[70]

As this was a mixed methods study, the philosophical assumptions governing this study can be located within a Pragmatic Paradigm. This underpins the framework for the Quantitative domain of this Delphi technique as evidenced by the use of basic statistics to arrive at consensus and the framework for the Qualitative domain of this Delphi technique as evidenced by the controlled feedback process, iterative process and opinion of the expert panel.[71,72]

3.4.2 Study Setting

This study focussed on MER in the O&G industry of Nigeria which is predominantly nestled in the Niger Delta region of Nigeria as shown in Figure 3.5. The region lies in the southern part of Nigeria along the coastal Atlantic shelf over 2000 square miles comprising 9 states out of 36 states, namely Delta, Edo, Bayelsa, Rivers, Akwa-Ibom, Cross-River, Abia, Imo, and Ondo states. It lies between longitude 5^0E to 8^0E and latitudes 4^0N to 6^0N sharing its northern border with Enugu, Kogi, Ebonyi and Kwara States, its eastern border with Cameroon, the western border with Lagos and Oyo states, and the southern border with the Atlantic Ocean.[15,32] It is largely a wetland with swampy terrain, offshore and less of onshore areas with the terrain criss-crossed by O&G exploration and production facilities.

Figure 3.5: Niger Delta region of Nigeria (adapted from researchgate.net)

3.4.3 Research Governance

This Delphi study was reviewed and approved by the following.

i. Supervisory team - A research protocol was initially designed, reviewed and approved by the PhD supervisory team.

ii. The School of Pharmacy and Life Sciences Ethics Review Committee at Robert Gordon University (Appendix V) – This protocol was submitted and approved by the School Ethics Review Committee on the 10th of May 2018 for the online Delphi study. After which the pilot review of the Delphi statements was conducted (Appendix VI). Informed consent was obtained from each participant after issuance of 'Participant Information Sheet' (Appendix VII). Voluntary consent was obtained prior to participation and evidenced by initialing of Consent Form (Appendix VIII).

Research materials including initialed consent forms and completed Delphi study questionnaires were stored in the R-Drive in accordance with the Standard Operating Procedures of the School of Pharmacy and Life Sciences and the governance policies of Robert Gordon University.

3.4.4 Delphi statements

An initial set of Delphi statements were developed from the outcome of the JBI systematic review, which leveraged on the enquiry of available evidences on policy and guidance statements on remote MER in the O&G industry of Nigeria. These statements were sent to experienced professionals for face and content validation as a pilot study.

3.4.5 Pilot study

The statements were first administered to a team of experienced RHCP stakeholders for face and content validation within a 2-week period. Face validation refers to the appraisal and assurance that, on the face of it, the statements reflect the study construct. Content validation refers to an estimation of the extent to which the relevance and representativeness of statements are fully captured.[62]

Recruitment – Eight participants were invited with all (100%) accepting to participate in the validation. The participants were recruited through suggestions by a volunteer conversant in the topic and potential participants, this was followed by person to person canvassing, electronic mail contacts and telephone discussion. They included an: RHCP specialist; RHCP Academic; Remote Healthcare Nursing Manager; Regional Director of RHCP; President of The Society of Occupational & Environmental Health Physician of Nigeria (SOEPHON); RHCP Lead in an Oil multi-National; Regional RHCP Manager in an Oil multi-National, and an Expatriate Remote Health Care Paramedic (see Figure 3.6). Criteria for inclusion required participants to be a present or past high ranking professional and academics with 10 years and above experience in remote healthcare practice in the O&G and allied industries of Nigeria. Participants were expected to be knowledgeable about the health risks associated with working in O&G industry of Nigeria. Individuals with limited knowledge, lower than 10 years experience, were excluded as they may not have an end-to-end knowledge in remote healthcare practise. The statements were sent by mail and self administered after pre-informing participants about the study background, obtained consent on their willingness to participate, invited to provide opinion on face and content validity of the statement. The statements were rated by using a 5-point Likert scale to indicate diferent levels of disagreement or agreement on each statement as: 1 = 'Strongly Agree' or 2 = 'Agree' or 3 = 'Neither Agree nor Disagree' or 4 = 'Disagree' or 5 = 'Strongly Disagree'. A free text section was included for participants to express additional information.

Outcome – While 50% had mixed opinion and recommended partial changes with retention of some statements (coloured amber in Table 3.2); 25% were satisfied with the content and thus recommended no changes (coloured green in Table 3.2). Conversely, 25% were completely dissatisfied and recommended complete change of content (coloured red in Table 3.2). They opined that, since the objective of the study is to identify competency requirements for MER, the statements should be specifica and focussed on skill set and competencies rather than diseases and broad based worklace factors. A graphical overview

of the response pattern can be seen in Figure 3.7. The initial statements were completely changed to more skill-specific competence based statements.

Basis for change – The initial statements were changed to enable the elicitation of respondent opinion on competence requirement instead of broadbased disease knowledge. Since the study construct was on competence requirement, the statements there requires specificity on skills needed to manage life threatening MER.

Fifty-four statements (Appendix IX) were thus designed and categorized under six headings:

I. Competencies required for the treatment of acutely ill personnel.

II. Competencies required to initiate treatment of trauma cases.

III. Competencies for therapeutic procedures.

IV. General competencies.

V. Competencies for diagnostic procedures.

VI. Miscellaneous.

Details of the pilot responses are provided in Table 3.2.

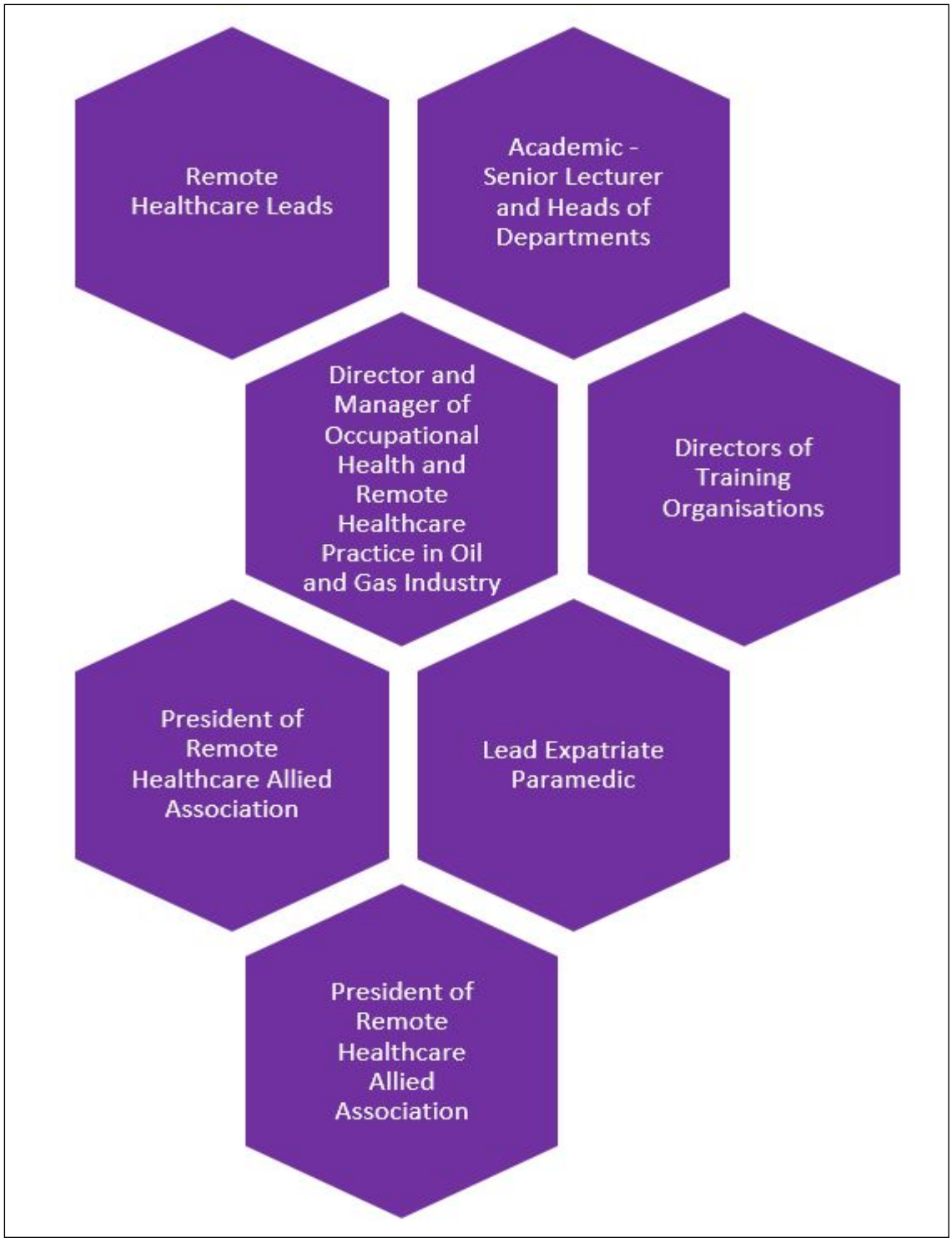


Figure 3.6: Profile of expert panel (Author generated)

Table 3.2: Face and content validation verbatim responses

Expert Roles	Expert Panel Comments
RHCP Specialist	Statements are ambitious & disease focused instead of skill based. Reword to a more specific competence-based statements. Use hyphen between sections and questions. Use colon after the statements before the options.
RHCP Academic	1. I have gone through the questionnaire and found it wide-ranging and covering all the appropriate areas. I have a few suggestions though. Section 2 - treatment of common injuries - I suggest that instead of bruises you put human & animal bite 2. Section 3- RHCP mandatory skills set. telemedicine facilities should read use of telemedicine facilities 3. Section 5 - RHCP training. I think in brackets we should indicate what category of medics may be required to have the training e.g. ATLS for doctors. Nurses are not eligible for ATLS training 4. Section 6 - Remote clinic requirements. Washing facilities should read TOILET &washing facilities 5. Section 10- Skill maintenance requirements. Periodic training should be removed as you already have mandatory CPD course Thanks for asking me to review these statements.
Remote Healthcare Nursing Manager	Delphi statements are comprehensive enough and adequate.
Regional Director of RHCP	I have gone through. Largely ok but would prefer the question to be more specific.
President, The Society of Occupational & Environmental Health Physician of Nigeria	Delphi statements reviewed. Some of the statements are broad, narrow down the competence requirement and you will be fine.
RHCP Lead, Oil multi-National	I have gone through the questionnaire which I feel is largely adequate but for the aspect on RHCPs facilitating helicopter landing operations. I feel it should not be in the scope of RHCP practice. Rejig some of the statements to be more specific questions on RHCP related skill requirements.
Regional RHCP Manager, Oil multi-National	I have gone through the statements and I think it is excellent. Participation should be voluntary, and this is clearly documented. Most of the areas regarding MER are covered.
Expatriate Remote Health Care Paramedic	Not satisfactory. Change entire statements to specific RHCP related focus. Remove primary care and chronic conditions from your assessments as these are not relevant and will complicate matters. Ask more specific questions Nail down your definition of `emergency care´ and focus on this. Include types of presentations i.e. acute, type of condition i.e. life threatening and an end for ´emergency treatment.

Legend: Green = No change required , Amber: Partial changes required, Red: Complete change of content required

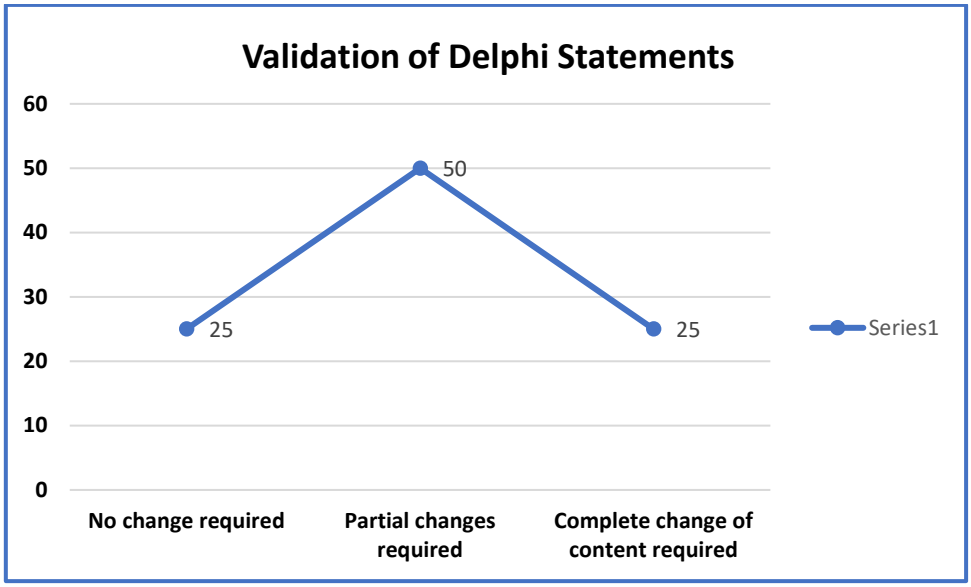


Figure 3.7: Delphi Statement Validation Pattern.

3.4.6 Rating of Refine Statements

The refined statements were designed to be rated by using a 5-point Likert scale to express varying levels of disagreement or agreement on each statement as: 1 = 'Strongly Agree' or 2 = 'Agree' or 3 = 'Neither Agree nor Disagree' or 4 = 'Disagree' or 5 = 'Strongly Disagree'. A free text comment box was included to enable participants to provide additional information about the statement should they wish to do so.

3.4.7 Determining consensus

There are several approaches [61, 62, 63] to deciding consensus in a Delphi study as highlighted by the Hsu and Sandford (2007) review paper (Table 3.2). However, Miller had posited that it is scientific to use percentage of opinion convergence to decide consensus.[62] In this study, statements rated 'Agree or Strongly Agree' from 70% of respondents were adjudged a consensus as it is the commonly adopted approach.[61]

Table 3.3: Approaches to determining consensus in Delphi study (adapted from Hsu 2007)

Author	Characterization of consensus
Seagle and Iverson (2001)	"Consensus was achieved on an item if at least 60% of the respondents were in agreement and the composite score fell in the "agree" or "disagree" range." (on a 5-point Likert scale.)
Miller, 2006	When a certain percentage of the rates falls within a defined range.
Ulschak (1983)	When 80% of respondents' rates fall within two categories on a 7-point scale.
Green (1982)	At least 70% of Delphi subjects need to rate three or higher on a 4-point Likert scale.
Scheibe, Skutsch, and Schofer (1975)	The use of percentage measures is inadequate. A more reliable alternative is to measure the stability of participants responses in successive iterations.

3.4.8 Selection Criteria for Expert Panel

This is the most crucial stage[61] in the Delphi study as data quality is dependent on the depth of knowledge, experience and foresight of each respondent on the subject.[60, 61] Relatedly, Derek et al.[68] opined that this stage is critical and would add validity to the data. Delbecq, Van de Ven, Andrew H and Gustafson (1975),[64] advised that the panel should be expert in the field of study and should, as a minimum, possess the following backgrounds:

> "*(1) Top management decision makers who will utilize the outcomes of the Delphi study;*
>
> *(2) Professional staff members together with their support team, and*
>
> *(3) the respondents to the Delphi questionnaire whose judgments are being sought*".

Within the context of the offshore oil and associated maritime industry, the selection criteria would be an individual who is: knowledgeable; experienced; managed and worked for a significant duration in remote healthcare spheres

(prevailing medical emergencies, MER, logistics, resources and management). Although, Hardy et al. differed in using years of experience as a criterion due to its the possibility of inadequate exposure to emergency cases, Derek, Keeney, Hasson and Mckenna[68] argued that a combination of criterion is most suitable approach. In this study, the background of selected experts falls under seven categories, Figure 3.5 details the profile of the expert panel, who had a minimum of 5-years of experience in healthcare delivery within the O&G industry or associated remote industries.[62, 65]

3.4.8.1 Sample Size

The most appropriate Delphi sample size is between 10 and 50 experts,[66] which was corroborated by the Witkin and Altschuld publication (1995). In this study, the sample size was 52.[64]

3.4.8.2 Recruitment of experts

Selected expert participants comprised 52 subject matter experts in the field of remote healthcare practice, including within the O&G industry. Participant were first identified through recommendation by participants in the validation phase, networking, LinkedIn, corporate websites search. Potential participants were contacted by an email invitation followed by a phone call to secure expression of interest.[65] On acceptance of willingness to participate, an informed online consent was obtained prior to commencement of the Delphi study with participant identity maintained semi-anonymous (see Figure 3.8 for detailed steps involved in the recruitment).

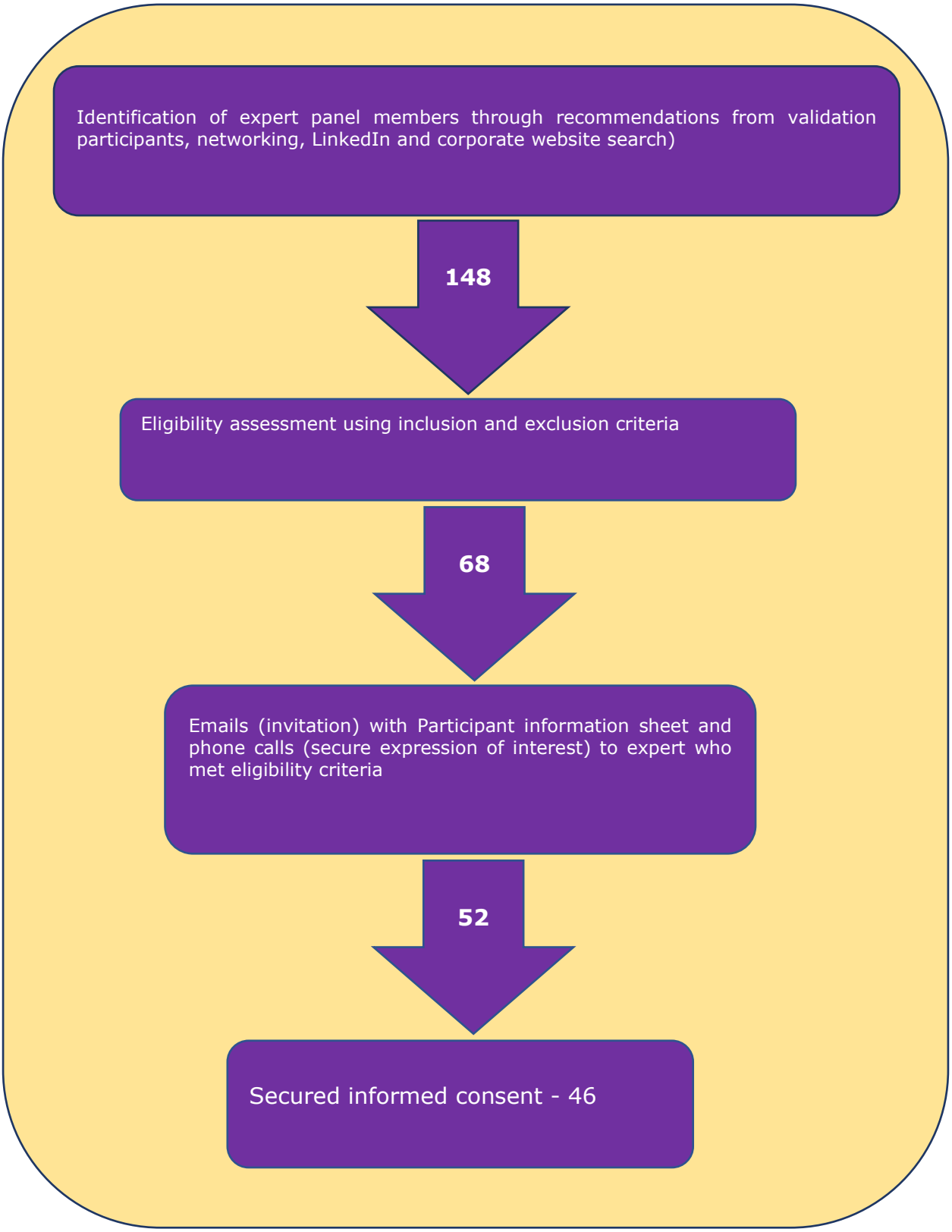


Figure 3.8: Flowchart for recruitment of expert panel

(Author generated)

3.4.8.3 Round 1- An email with link to the SurveyMonkey survey platform with Delphi statements was sent to 52 participants over a 3-week period for completion and return. Participants were advised to read an attached Participant Information Sheet, before giving consent to participate over a 3-week period with periodic reminders (Appendix VII). The participant responses were analysed using descriptive statistics to appraise the percentages and frequencies of responses with content analysis conducted on the qualitative textual responses. Focus was on percentages and frequencies because Delphi technique is consensus based and thus dependent on the percentages of consensus or agreement on a statement. Statements with 70% consensus were extracted from responses that selected 'Agree' and 'Strongly Agree'. This was achieved using the survey monkey capabilities (Figure 3.9).

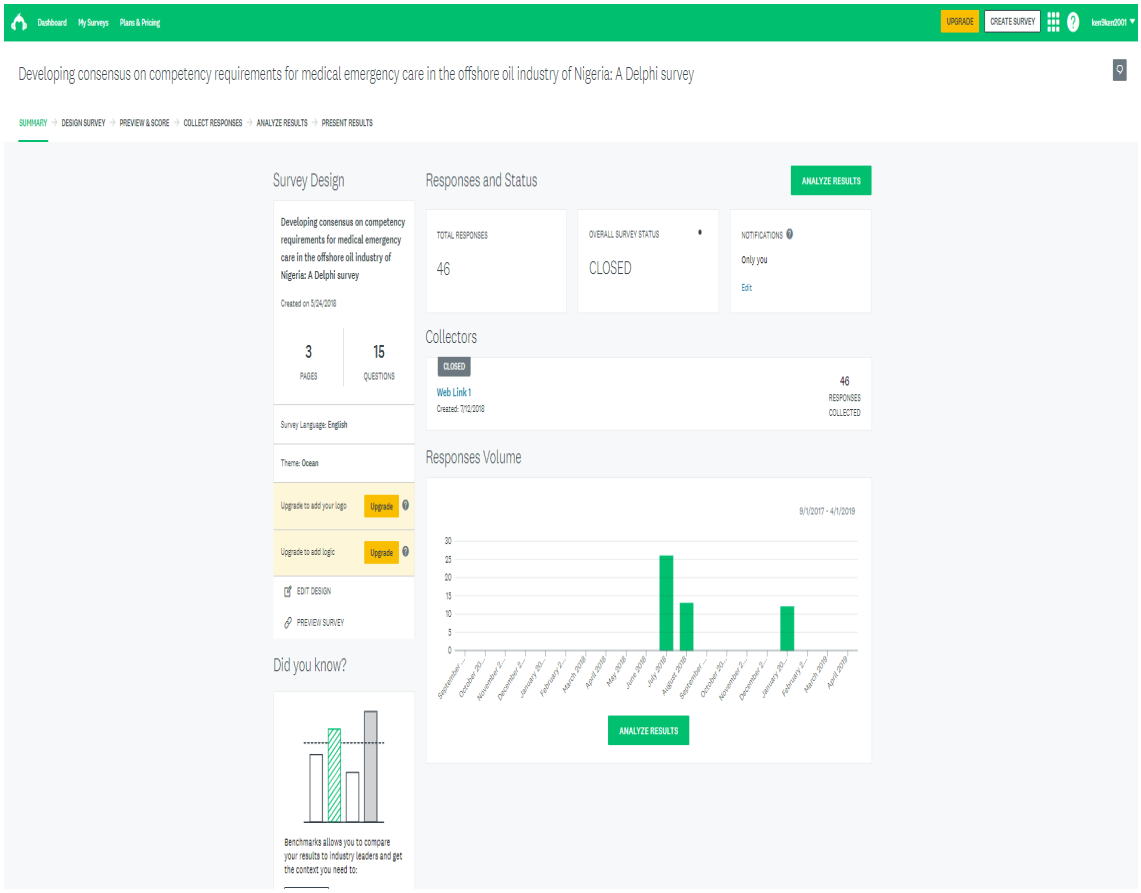


Figure 3.9: Screen-shot example of survey monkey dashboard.

3.4.8.4 Round 2 – A summary of responses to each statement and commentary analysis was sent to all participants. Seven statements did not make 70% consensus in Round 1 and were thus re-worded, revised and administered to 52 participants over a 3-week period with two reminders before the end date. The responses were analysed using descriptive statistics with textual analysis of the comments. Focus was on percentages and frequencies because the Delphi technique is consensus based and thus dependent on the percentages of consensus or agreement on a statement. Statements with 70% consensus were extracted from responses that selected 'Agree' and 'Strongly agree'. This was achieved using the basic statistics capabilities of the survey monkey (Figure 3.10).

	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE	TOTAL	WEIGHTED AVERAGE
1.1 - Obtain patient history, conduct clinical assessment and focused examinations like otoscopy, laryngoscopy etc.	60.87% 28	36.96% 17	0.00% 0	2.17% 1	0.00% 0	46	4.57
1.2 - Perform and interpret a 12-lead electrocardiogram.	47.83% 22	52.17% 24	0.00% 0	0.00% 0	0.00% 0	46	4.48
1.3 - Perform and interpret emergency ultrasound.	23.91% 11	52.17% 24	17.39% 8	6.52% 3	0.00% 0	46	3.93
1.4 - Perform and interpret plain radiography of the chest, pelvis, c-spine, extremity and skull.	23.91% 11	52.17% 24	8.70% 4	15.22% 7	0.00% 0	46	3.85
1.5 - Assess the level of consciousness using the Glasgow Coma Scale (GCS).	73.91% 34	23.91% 11	0.00% 0	2.17% 1	0.00% 0	46	4.70
1.6 - Assess vital signs (respiration, heart rate, temperature, and blood pressure), perform pulse oximetry and cardiac monitoring	82.61% 38	17.39% 8	0.00% 0	0.00% 0	0.00% 0	46	4.83
1.7 - Perform and interpret Point-of-Care-Tests (POCT) namely Complete Blood Count; Basic Metabolic Panel (calcium/phosphate/magnesium); Cardiac markers; electrolyte; Blood glucose; malaria screening; hemoglobin test; Arterial blood gas and clotting screen.	30.43% 14	43.48% 20	17.39% 8	8.70% 4	0.00% 0	46	3.96
1.8 - Perform and interpret diagnostic peritoneal lavage and rectal examination.	13.04% 6	34.78% 16	30.43% 14	19.57% 9	2.17% 1	46	3.37
1.9 - Perform triage in multiple emergency cases	76.09% 35	21.74% 10	0.00% 0	2.17% 1	0.00% 0	46	4.72

Comments (10)

Figure 3.10 : Screen-shot example of statistics on survey monkey.

3.5 RESULTS

An 88% response rate was achieved with 46 responses from 52 consented panel members.

Background of Respondents

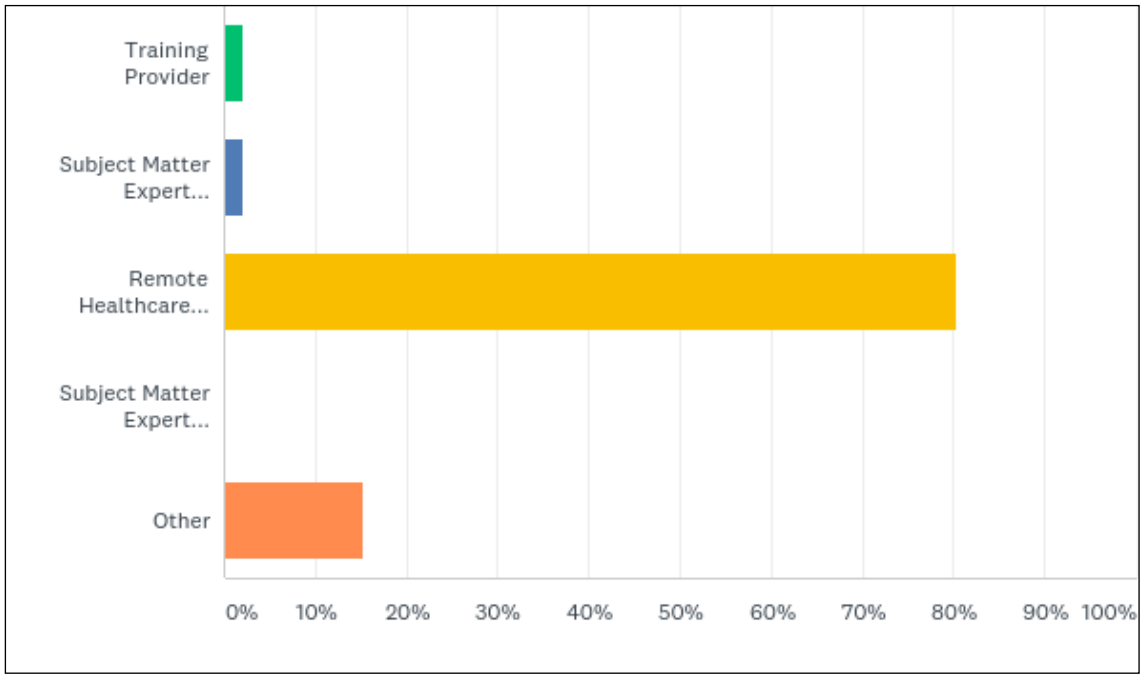


Figure 3.11 Categories of respondents

ANSWER CHOICES	RESPONSES	
Training Provider	2.17%	1
Subject Matter Expert (academic)	2.17%	1
Remote Healthcare Practitioner (RHCP)	80.43%	37
Subject Matter Expert (Retired)	0.00%	0
Other	15.22%	7
TOTAL		46

Most respondents were RHCP practitioners in the O&G industry of Nigeria (Figure 3.11). This group constitutes 80.43% of 52 consented participants. This cannot be unconnected with the fact that they are in the frontline of remote medical emergencies and knows exactly what is required for an efficient and effective emergency response. This also implies that they constitute a greater majority of the consensus.

Years of Experience in Remote healthcare in Nigeria

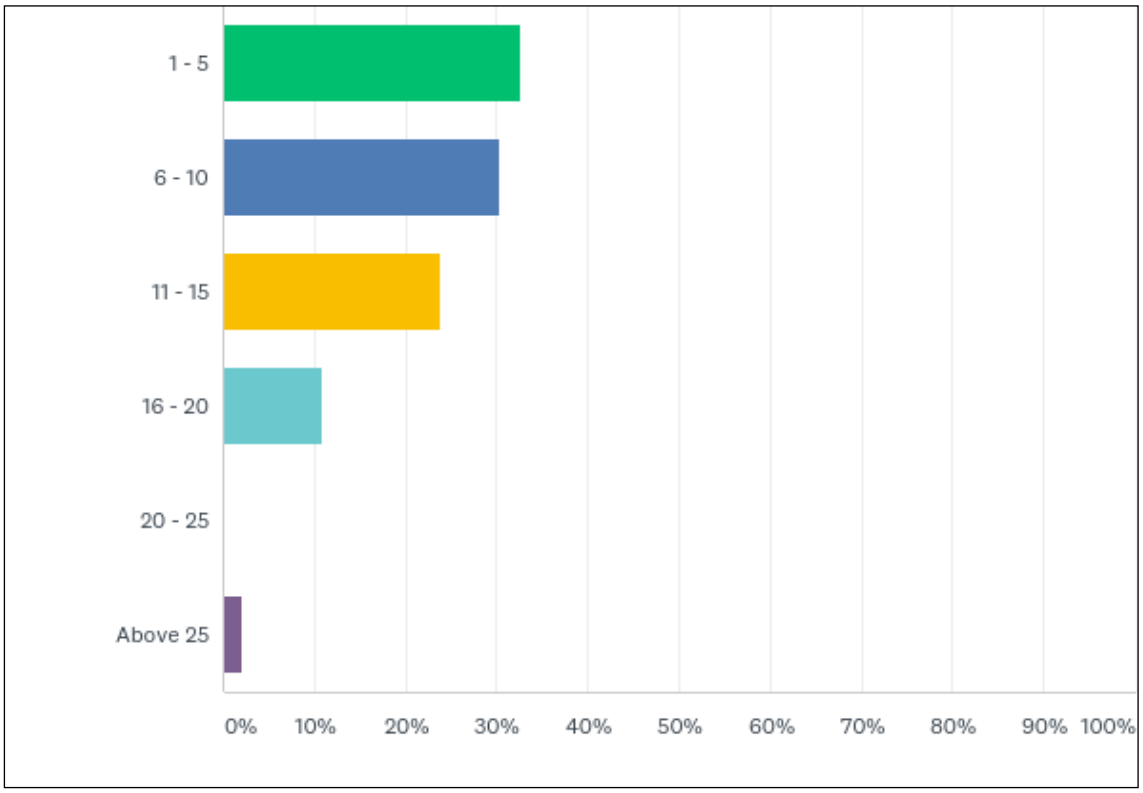


Figure 3.12 Number of years of experience working in the delivery of remote healthcare in Nigeria (outside O&G Industry)

ANSWER CHOICES	RESPONSES	
1 - 5	32.61%	15
6 - 10	30.43%	14
11 - 15	23.91%	11
16 - 20	10.87%	5
20 - 25	0.00%	0
Above 25	2.17%	1
TOTAL		46

In Figure 3.12, 32.61% of the respondents had 1-5 years' experience in remote healthcare delivery of Nigeria followed by 6-10 years and 11-15 years respectively. The range of years of experience in the remote healthcare sector

of Nigeria implies their experience might still be current and representative of the unique requirements needed in the Nigerian remote healthcare space.

Years of experience in Remote Healthcare delivery in Nigeria O&G industry

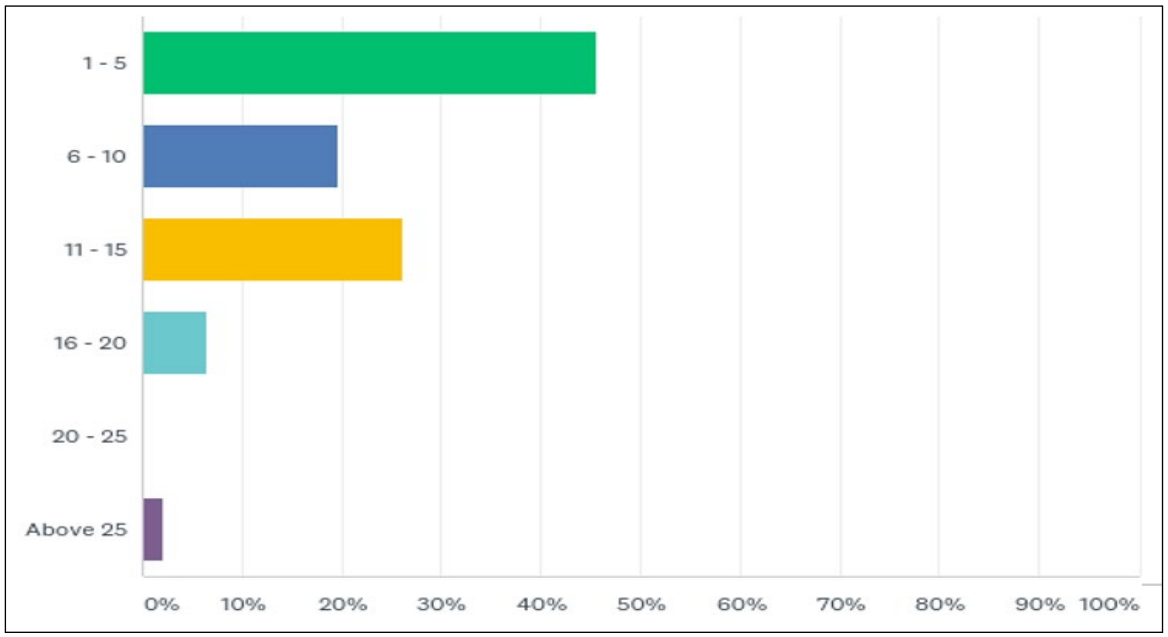


Figure 3.13: Number of years of experience working in remote healthcare in the O&G industry of Nigeria overall.

ANSWER CHOICES	RESPONSES	
1 - 5	45.65%	21
6 - 10	19.57%	9
11 - 15	26.09%	12
16 - 20	6.52%	3
20 - 25	0.00%	0
Above 25	2.17%	1
TOTAL		46

In Figure 3.13, 45.65% of the respondents had 1-5 years' experience in remote healthcare delivery in the O&G industry of Nigeria followed by 6-10 years (19.57%) and 11-15 years (26.09%) respectively.

In comparison with Figure 3.8, the number of respondents with comprehensive knowledge in the remote healthcare space and oil industry is robust enough to give valid information.

3.5.1 Round 1 Delphi technique

This section presents the rate of expert consensus achieved for each statement in the six sections. Verbatim comments were given on some statements.

3.5.2 Statements regarding competencies on diagnostic procedures

1. The Remote Healthcare Practitioner should be able to obtain patient history, conduct clinical assessment and focused examinations like otoscopy, laryngoscopy etc.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
28	17	0	1	0

Consensus reached (98%)

2. The Remote Healthcare Practitioner should be able to perform and interpret a 12-lead electrocardiogram.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
22	24	0	0	0

Consensus reached (100%)

3. The Remote Healthcare Practitioner should be able to Perform and interpret emergency ultrasound.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
11	24	8	3	0

Consensus reached (76%)

4. The Remote Healthcare Practitioner should be able to perform and interpret plain radioradiographs of the chest, pelvis, c-spine, extremity and skull.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
11	24	4	7	0

Consensus reached (76%)

5. The Remote Healthcare Practitioner should be able to assess the level of consciousness using the Glasgow Coma Scale (GCS).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
34	11	0	1	0

Consensus reached (98%)

6. The Remote Healthcare Practitioner should be able to assess vital signs (respiration, heart rate, temperature, and blood pressure), perform pulse oximetry and cardiac monitoring

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
38	8	0	0	0

Consensus reached (100%)

7. The Remote Healthcare Practitioner should be able to perform and interpret Point-of-Care-Tests (POCT) namely Complete Blood Count; Basic Metabolic Panel (calcium/phosphate/magnesium); Cardiac markers; electrolyte; Blood glucose; malaria screening; haemoglobin test; Arterial blood gas and clotting screen.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
14	20	8	4	0

Consensus reached (74%)

8. The Remote Healthcare Practitioner should be able to Perform and interpret diagnostic peritoneal lavage and rectal examination.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
6	16	14	9	1

Consensus **not** reached (48%)

9. The Remote Healthcare Practitioner should be able to perform triage in multiple emergency cases.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
35	10	0	1	0

Consensus reached (98%)

Verbatim Statements:

- RHCPs in the oil industry are more of nurses than doctors
- The nurses need more competence development than the doctors

Summary:

Consensus was achieved for 8 out of a total of 9 statements.

Consensus was however not achieved for statement 8; only 48% of the panel opined that RHCPs should perform and interpret diagnostic lavage and rectal examination.

3.5.3 Responses relating to general comments regarding general competencies

1. The Remote Healthcare Practitioner should be knowledgeable and able to establish peripheral intravenous access using intravenous catheter or cannula, perform venous cut down and establish intraosseous access (upper and lower extremity) with administration of different types of intravenous infusion.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
27	18	1	0	0

Consensus reached (98%)

2. The Remote Healthcare Practitioner should be knowledgeable and able to perform Basic Life Support (BLS) using Automated External Defibrillator (AED).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
38	8	0	0	0

Consensus reached (100%)

3. The Remote Healthcare Practitioner should be knowledgeable and able to recognize and initiate emergency treatment for exposures to acute toxic substances (asphyxiates, irritants, allergens and sensitizers), corrosives and toxins.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
32	13	0	0	1

Consensus reached (98%)

4. The Remote Healthcare Practitioner should be knowledgeable and able to identify ST segment elevation, Ventricular Fibrillation, Pulseless Ventricular Tachycardia and perform Advance Life Support.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
28	17	0	1	0

Consensus reached (98%)

5. The Remote Healthcare Practitioner should be knowledgeable and able to recognize and initiate treatment of shock and unconsciousness

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
30	16	0	0	0

Consensus reached (100%)

6. The Remote Healthcare Practitioner should be knowledgeable and able to perform winching of an acutely ill personnel from an awkward site (floating boat or platform) to a remote clinic.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
17	15	6	8	0

Consensus reached (70%)

7. The Remote Healthcare Practitioner should be knowledgeable and able to administer emergency hyperbaric oxygen therapy (HBOT) and therapeutic recompression treatment for decompression illness arising from immersion and drowning.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
7	19	14	6	0

Consensus **not** reached (57%)

8. The Remote Healthcare Practitioner should be knowledgeable and able to perform incision and drainage in simple superficial abscess.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
23	14	3	6	0

Consensus reached (80%)

9. The Remote Healthcare Practitioner should be knowledgeable and able to advise management of the need for an evacuation.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
33	13	0	0	0

Consensus reached (100%)

Summary:

Consensus was achieved for 8 out of a total of 9 statements.

Consensus was however not achieved for statement 7; only 57% of the panel opined that RHCPs should be knowledgeable and able to administer emergency hyperbaric oxygen therapy (HBOT) and therapeutic recompression treatment for decompression illness arising from immersion and drowning

3.5.4 Responses relating to general comments regarding competencies for therapeutic procedures

1. The Remote Healthcare Practitioner should be knowledgeable and able to insert surgical (tracheotomy, needle & surgical cricothyroidotomy) and non-surgical airways (laryngeal mask, nasopharyngeal and oropharyngeal airways).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
20	22	2	2	0

Consensus reached (91%)

2. The Remote Healthcare Practitioner should be knowledgeable and able perform needle decompression of tension pneumothorax.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
25	18	3	0	0

Consensus reached (93%)

3. The Remote Healthcare Practitioner should be knowledgeable and able to perform and manage Chest drain or tube insertion.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
16	25	5	0	0

Consensus reached (89%)

4. The Remote Healthcare Practitioner should be knowledgeable and able to pass urinary catheter (suprapubic and transurethral) and Gastric tube.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
26	19	1	0	0

Consensus reached (98%)

5. The Remote Healthcare Practitioner should be knowledgeable and able to perform Transcutaneous pacing.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
22	18	3	3	0

Consensus reached (87%)

6. The Remote Healthcare Practitioner should be knowledgeable and able to maintain airway using chin-lift manoeuvre, jaw thrust manoeuvre, recovery position and able to perform suctioning of secretion.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
35	11	0	0	0

Consensus reached (100%)

7. The Remote Healthcare Practitioner should be knowledgeable and able to perform a Bag-Mask ventilation and administer supplemental oxygen.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
37	9	0	0	0

Consensus reached (100%)

8. The Remote Healthcare Practitioner should be knowledgeable and able to perform Pericardiocentesis.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
12	12	12	9	1

Consensus **not** reached (52%)

9. The Remote Healthcare Practitioner should be knowledgeable and able to administer emergency medications and pharmacological agents through enteral and parenteral routes such as sublingual, oral, per rectum, intravenous, intraosseous, endotracheal, topical and subcutaneous.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
33	12	1	0	0

Consensus reached (98%)

Verbatim Statements:

- Remote offshore medics should be able to resuscitate patients,
- They should be knowledgeable in ethics and leadership,
- RHCPs should be able to organize drills from time to time

Summary:

Consensus was achieved for 8 out of a total of 9 statements. Consensus was however not achieved for statement 8. 52% of the panel opined that RHCPs should be knowledgeable and should be able to perform Pericardiocentesis.

3.5.5 Responses relating to general comments regarding competencies required to initiate treatment of trauma cases

1. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment (reduce and immobilize) of fractured bones (extremities, pelvic, thorax and spine).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
32	14	0	0	0

Consensus reached (100%)

2. The Remote Healthcare Practitioner should be knowledgeable and able to reduce and immobilize dislocated joints (Jaw, Shoulder, Elbow, Digits, Hip, Knee, and Ankle).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
22	20	4	0	0

Consensus reached (91%)

3. The Remote Healthcare Practitioner should be knowledgeable and able to recognize and initiate treatment of Increased Intracranial Pressure.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
18	25	1	2	0

Consensus reached (93%)

4. The Remote Healthcare Practitioner should be knowledgeable and able to perform wound care, apply suture to uncomplicated lac lacerations and dressing to wounds.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
28	17	0	1	0

Consensus reached (98%)

5. The Remote Healthcare Practitioner should be knowledgeable and able toinitiate treatment and stabilize acute abdomen.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
22	19	3	2	0

Consensus reached (89%)

6. The Remote Healthcare Practitioner should be knowledgeable and able to initiate and stabilize burns cases.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
24	22	0	0	0

Consensus reached (100%)

7. The Remote Healthcare Practitioner should be knowledgeable and able to control external bleeding, epistasis and recognized internal bleeding and initiate treatment.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
29	15	1	1	0

Consensus reached (96%)

8. The Remote Healthcare Practitioner should be knowledgeable and able to type and cross match blood, facilitate blood donation and administer blood transfusion.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
3	19	15	8	1

Consensus **not** reached (48%)

9. The Remote Healthcare Practitioner should be knowledgeable and able to initiate the management of pain using suitable analgesics.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
30	15	0	1	0

Consensus reached (98%)

Summary:

Consensus was achieved for 8 out of a total of statements. Consensus was however not achieved for statement 8; only 48% of the panel opined that RHCPs should be knowledgeable and able to type and cross match blood, facilitate blood donation and administer blood transfusion.

3.5.6 Responses relating to general comments regarding competencies required for the treatment of acutely ill personnel

1. The Remote Healthcare Practitioner should be knowledgeable and able to initiate emergency treatment of acute psychosis severe anxiety depressive disease.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
19	23	3	1	0

Consensus reached (91%)

2. The Remote Healthcare Practitioner should be knowledgeable and able toinitiate treatment and stabilize Seizures and convulsion.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
25	21	0	0	0

Consensus reached (100%)

3. The Remote Healthcare Practitioner should be knowledgeable and able to identify and initiate treatment for Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
12	16	13	4	1

Consensus **not** reached (61%)

4. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment for Hypertensive crisis and acute stroke.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
25	20	1	0	0

Consensus reached (98%)

5. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment of asthmatic attack using nebulizer and medications.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
31	15	0	0	0

Consensus reached (100%)

6. The Remote Healthcare Practitioner should be knowledgeable and able to administer emergency medications and pharmacological agents through enteral and parenteral routes such as sublingual, oral, per rectum, intravenous, intraosseous, endotracheal, topical and subcutaneous.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
30	14	1	1	0

Consensus reached (96%)

7. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment for acute Gastro Intestinal haemorrhage.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
15	22	6	3	0

Consensus reached (80%)

8. The Remote Healthcare Practitioner should be knowledgeable and able to identify and initiate treatment for acute anaphylaxis.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
29	17	0	0	0

Consensus reached (100%)

9. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment and stabilize acute metabolic conditions (Diabetic Keto Acidosis, Acute Thyrotoxicosis etc.).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
23	22	0	1	0

Consensus reached (98%)

Verbatim Statements:

Remote medics should be decisive and able to collaborate efficiently with topside medical facility and manage less severe burn cases.

No remote healthcare medic should perform tracheotomy and peri cardiocentesis.

Summary

Consensus was achieved for 8 out of a total of 9 statements. Consensus was however not achieved for statement 3; only 61% of the panel opined that RHCPs should be knowledgeable and able to identify and initiate treatment for Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI).

3.5.7 Responses relating to general comments regarding miscellaneous competencies

1. The Remote Healthcare Practitioner should be knowledgeable and able to communicate effectively with topside medical team while working on emergency cases.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
36	10	0	0	0

Consensus reached (100%)

2. The Remote Healthcare Practitioner should be knowledgeable and able to identify and initiate treatment for acute malaria and other acute presentations of tropical diseases.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
36	10	0	0	0

Consensus reached (100%)

3. The Remote Healthcare Practitioner should be knowledgeable and able to identify and initiate treatment for contagious diseases like Chicken pox, Ebola etc.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
32	14	0	0	0

Consensus reached (100%)

4. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment for Food poison.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
34	12	0	0	0

Consensus reached (100%)

5. The Remote Healthcare Practitioner should be knowledgeable and able to identify and initiate management for acute anxiety resulting from kidnapping

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
19	21	2	4	0

Consensus reached (87%)

6. The Remote Healthcare Practitioner should be knowledgeable and able to administer local anaesthesia including infiltration

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
24	21	1	0	0

Consensus reached (98%)

7. The Remote Healthcare Practitioner should be knowledgeable and able to initiate treatment for traumatic tooth injuries.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
15	14	7	8	1

Consensus reached **not** (63%)

8. The Remote Healthcare Practitioner should be knowledgeable and able to use telemedicine equipment (Tempus Pro, potable telemedicine equipment) to transmit voice, images, data and work on patient under the guide of an onshore team.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
26	19	1	0	0

Consensus reached (98%)

9. The Remote Healthcare Practitioner should be knowledgeable and able to use eyewash and shower stations in initial treatment of chemical burns.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
34	12	0	0	0

Consensus reached (100%)

Verbatim Statements:
Remote Healthcare personnel should be competent enough to participate in site management review and use Body Mass Index (BMI) in management of non-communicable diseases. RHCPs that hold medicine background should be able to carry out stroke assessment

Summary

Consensus was achieved for 8 out of a total of 9 statements. Consensus was however not achieved for statement 7; only 63% of the panel opined that RHCPs should be knowledgeable and able to initiate treatment for traumatic tooth injuries

3.5.8 Round 1

An 88% response rate was achieved with 46 responses from 52 panel members. Consensus was obtained for 48 out of 54 statements (87.03%) with 15 textual comments. Overall, a high level of consensus was achieved for the majority of statements in each of the 6 competency sections.

3.5.9 Round 2

Revised statements relating to sections on ability of the RHCP to perform diagnostic procedures; therapeutic procedures; treatment of Trauma cases, miscellaneous competencies; treatment of acutely ill personnel &general competencies.

1. The Remote Healthcare Practitioner would require competence to perform and interpret diagnostic peritoneal lavage and rectal examination.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
9	32	4	5	0

Consensus reached (89%)

2. Remote healthcare practice requires knowledge of Hyperbaric Oxygen Therapy (HBOT) for decompression illness arising from immersion and drowning.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
12	26	6	6	0

Consensus reached (83%)

3. Ability to perform Pericardiocentesis should be a competence requirement for remote healthcare practice.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
4	31	7	7	1

Consensus reached (76%)

4. Remote Healthcare Practitioner should be able to safely obtain and transfuse blood.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
6	15	8	18	3

Consensus **not** reached (46%)

5. The Remote Healthcare Practitioner should recognize and commence treatment of Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI).

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
10	22	10	7	1

Consensus reached (70%)

6. The Remote Healthcare Practitioner recognize and commence treatment of traumatic tooth injuries.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
18	28	4	0	0

Consensus reached (100%)

Verbatim Statements:

Offshore medics should be able to handle every medical emergency treatment of burns, wounds such as laceration, fracture and be able to suture wound and care of seek workers in the remote locations.

Summary

Consensus was achieved for 5 out of a total of 6 statements. Consensus was however not achieved for statement 5; only 46% of the panel opined that RHCPs should be able to type and cross match blood, facilitate blood donation and administer blood transfusion

Table 3.4: Overview of the Delphi two rounds

Initial statements	Round 1 statement without consensus	Percentages of consensus (%)	Revised statements in Round 2	Round 2 statement with consensus	Round 2 statement without consensus
54					1 Statement (46%)
	The RHCP should be able to perform and interpret diagnostic peritoneal lavage and rectal examination.	**48**	The RHCP would require competence to perform and interpret diagnostic peritoneal lavage and rectal examination	**(89%)**	
	The RHCP should be knowledgeable and able to administer emergency hyperbaric oxygen therapy (HBOT) and therapeutic recompression treatment for decompression illness arising from immersion and drowning	**57**	RHCP requires knowledge of Hyperbaric Oxygen Therapy (HBOT) for decompression illness arising from immersion and drowning	**(83%)**	
	The RHCP should be knowledgeable and able to perform Pericardiocentesis	**52**	Ability to perform Pericardiocentesis should be a competence requirement for remote healthcare practice	**(76%)**	
	The RHCP should be knowledgeable and able to type and cross match blood, facilitate blood donation and administer blood transfusion	**48**	RHCPs should be able to safely obtain and transfuse blood	(46%)	
	The RHCP should be knowledgeable and able to identify and initiate treatment for Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI)	**61**	The RHCP should recognize and commence treatment of Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI)	**(70%)**	
	The RHCP should be knowledgeable and able to initiate treatment for traumatic tooth injuries	**63**	The RHCP recognize and commence treatment of traumatic tooth injuries	**(100%)**	

3.6 Discussion

3.6.1 Key findings

The central objective of this Delphi study was to determine consensus of expert opinion on statements pertaining to competency requirements for MER in the O&G industry of Nigeria. It was based on a collage of opinion underpinned by experiences of expert participants thus suitable for developing a competence framework for the training and development of RHCPs[61]. This pooled tested and tried skills from a wide range of medical emergency scenarios the participants had been involved in.

The outcome of this Delphi study showed that, apart from remote blood donation and transfusion which had no consensus, RHCPs should be knowledgeable and proficient in a specific life-saving skill set required to: stabilise acutely ill or injured person; initiate treatment of trauma cases; undertake therapeutic procedures, and diagnostic procedures. It further showed the necessity of miscellaneous skills such as emergency response communication, initiating treatment of tropical diseases (e.g. malaria), contagious diseases (e.g. Ebola and food poisoning), and initiating treatment of traumatic tooth injuries and administration of local anaesthesia. Additionally, the consensus showed the necessity for RHCPs to acquire skills pertaining to: intravenous access and infusion; performing Basic Life Support and Advance Cardiac Life Support; treating exposure to acute toxic substances; identifying and initialising treatment of cardiac dysrhythmias, burns, and administering HBOT.

Whilst the IRHC Delphi study used a similar Delphi technique[35], this Delphi study differed in number of ways. Firstly, the Delphi statements in this study were specific to MER-related competencies as opposed to the IRHCs that were non-specific statements covering several medical emergency variables. Secondly, whilst this study focussed on acutely ill medical emergencies, the IRHC considered general healthcare and primary healthcare related medical conditions. Thirdly, this study focussed on MER in the Nigeria context which is contrary to the IRHCs where the expert panel were drawn from across the globe and adopted a global view of MER and competence requirement.

Whilst the aims and objectives of this Delphi were realised, incorporating the findings into specific training and development of RHCPs within the Nigeria context may lead to better outcomes in MER with respect to the remote O&G locations of Nigeria.

3.6.2 Strengths

The autonomy and quasi anonymity of the participants in this Delphi study process afforded the experts liberty to be factual and objective in their responses, thereby promoting the likelihood of making the data a true reflection of competence requirement needed by the RHCPs. As the administration of the questionnaire was online and quasi anonymous, any domineering influence of strong personalities and occupational status was potentially reduced.[61]

The variety and diversity of the expert panel enabled a comprehensive and multifaceted source of opinions as the panel members came from diverse backgrounds in the remote healthcare sector namely: paramedics; nursing; academia; managerial and directorial levels; health and safety; medicine, and remote healthcare allied associations.

There was copious pre-study communication between the researcher and the panel members through issuance of participant information, informed consent, pre-round one and two contact, and post-round one and two feedbacks. This injected clarity, openness and objectivity which was a strength to the study process. Bedsides, the use of post-round feedback to panel members engendered reflective opinion and facilitated consensus of their expert opinion. Additionally, the possible influence of different biases (e.g. situation and person-specific bias along with researcher bias) were key factors in establishing methodological rigour, which is essential to the integrity of the research.

3.6.3 Limitations

Although, the Delphi study questionnaire had free text sections, the Likert method does not permit respondents to state the reasons for the choice of option thus limiting the sharing of knowledge behind achieving consensus and non-consensus. Furthermore, since the study was undertaken in Nigeria, its generalizability might be limited thus a threat to its external validity. The differences in respondents primary roles could potentially inflict bias and different views about the statements and responses thus a threat to internal validity. Additionally, the selection of participants may have been biased thereby also imposing a threat to its internal validity. Relatedly, the study was administered on internet platform via Survey Monkey and electronic mail thus might disadvantage respondents that are not internet savvy.The processes involved in the Delphi technique (Figure 3.1) is time consuming and requires the commitment of participants.

3.7 Interpretation of findings

In round 1, consensus was obtained for statements relating to Competencies for Diagnostic Procedures (8/9); General competencies (7/9); Competencies for Therapeutic Procedures (8/9); Competencies required to initiate treatment of Trauma cases (8/9); Competencies required for the treatment of acutely ill personnel (8/9) and Miscellaneous Competencies 8/9. However, in round 2, consensus was achieved in statements regarding to competence requirement to perform, interpret diagnostic peritoneal lavage and rectal examination, knowledge of Hyperbaric Oxygen Therapy (HBOT) for decompression illness arising from immersion and drowning, ability to perform Pericardiocentesis, ability to safely obtain and transfuse blood, recognize and commence treatment of Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI) and competence to recognize and commence treatment of traumatic tooth injuries.

In contrast to other Delphi studies,[35,39] certain competencies not previously emphasised were found to be critical to managing life threatening emergencies[2]. These includes competencies for emergency treatment of malaria;

instrumentation in remote telemedicine; winching of emergency cases from remote inaccessible locations; laboratory, and diagnostic competencies. This portends the fact that RHCPs should be knowledgeable of prevailing medical emergencies with suitable treatments. Responses to statements on competencies for diagnostic procedures highlighted the need for RHCPs to investigate emergency conditions using invasive and non-invasive procedures. Although, there was an initial disagreement on ability to perform and interpret complex diagnostic procedures such as peritoneal lavage and rectal examination, it was upheld in the Round 2 thus bringing to the fore the need for invasive diagnostic competencies. Remarkably, consensus was not achieved on the statement concerning the competency of RHCPs to type and cross match blood, facilitate blood donation and administer blood transfusion. While there were no textual comments on reasons for the non-consensus, it is however hypothetical that the processes involved in blood storage and the potential sequela of transfusion could require several high-tech equipment and skilled persons to operate, thus making it not possible for a lone resource.

3.8 Conclusion

The outcome addressed the main objective of the survey, which was to principally obtain consensus of expert opinion on statements pertaining to competency requirements for MER in the O&G industry of Nigeria. Upon this outcome, an accepted standard of training and competency development of RHCP could be built. Interestingly, a high rate of consensus was achieved on the Delphi statements which did not only present the requisite competencies but were synthesized from rigorous techniques involving critique, appraisal of available institutional and corporate policies and guidelines, metanalysis, metasynthesis and expert validation for face and content authentication. Consequently, the product of statement synthesis, critical validation, broad spectrum of expert panel, obtainment of high rate of consensus affords this outcome a valid credibility and thus makes the consented competencies recommendable for adoption by institutions and organisation in managing remote healthcare medical emergencies. As competency requirement for remote healthcare delivery was found to be incomprehensive and varied significantly among institutions and organisations, a

synergy of this outcome with the IRHC broad strategic remote healthcare competency framework will make a good recipe for competent RHCP and remote healthcare delivery.

For these outcomes to be incorporated and operationalized within the Nigerian context would require further consideration by training providers in the O&G industry of Nigeria. Thus, the third stage of this doctoral research sought to explore with a team of discussants from the American Heart Association training providers of Nigeria using focus group methodology how best to integrate and apply the identified MER-related competencies into current training programs in remote healthcare practice. The next chapter is dedicated to presenting the exploratory study.

Chapter 4

Stage 3: Training and Competency Requirements for RHCPs in the O&G industry of Nigeria: An exploratory study.

4.1 Introduction

To build on the Delphi study outcomes reported in Chapter 3, necessitated the conduct of an exploratory study in order to obtain the opinion of training providers on the integration and application of identified MER-related competencies for the specific development of RHCPs in Nigeria. The purpose of this chapter is to present the details on the conduct of that exploratory study and report on its outcomes.

4.2 Justification for the choice of methodology.

A number of qualitative methods exist to obtain the opinion and views of research participants that notably include: focus group discussion; in-depth interviews, and observations. The pros and cons of these three qualitative methods are presented in Table 4.1. For the purpose of this doctoral research, focus group discussion was selected as the most appropriate method because of its relative strengths and the value of pooling data from a group of participants who have the relevant topic-related knowledge and experience.

Table 4.1: Pros and Cons of Qualitative Research Methods

Qualitative Methods	Pros	Cons
Focus group discussion	- This method saves time and resources because of the collective advantage of gathered participants. -It yields larger amount of information and data. -It yields quality data as a result of the refining and corrective effective of the several high quality participant.	- There is the potential of domineering influence by vociferous participants. - The recruitment of high calibre participants might be difficult to achieve -Analysis of data is difficult as it might require multiple transcription of taped record
In-depth interview	- This method allows participant freedom of expression about a topic as it may be one-on-one with the researcher alone	- The depth and breadth of data might be limited because of single source of data.

	- It elicits detailed information about a topic.	- Presence of researcher as interviewer might make the interviewee economical with needed facts and data
Qualitative Methods	**Pros**	**Cons**
Observation	-In this method, researcher could witness what the participants are doing directly and with objective -Researcher could spot cues that participant might be unmindful. - It can unmask valuable findings that participant had intentionally not disclosed.	- The presence of the researcher might cause the observed participant to act in an unreal fashion thereby creating wrong impression. - It is time consuming with limited data source

Adapted[28,36,39,46,82]

The Delphi study described in Chapter 3, alongside the IRHC[45] Delphi study reviewed in chapter 2,[28] has established different domains (categories) of requisite competencies (Table 4.2) required for RHCPs to respond effectively to medical emergencies in remote work locations. To be precise, these competencies broadly include those required to treat acutely ill persons, initiate treatment of trauma cases, perform therapeutic and diagnostic procedures, alongside the identification of more general and miscellaneous competencies. The IRHC Delphi study identified key competencies around communicating an emergency, initiating treatment of common psychiatric emergencies, airway management, medical history and physical assessment, toxicology, primary healthcare, pharmacology, wound care, endoscopic procedure, anesthesia and sedation, orthopedic procedures, and treatment of deep vein thrombosis (DVT).

The outcome of the Delphi study conducted for this doctoral research and described in Chapter 3 differed from the IRHC[40] Delphi study by identifying specific MER-related competencies. Notwithstanding, it was also concluded in Chapter 3 that the synergy of these two outcomes would produce a more competent RHCP and, as such, make remote healthcare delivery more efficient. To realize this situation within a Nigerian context, however, would first require the incorporation

of these Delphi outcomes into the existing training framework and development of RHCPs in Nigeria.

Table 4.2: Domains of Requisite Competencies

	Category or Domain of Competencies	**Thesis Delphi**	**IRHC Delphi**
1	Initiate treatments for acute illness	Yes	No
2	Initiate treatment for trauma	Yes	
3	Therapeutic procedures	Yes	
4	Diagnostic procedures	Yes	
5	General	Yes	
6	Cardiopulmonary Resuscitation	Yes	
7	Miscellaneous	Yes	
8	Emergency communications	No	Yes
9	Initiate treatment of common Psychiatric emergencies		Yes
10	Airways management		Yes
11	History and physical assessment		Yes
12	Dental		Yes
13	Toxicology		Yes
14	Primary Healthcare		Yes but not MER related
15	Occupational Medicine		Yes but not MER related
16	Clinical governance		Yes but not MER related
17	Telemedicine		Yes
18	Remote Site Pharmacy		Yes
19	Health risk assessments (HRA).		Yes but not MER related
20	Fitness to work (FTW)		Yes but not MER related
21	Substance abuse policy and controls		Yes but not MER related
22	Food and drinking water safety monitoring		Yes but not MER related
23	Ergonomics and lifting		Yes but not MER related
24	Hearing Conservations Programs		Yes but not MER related
25	Fatigue Risk Management (FRM)		Yes but not MER related
26	Work Place Health Promotion Program (WHPP)		Yes but not MER related
27	Infectious Disease Outbreak Prevention		Yes but not MER related
28	Incident Investigations		Yes but not MER related
29	Wound management		Yes but not MER related
30	Fracture management		Yes but not MER related
31	Venous access		Yes but not MER related
32	Orthopedic procedures		Yes but not MER related
33	Anesthesia and sedation		Yes but not MER related
34	Endoscopic procedure		Yes but not MER related
35	Wound care		Yes but not MER related
36	Pharmacology		Yes but not MER related

Source – Adapted from IRHC[35,39] and Author generated

Furthermore, while the two Delphi studies considered competencies acquired from RHCPs' primary training, it will be useful to explore the content to gain a better understanding of associated competencies. In Nigeria, the general background qualifications for most RHCPs largely stem from nursing and medical school trainings with mandatory continuous professional development (CPD) courses for annual renewal of licenses. Details about the RHCP background training is however missing in the IRHC Delphi study.

4.3 Available courses and training with derivable competencies for RHCPs in Nigeria

Courses and trainings with derivable competencies for remote healthcare practice in Nigeria can be broadly categorized as basic (background) training courses, CPD courses and post-basic courses (see Figure 4.1) or specialist training.

4.3.1 Basic (background) Training: In this context, basic training refers to the basic qualifying training given to a healthcare worker upon which subsequent training or courses could be built. Common basic training for RHCPs includes basic nursing school training (see Appendix xii for list of approved schools of nursing)[73] and medical school training (see Appendix xiii for list of accredited medical schools in Nigeria).[74]

Nursing school training - Is undertaken for three years in a basic nursing school with qualifying titles such as Registered nurse (RN) or State Registered Nurse (SRN). On the other hand, a university nursing degree training is administered for four years with qualifying titles such as Bachelor of Nursing science (BNSc). RHCPs with a nursing background form the bulk of RHCPs in the O&G industry of Nigeria and are given a variety of titles for their roles, including Nurse, Offshore or Rig medic, Medic or Occupational Health Nurses (OHN). While the content and depth of training differs between basic nursing school and university nursing training, both are practically oriented.

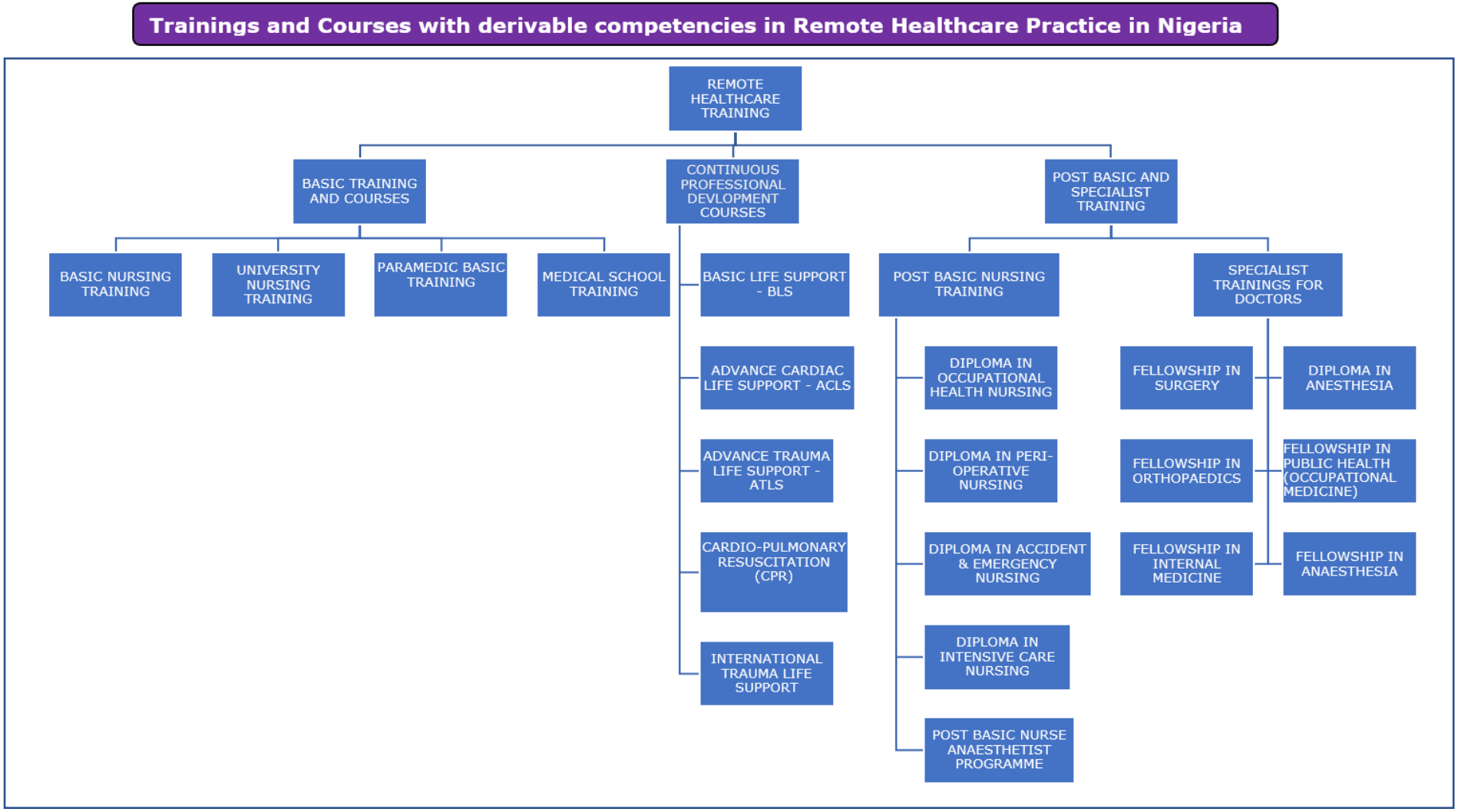


Figure 4.1: Trainings and courses with derivable competencies for RHCPs in Nigeria[71-80]

An overview of training content in a typical basic nursing school programme is presented in Table 4.2. These subjects are further expanded upon in detail into various modules with a typical outcome at the end of the training including the ability to provide quality care using the nursing process, conduct pre and post nursing visits, facilitate clinical, emergency and routine procedures through effective equipment and instrument support, design and maintain infection control, manage the utilization of clinical facilities, supervise safe practice of nursing and medical students, budget management, design management and organizational policies, and to participate in and conduct clinical research. A typical university nursing programme[73] is presented in Table 4.2.

Medical school training is a university degree (Appendix xii) studied over six years, with a seventh year as an internship. Medical graduates are the second most common RHCPs (after those with a nursing background) and occupy roles such as doctor or rig doctor, offshore medic and Occupational Health Physicians. An overview of the training content in a typical medical programme[74] is presented in Table 4.2.

Table 4.3: Contents of RHCP primary trainings

Basic Nursing Programme[75]	**University Nursing Programme**[723]	**Medical School Programme**[74]
An overview of training content in a typical basic nursing school programme[71] includes English Language, Basic Sciences (Mathematics, Biology, Physics, Chemistry), Anatomy and Physiology, Nursing foundations (1-3), Community Health Nursing, pharmacology, Nutrition, Behavioral Science (Humanities, Sociology, Psychology), Medical and Surgical Nursing, Maternal and Child Health Nursing, Mental Health and Psychiatric Nursing, Nursing Education, Community Health posting and Clinical rotational postings.	A typical university nursing programme[72] includes Genetics, Biology, Chemistry, Mathematics, General Studies (English Language, Humanities and Civic Learning), Parasitology, Foundation of Nursing, Embryology, Histology and Cytology, Biochemistry, Computer Science, Physiology, Medical-Surgical Nursing, Pharmacology, Anatomy, Physiology, Sociology in Health (Social medicine),Medical Jurisprudence, Nutrition, Pediatric Nursing, Community Health Nursing, Maternal and Child Nursing, Biostatistics, Medical microbiology, Reproductive Health Nursing, Research Methodology, Geriatric Nursing, Health Economics, Guidance and Counselling, Nursing Administration and Management, Health Education, Clinical Nursing Seminars, Practicum and Clinical postings which affords an individual practical competencies in clinical history taking, basic laboratory investigations, cardiopulmonary stabilization, rehydration, blood transfusion, oxygen administration, catheterization and admission procedure.	**Basic Medical** Science phase include courses such as Anatomy and Embryology, Histology, Biochemistry, Genetics, Physiology, Medical Sociology, Psychology and Statistics. **The Basic Clinical Science phase** includes courses such as Pathology, Morbid anatomy, Hematology, Microbiology and Immunology, Chemical pathology, Epidemiology, Biostatistics, Medical Informatics, Environmental Health, Community Health and Primary Health Care, Pharmacology and Therapeutics. **The core clinical science phase** includes courses such as Introductory Medicine, Introductory Surgery, Pediatrics, Obstetrics and Gynecology, Family medicine, Radiology, Anesthesia, Psychiatry, Ophthalmology, Otorhinolaryngology, Medicine, Surgery, Elective. Medicine Sub-specialties including Dermatology, Cardiology, Endocrinology, Gastroenterology, Hematology, Rheumatology, Infectious Disease, Oncology, Respiratory Medicine, Neurology, Renal Medicine, General Therapeutics. Surgery sub-specialties including General Surgery, Orthopedics, Pediatric Surgery, Plastic and Reconstructive Surgery, Thoracic and Vascular Surgery, Neurosurgery and Anesthesia.

Source – Adapted from Nursing and Midwifery Council of Nigeria[73] and Nigerian Medical and Dental Council[74]

Paramedic School - Less common basic trainings for RHCPs include the paramedics and the community healthcare workers (both are rarely used in the oil industry). The University of Benin Teaching Hospital (UBTH) paramedic programme is the foremost and approved training institution for paramedics in Nigeria and has since its commencement in 2008 graduated less than 100 students. They provide pre-hospital support to patients before transportation to the hospital. While the programme involves class room teaching, laboratory demonstration and observations of clinical procedures, anecdotal observations show that training has limited theoretical content and hands-on experience hence low appeal by remote industry operators in Nigeria[75].

4.3.2 Continuous Development Courses (CPD)- CPDs are usually undertaken by all healthcare workers regardless of the basic training, although there are specialized CPDs for doctors such as the Advance Trauma Life Support (ACLS). Although CPD courses[74] vary, a number of common CPDs with derivable competencies relevant to remote healthcare practice in Nigeria exist and include: Basic Life Support (BLS); Advance Cardiac Life Support (ACLS); Pre-Hospital Life Support (PHLS); Advance Trauma Life Support (ATLS); First Aid or Advance First Aid courses; and Cardio-Pulmonary Resuscitation (CPR) training (see Appendix xiiv) for list of approve CPD providers. Nursing and Medical practitioners in Nigeria are required to successfully attend CPD courses as requirement for renewal of annual general practicing license (as a nurse or doctor).[74]

4.3.3 Post-basic courses or specialist training. Some RHCPs with basic nursing training in Nigeria also hold specialisms referred to as 'Post-basic qualifications' (see Figure 4.1) which include training that is highly relevant in the remote healthcare setting.[75] Moreover, RHCPs with basic medical training may also have undergone specialist qualifications, referred to as fellowship training (see Figure 4.1). While additional post-basic nursing training in a specialism varies from 12 months to 18 months in duration, relevant specialist medical trainings involves further in-depth training in specific medical field, the duration of which can vary from four to five years.[74] Nurses and/or medics with these post-basic

qualifications would have a range of competencies that would be valuable within the remote healthcare setting.[75]

4.4 Rationale for Focus Group Discussion -

While knowledge is a product of in-depth teaching and learning, skills and competence are both outcomes of established knowledge and repeated hands-on best practice. Although the content of the basic training (both nursing and medical)[72-80] attained by the majority of the RHCPs in Nigeria covers some competencies, comparatively, it does not cover all remote healthcare competencies identified in Table 4.2. Additionally, they are not completely bespoke to the challenges and needs of remote healthcare situations in Nigeria as described in Chapters 1 and 3. To identify commonly occurring medical emergencies and specific competencies relevant to remote healthcare in Nigeria, there is a need for research to gain a complete picture of current practices, training and competence requirement with respect to MER. This study explored the views and opinions of a number of partiicipants in a focus group to identify current course providers, what their shortcomings are, what needs to be introduced and how. As well as informing the O&G industry, has the potential to enhance competency of RHCPs in non-O&G remotely operating industries such as mining, maritime and agriculture in the management of MER and common issues associated with remote locations faced by these sectors.

4.5 Objectives

The principal objective of this study was to explore the opinions and views of remote healthcare training providers to gain a deeper insight into available RHCP training courses in Nigeria and their views on how to incorporate bespoke competencies into training courses.

4.6 Research Questions

Specifically, this focus group study sought to answer:

I. What are the gaps in the courses presently administered to RHCPs in Nigeria?

II. What should be the bespoke competencies for remote emergency care in the O&G Industry of Nigeria?

III. What needs to be implemented to optimise the development and training of a competent RHCP?

4.7 Method

The focus group discussion is a qualitative research method used to resolve research topics or questions by facilitating participants' expression of views, opinions, knowledge, experience, ideas and comments on topics, issues and questions.[81,82] Processes involved in a focus group includes the formulation of discussion questions, recruitment of participants, sessions (discussion, note-taking and tape recording), transcription of qualitative data, analysis of results and generation of findings.[82,83] A Qualitative descriptive (QD) approach, which is a qualitative research method used in the study of healthcare-related research topics and presented in a descriptive format was adopted in this focus group discussion.[84] This method was adopted because it extracts people's opinion about specific concepts and is compatible with different sampling techniques, theoretical approach and data collection instruments.[84]

4.7.1 Discussion Questions

In order to gain a deeper understanding of the RHCP courses and training in Nigeria, open-ended questions were derived from the outcome of the Delphi study prior to the commencement of focus group discussion sessions. These included:

I. What are the courses administered to RHCPs in the Oil & Gas industry of Nigeria?

II. What are the gaps in content and delivery format?

III. What are the strengths?

IV. Who are the current course providers?

V. What should be the bespoke competencies for remote emergency care in the O&G Industry of Nigeria?

VI. What needs to be introduced or implemented to optimise the development and training of a competent RHCP and how?

VII. What competencies should the background training of RHCPs comprise?

These questions (Appendix x) were asked by the researcher and used as guide questions during the focus group discussion sessions.

4.7.2 Recruitment of Participants - According to Krueger and Casey[82], the optimum number for a focus group is between 6 and 8 in a session. Groups of this size are enough to gain a variety of perspectives and small enough not to be disruptive[81-83]. Thirty two participants were invited but 26 accepted to participate in the three sessions organized in two locations in Port Harcourt and Warri, Nigeria. Ethical approval was first obtained from Robert Gordon University Ethics Committee (see Appendix xv). The participants were recruited from the American Heart Association training providers of Nigeria through nominations by a volunteer knowledgeable in the topic and participants, person-to-person canvassing, local Nigeria training networks, contacts and telephone conversation. The association has several training companies as members of the umbrella body. Since the training companies are regulated through a national association, formal approval was secured from the Association (see Appendix xvi), potential participants were invited by electronic mail (see Appendix xvii) and were provided with a 'Participant Information Sheet' (see Appendix xviii); individuals who chose to participate were required to provide informed consent (see Appendix xix). They were further asked to identify a suitable date, time and venue for the focus group discussion.

4.7.3 Inclusion criteria – Criteria for inclusion required participants to be specialist and subject matter expert in remote healthcare practice with experience in providing trainings to RHCPs in the O&G industry of Nigeria. Participants were expected to be knowledgeable about the health risks associated with working in O&G industry of Nigeria.

4.7.4 Exclusion criteria – Individuals and employers of training providers at a very senior role (senior managers, directors) were excluded as their presence

could have made participants unwilling to participate and uncomfortable in discussions.

4.7.5 Discussion sessions

Three discussion sessions were held in comfortable small size event centres in Warri and Port Harcourt. The discussions were moderated (facilitated) by the doctoral researcher, while two resource persons supported with audio-recording, timekeeping and note-taking. The actual focus discussion was held for 60-minutes but an additional 30-minutes was allowed for welcoming, initial documentation, ground rules (speak one at a time, respect, confidentiality & anonymity afterwards), refreshment, settling into the group and closing remarks. During the discussion, participants were cordially asked to express their views and opinion using the discussion questions in section 4.5.1 above as a guide.

4.7.6 Transcription and Analysis

Transcription Audio-recordings from the focus group sections were transcribed into textual documents. Transcription is a process whereby audio or visual data obtained by recording are presented in a textual format called transcript.[78] In this study, the audio - recording was in English and was transcribed verbatim by a professional academic transcriber whose native language was English. During transcription (see Appendix xx) , participants were anonymised by using a 'speaker label" to identify their respective opinions.

Analysis – Thematic analysis was adopted to analyse the transcript with the aid of the NVivo software. Thematic analysis is a qualitative research method used to identify, analyze, organize, describe, and report themes within a data set such as transcribed text.[84-86] It involved familiarization with the transcript data, identification of emerging initial codes, development and review of overarching themes, and producing report.[84] Thematic analysis was adopted because it is useful for evaluating perspectives of different participants in a study, mapping the differences and summarizing relevant features in a large data set.[85]

Transcripts from 26 participants were uploaded into NVivo software as files, followed by identification and selection of emerging codes from sections of the text into themes called nodes in NVivo. According to Saldana, a code is 'most often a word, short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data'[79].

4.7.7 Data Protection

Data from this research was handled in line with the 'General Data Protection Regulation (GDPR - 2018) and Robert Gordon University data storage and retention policies. The hard copies of the consent forms were locked in a safe; thereafter they were scanned and stored electronically as password-protected files on the university research drive (R-drive) accessible only by the research team. The security of the transcripts was ensured by encryption and password protection, and all of the audio-recordings and hard copies of the transcripts were deleted post-transcription. The soft copies were stored in NVivo with passwords for references. Thus, the study data were securely handled appropriately to protect participants' anonymity and confidentiality.

4.7.8 Ethics Approval. The study was approved by the Ethics Committees of Robert Gordon University (see Appendix xv) and the American Heart Association training providers of Nigeria (see Appendix xvi).

4.8 Results

4.8.1 Participant Demographics

Of the 32 invitees, 26 (81%) RHCPs training providers took part in the three focus group discussions; 6 invitees did not show up on the day of the sessions. Trainers with medical and nursing backgrounds comprised the largest proportion of participants (38.5% and 30.8 respectively; Figure 4.2). Participants' roles included trainers, markers and examiners with the largest being the trainers (80.8%; Figure 4.3). The duration of experience ranged from 5 to 30 years (Figure 4.4),

with the age of participants ranging from 31 years to 60 years. Participants were drawn from the following training providers:

- University of Port Harcourt Teaching Hospital
- Delta State Hospital Management Board - Warri
- Nigerian Medical Association - Warri
- Ministry of Health, Asaba/Warri
- Delta State University, College of Health Science – Oghara
- Abol AHA Life Support Centre, Warri
- Lilly Clinic, Warri
- Emergency Response Services Nigeria, Ltd – Port Harcourt

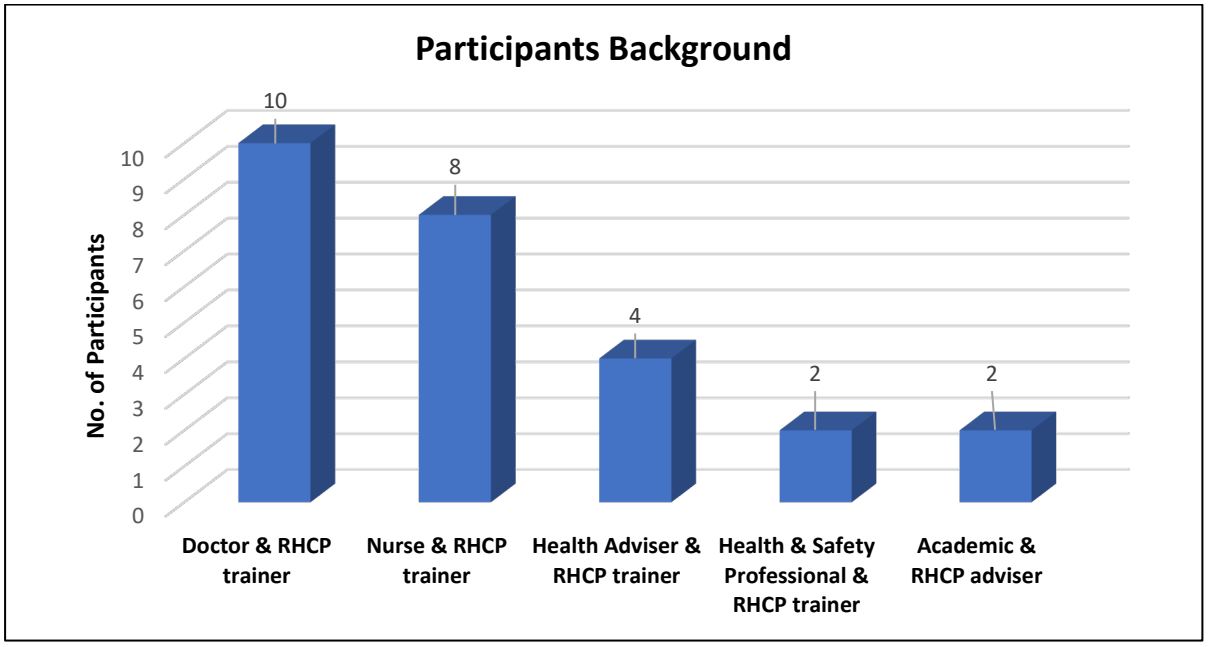


Figure 4.2 – Background of Participants

Numbers represent the number of participants within each focus group.

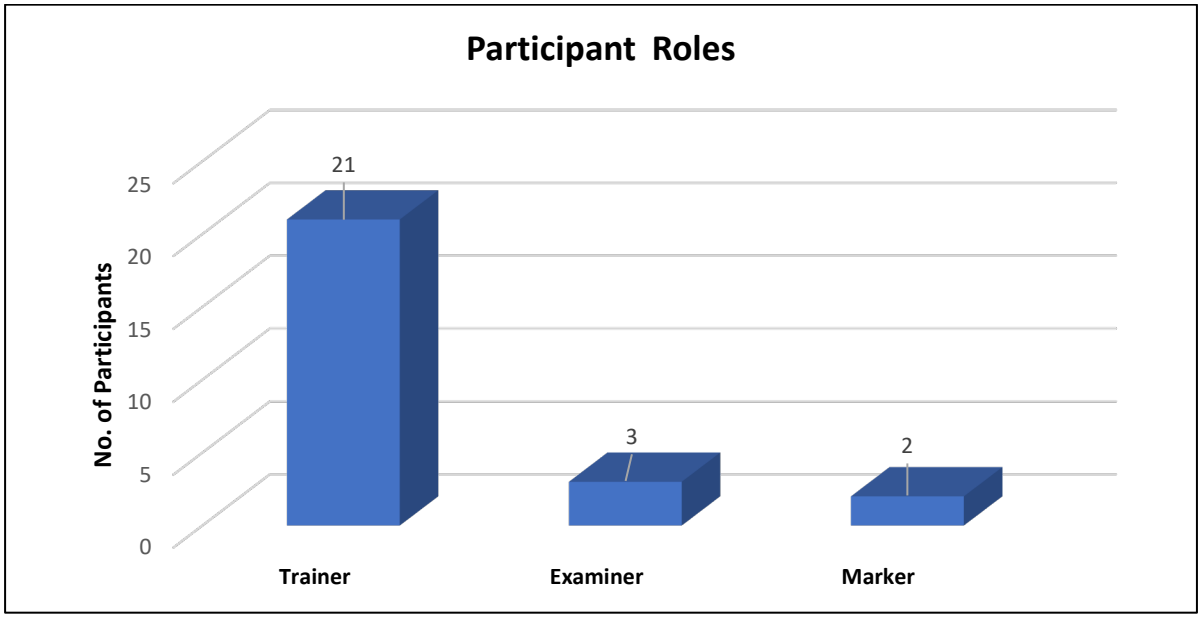


Figure 4.3 – Participant Role

Numbers represent the number of participants within each focus group.

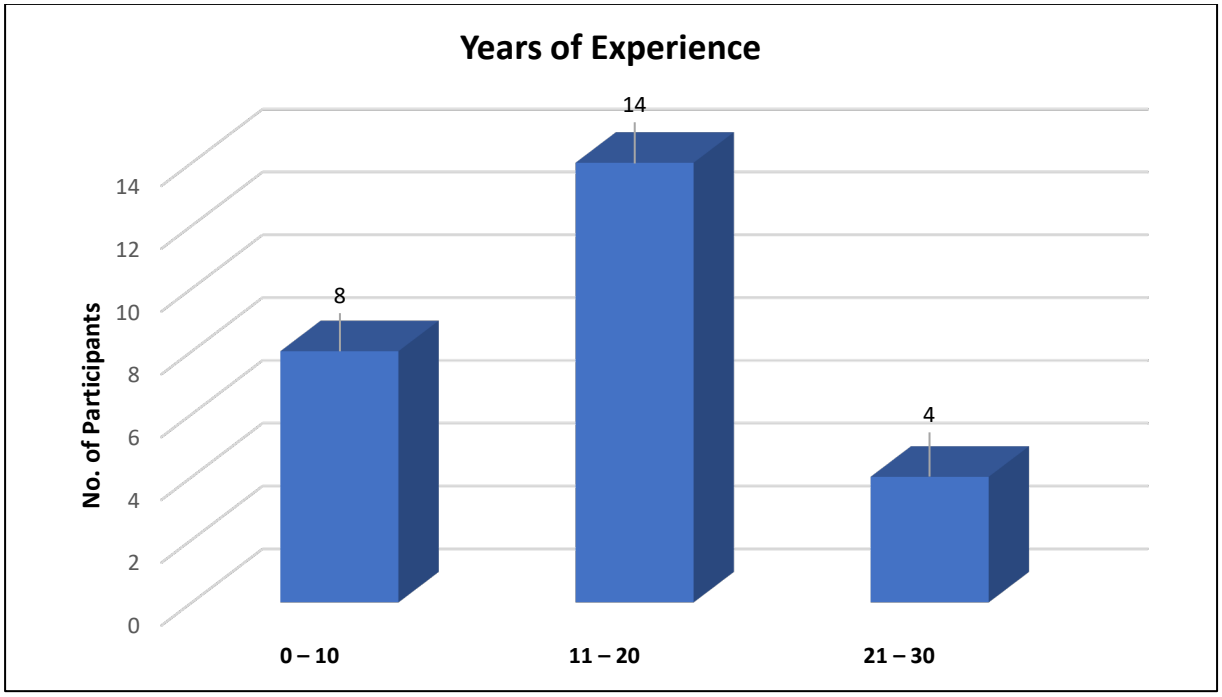


Figure 4.4 –Years of Experience

Numbers represent the number of participants within each focus group.

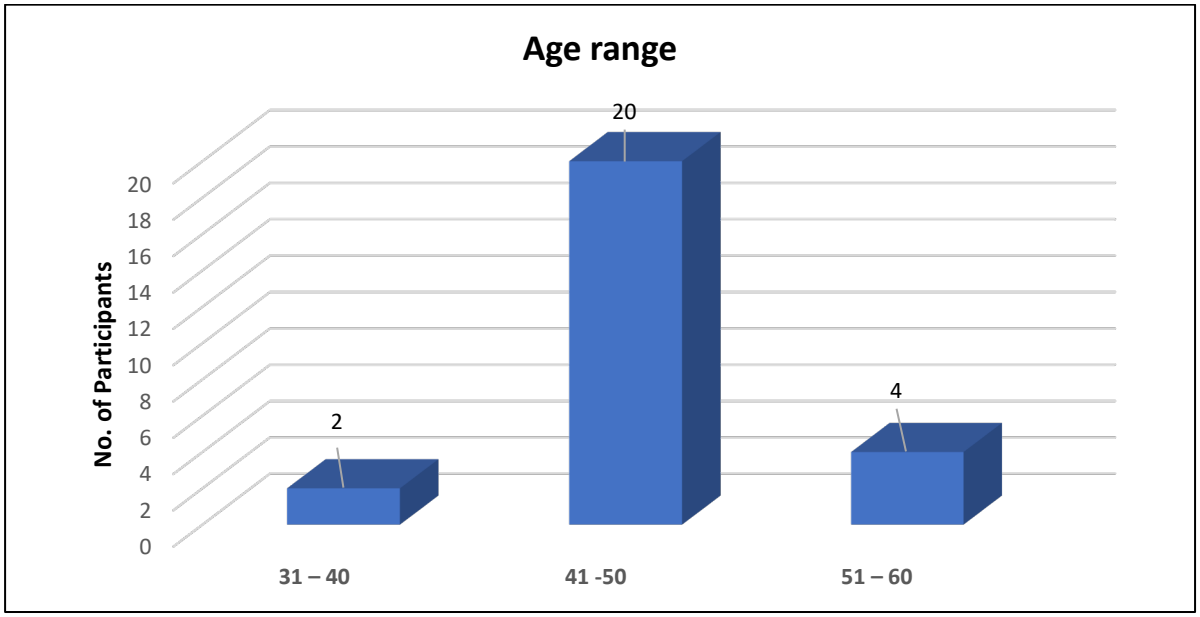


Figure 4.5 – Age of Participants

Numbers represent the number of participants within each focus group.

Key findings as presented in Table 4.4 and further highlighted in Appendix xx includes: absence of regional case studies and clinical scenarios in currently administered RHCP courses, expressed as '….the training courses are not be-spoke to Nigeria environment'[p1]; course learning outcomes are unsuitable for lone practitioners, expressed as '…for the remote health care practitioners, you work alone and, the fact that the SCLS, the BLS, ACLS training that we have is something you do as a team' [p1]; trainings lacks the necessary equipment for hands-on learning, learning resources and time, stated as '…imperfectness of the materials'[p2]; less emphasis and insufficient information is given on commonly occurring life threatening medical emergencies that requires competencies such as malaria, Ebola, tetanus, drug addiction, anatomy and physiology, mental illness, post-traumatic stress disorder (PTSD), kidnapping and psychosocial hazards, cutlass or knife injury, nail injury, fatigue, explosion wound, electric shock, drowning, food poisoning. This was expressed as '….we find the things like gunshot wounds, bombs, are very common in these areas' [p20], 'So, trauma, generally is common'[p20], 'the commonest things we see in Nigeria are more of trauma than

cardiac arrest, or than heart attack and stroke, yeah, strokes, heart attack, they're all there but, trauma is most common because of our environment'[p19], '….we must have adequate basis of anatomy and physiology'[p3], 'So there's a need to consider, maybe from epidemiology or from, erm, records, what are those things we tend to see commonly in our clime considering our demography'[p5], 'It would be nice to infuse some of that into the, the training module'[p5].

This study further disclosed that there was content overlap and repetition of concepts in the training courses which was expressed as '…the training courses that we get here, some of them may be repetitive'[p4]; the need for operational competence in telemedicine was expressed as '…in relation to telemedicine per say, now, there are two things, on the one hand, we have the software and then on the other hand you have the gadgets'[p1]. Additionally, flexible format of course delivery was preferred to the present status, expressed as 'So, I think that that format needs to be reviewed and made flexible as the effectiveness is in question, quite honestly, because when, when the chips are down in these remote locations'[p5]

4.8.2 Outcome of Thematic analysis

Similar sections of transcript with words, phrases and sentences relevant to research questions were pooled together as codes. Re-occurring codes were further pooled together as 6 overarching themes (see Table 4.4).

Overarching themes included: communication; delivery format; gap analysis; remote healthcare hardwares; RHCP primary training, and suggested content. While sugested medical emergency conditions were mapped to a theme called 'suggested content', the gaps noted by all the participants were pooled into the theme refered to as 'gap analysis'. Relatedly, suggested formats for the delivery of RHCP courses were aggregated into the theme called ' delivery format'. Likewise, opinions on information technology and equipment used in Telemedicine were all constituted into 'Remote Health Hardware' theme. Responses on communication skill and background training of RHCPs were mapped into RHCP primary training and communication theme respectively.

Table 4.4 Findings

Summary of Initial Codes	Overaching Themes
Malaria, Ebola, Tetanus, Drug addiction, Food poisoning, Mental health, Fatigue, Bullying, Harassment, Kidnapping, PTSD, Electric shock, Head Injury, Wound, Cutlass cut, Electric shock, Nail & Puncture injuries, Knife stab injury, Explosion/Bomb injury, Stroke, Heart attack, Drowning, Food poisoning, Cardiac arrest, Safety Hazards	Suggested content
Reading material, Nigeria case studies, EMS/ pre-hospital related roles, RHCPs in Nigeria double hat as EMS and Medic, More modules, Missing Nigeria case studies, Content mismatch, Insufficient practical's, Ill equipped trainings, Equipment Operability, Insufficient training time, Content overlap, Missing Hand-on component, Missing Nigeria case studies, Deficient in Nigeria scenario, Inadequate Anatomy and Physiology	Gap Analysis
Classroom, Online, Internet, Practicals, Case reviews, Case Report, Hands-on, Internship, Background training with remote healthcare, Inclusion of remote healthcare training in background training, Hands-on component, In-house refresher training, Hands- on component, Time management skill, Multi-tasking, Periodic in-house training in between RHC courses, Adequate training time, Multitasking skill, Background training with remote healthcare, Inclusion of remote healthcare training in background training, Hands-on component	Delivery format
Regional Remote Epidemiology, Basic Life Support, Emergency Medical Training, Remote Health, Advance Cardiac Life Support	RHCP primary training
Bandwidth challenge, Poor data transmission, Telemedicine, Remote technology, Inoperable remote technology, Remote healthcare technology, Technologically savvy, Data transmission, Poor Network bandwidth, Poor network connectivity, Instrumentation skill, Equipment operability, IT skill, Equipment operability skill, Dysfunctional equipment	Remote Health Hardware
Assessment and communication skills, Listening skill, Nigeria lingua franca	Communication

Although, there was no lone voice, participants did not comment on opinion already expressed by others. Participants made contributions that were related, in agreement and mapped to different themes.

In general, the findings from this study showed the lack of regional context in RHCP training content and need to add more contextual modules; learning outcomes were not suitable for lone practitioners like the RHCP; inadequate training equipment and hands-on component in present courses. Furthermore, the study revealed insufficient content on anatomy and physiology; lack of depth and in some cases missing information on clinical emergencies such as malaria, ebola, mental health emergency, PTSD secondary to kidnapping, gun shot and hostilities; different training patterns; inclusion of remote healthcare, telemedicine, BLS, ACLS and Emergency Medical Training (EMT) into the primary trainings of the RHCPs.

4.9 Discussion

4.9.1 Statement of Key Findings

This exploratory study has disclosed the gaps in the RHCP courses presently administered in Nigeria. It has revealed most RHCP courses lack regional case studies[5] and clinical scenarios[5, 43], but rather impose foreign scenarios that are rarely or never encountered in the remote healthcare terrain of Nigeria. Outcomes of training were found to be unsuitable for lone practitioners[2] as the courses were designed for team responses to emergencies. The study has also shown that, in comparison with same courses delivered overseas,[1, 43] current training in Nigeria lacks the requisite equipment for hands-on learning, is inadequate in terms of time given to training, and there is an absence of reading materials and basic training in Anatomy and Physiology.

This study has further revealed the bespoke competencies that would be of immense value to remote healthcare practice in the region. This finding resonates with the study outcome published by Ajayi and Okegbemiro [26,27,29] in which certain medical emergencies were presented to be commonly occurring in the region and would require specialised skills. These included competencies for the prevention, diagnosis and management of malaria, ebola, tetanus, drug addiction, mental illness, PTSD from kidnapping and psychosocial hazards, cutlass or knife injury,

nail injury, fatigue, explosion wound, electric shock, drowning, food poisoning and safety hazards. In several courses these were given a passing mention but were not expanded upon. Some cases such as mental health, drug addition, PTSD would be well treated as a module for good understanding and skill enhancement.

Additionally, this study unveiled ways by which the delivery and training format can be improved upon. A flexible delivery format was mentioned several times as being more effective in enhancing the competence of the RHCPs. Flexibility through a blend of face-to-face training, distance learning with periodic in-house refreshers, hands-on, case reviews and reports were identified as the ideal mix of training delivery. Like the IRHC publication[43], this study further highlighted the need for the inclusion of a remote healthcare, regional remote epidemiology, BLS, ACLS, EMT[43] as important component in the basic background training, for all categories of RHCPs (nurses, doctors and paramedics) with part of a mandatory internship allotted to remote healthcare.

This study further prioritized the need for remote health technology and competence to be overhauled. It revealed that the ''Achilles heel'' of remote healthcare technology in Nigeria to be poor data transmission, limited bandwidth, dysfunctional equipment and incompetence in hardware operation. These findings thus set the agenda for making remote healthcare technology a prime content of RHCPs training going forward, which up to now hasn't been the case. It calls for RHCPs to be ''information technology savvy'', to know how to operate equipment and to be competent in using telemedical infrastructure. This finding corroborates the position of IRHC on the necessity for telemedicine and information technology in remote locations.[45] It was further shown that softer skills such as listening, assessment, communication and use of regional lingua franca (regional parlance) should be included in RHCP training. This will enhance consultation and optimise patient centredness in emergency response especially where the work crew has a significant number of locals as presented in Onuba[5]

4.9.2 Strengths and Limitations

Qualitative data and detailed information were collected from a wide range of sources through an open but refining interaction and discussion. The rigorous process of selection of the participants and expertise of the participants ensured quality data output withinternal validity. The body language, emphasis and demonstrated passion of the participants added non-verbal clarity to the data. However, the limitations in this study include the use of multiple locations in order to achieve a reasonable sample size[85] which made it expensive. The tangible (financial) and intangible (time) costs of organizing these focus group discussion sessions was significant. Given that the discussion was guided by pre-selected questions means the outcome may lean towards the moderator's perception. Additionally, there was a potential limitation in accessing a transcription service by a third party who was not in the sessions.

4.9.3 Interpretation of Findings

Inclusion of regional and national case studies in the training content would equip RHCPs with the requisite knowledge and competence to manage prevalent medical scenarios. As regional epidemiology varies across the globe, emphasis on common cases that are encountered in different regions could lead to a better outcome. This could be complemented if, before the face-to-face component of RHCPs training, participants could document cases they have encountered and reviewed with lessons learnt. This would not only corroborate the case studies in the study materials but would also enhance the skill of candidates in managing common remote healthcare cases.

Additionally, since the time allocated for the RHCP training is limited, it is important for the primary background courses to be comprehensive with elements of remote healthcare emergency included in the content. It has been found in this study that nursing, medicine and paramedicine are the three background courses for RHCPs in Nigeria. Participants opined that there is a paucity of training around remote healthcare emergencies and occupational health in these courses. These gaps could be bridged by introducing strands of courses such as the BLS, ACLS,

Trauma Life Support (TLS), EMT , Remote Health and Occupational Health with internship postings in these areas.

As identified in this study, some of the commonly occurring clinical scenarios in remote regions of the Niger Delta of Nigeria included: malaria, PTSD from kidnapping and psychosocial hazards, mental illness, cutlass or knife injury, ebola, tetanus, drug addiction, food poisoning, drowning and electric shock. Some of these medical conditions constituted emergencies, and in some cases had resulted in medical evacuation or even death. It would therefore be highly useful if detailed scenarios, materials and lessons on the management of these cases and emerging recurring scenarios are integrated in the training programmes for RHCPs. As some emergency cases present rarely, there is need for refresher training to ensure practices are up to date.

Training requires an investment of time resource by both the employer and the employee, so a flexible and blended training format would be more efficient in developing the skills of RHCPs. Moreover, the realities of the work setting require the RHCP to undergo several non-medical training courses as might be requested by the Human Resources. Thus, a flexible and blended approach through online, face-to-face, practical or hands-on, teleconference review of cases and distance learning component will enhance competence development more efficiently. Some courses do posit flexibility; however, they still lack the use of teleconference, case review and experience documentation as part of the rubrics of the trainings.

The details of these finding informed a management of change discussion with the association (American Heart Association training providers of Nigeria) after the focus group discussion. This explored ways of embedding the findings in the training packages going forward. A resolution was reached to communicate the proprietors and designers of the training courses with references to the exploratory study.

4.9.4 Further Work

Further study would be required to assess the efficacy of including commonly occurring regional medical emergencies in the training of RHCPs. This would examine the efficiency of RHCPs, medical evacuation and case improvement

matrices of workers. The overarching objective would be to measure improvement in RHCPs efficiency in the management of remote healthcare cases. Relatedly, further work should be to record how improved training would be accepted (taken up) by the O&G industry in Nigeria.

4.9.5 Conclusion

This study has explored the opinions and views of RHCPs training providers on training courses for RHCPs in Nigeria. Qualitative outcomes showed that clinical competencies could be enhanced when commonly occurring regional scenarios are made case studies in the training packages and administered in a flexible but blended format. While this outcome is generalizable, it is noteworthy that this might vary cross the globe and essential for RHCPs training content to be made bespoke to regional epidemiology. While the gaps in presently administered courses were identified, it is noteworthy that most RHCP trainings omit essential skill domains such as Telemedicine, Communication, Information Technology, Assessment, Safety to mention but a few. Both clinical and non-clinical skills should be administered in a flexible and blended format. The outcome of this study can be used to design training packages for RHCPs and inform changes in the training guidelines and framework of organizations operating in remote terrains.

Chapter 5

Discussion

5.1 Study Aims

The overarching objective of this research was to explore current practices in MER in the O&G industry of Nigeria, with the purpose of identifying training needs of RHCPs. In realising this, it identified evidences of best practice in, and related global benchmark indicators for MER provision and further explored the current structure, coverage and capability of remote medical emergency response provision in the O&G industry of Nigeria. Also, it identified competencies and related training needs for RHCPs in Nigeria, facilitated consensus and application of training requirements of RHCPs within the O&G industry of Nigeria.

5.2 Statement of Findings

The Systematic Review collated and presented available policies and guidance statements for RHCPs with three synthesized findings.
Firstly, policies and guidance statements on MER for RHCPs have to date been derived through consensus of expert opinions, engagement of subject experts, outcomes of narrative literature review, collection of industry best practices, extraction from relevant publications and outcomes of various industry studies.
Secondly, evidence disclosed diverse nature and challenges of remote medical emergencies. A common denominator, however, was the need for a broad spectrum of competences and MER resources, although the documents differed in the required type and how to develop these competences thus necessitating the need for study. Thirdly, the effectiveness of the MER standards, policies and guidance statements were made possible by the implementation of the MER specifications.

The key findings from the Delphi showed that, besides mandatory skill for remote blood donation and transfusion (which had no consensus), RHCPs should be knowledgeable and proficient in a specific life-saving skill set required to stabilise acutely ill or injured person, initiate treatment of trauma cases, undertake

therapeutic procedures and diagnostic procedures. It further showed the necessity of miscellaneous skills such as emergency response communication and initiating the treatment of: tropic diseases (e.g. malaria); contagious diseases (e.g. Ebola and food poisoning), and traumatic tooth injuries including administration of local anaesthesia. Additionally, the consensus showed the necessity for RHCPs to acquire skills on intravenous access and infusion, perform BLS and ACLS, treat exposure to acute toxic substances, identify and initialise treatment of cardiac dysrhythmias, burns, and administer HBOT. Remarkably, consensus was not achieved on the statement concerning the competency of RHCPs to type and cross match blood, facilitate blood donation and administer blood transfusion. While there were no textual comments on reasons for the non-consensus, it is however hypothetical that the processes involved in blood storage and the potential sequela of transfusion could require several high-tech equipment and skilled persons to operate thus making it not possible for a lone resource.

An approach to integration and application of these competencies into currently administered RHCP courses and training was explored through a focus group discussion. This disclosed the gaps in the RHCP courses presently administered in Nigeria. It further showed most RHCP courses lack regional context, but rather foisted foreign scenarios that are rarely or never encountered in the remote healthcare terrain of Nigeria. Additionally, learning outcomes were found not suitable for lone practitioners as the courses were designed for team response to emergencies unlike. It disclosed that in comparison with same courses delivered overseas, it lacks requisite equipment for hands-on learning, inadequate time, absence of reading materials and basics in Anatomy and Physiology. Furthermore, it showed the bespoke competencies that will be of immense value to remote healthcare practice in the region. These include competencies for the prevention, diagnosis and management of Malaria, Ebola, Tetanus, Drug addiction, Mental illness, PTSD from Kidnapping and psychosocial hazards, Cutlass or knife injury, Nail injury, Fatigue, Explosion wound, Electric shock, Drowning, Food poisoning and safety hazards. Additionally, this study showed ways by which the delivery and training format can be improved upon. It was severally opined that a flexible

delivery format will be more effective in enhancing the competence of the RHCPs. Flexibility through a blend of face-to-face training, distance learning with periodic in-house refreshers, hands-on, case reviews and report. It further highlighted the need for inclusion of remote healthcare component, regional remote epidemiology, BLS , ACLS , EMT in basic background trainings for all categories of RHCPs (nurses, doctors and paramedics) with part of mandatory internship allotted to remote healthcare.

It further prioritized the need for remote health technology and competence overhaul. It revealed the under belly of remote healthcare technology in Nigeria to be poor data transmission, limited bandwidth, dysfunctional equipment and incompetence in hardware operation.

5.3 Interpretation of Findings

As precious industrial resources lie in remote parts of the world,[1] with harsh climatic challenges,[2,3] the last layer of survival for workers is the availability of competent RHCPs and not just Personal Protective Equipment (PPE).[80] While this resonates with the offshore O&G industry, other remotely operating industries (military, maritime, mining, agriculture, space etc)[2] also stand in need of competent remote healthcare. Notwithstanding, the multifarious health crises and life-threatening emergencies[1,2] encountered in the remote terrains of these industries makes the case for a well trained RHCP. Common denominators include remote healthcare challenges[30] and competency requirement for remote healthcare[27] delivery which was found incomprehensive and varied significantly among institutions and organisations. These have been worsened by the lacunae created by the absence of a universally accepted competency framework.[1,35]

Competency development should therefore focus on both broad-based competencies, as seen in the case of the IRHC Delphi,[35] and specific competencies as found in this research. While skills in all clinical spheres are appreciably important, skills that are deployed in stabilizing life-threatening medical conditions should be mandatory for RHCPs in remotely operating industries. Relatedly, non-clinical skills such as use of telemedical units, communication, winching or logistics,

Health and Safety should be viewed as necessary enablers and thus mandatory for RHCPs. Also, remote healthcare technology has now become a prime sought-after skill for RHCPs training which previously hasn't been the case. Nonetheless, soft skills on listening, assessment, communication and use of regional lingua franca (regional parlance) should be integrated in RHCP trainings.

Pending availability of a universally acceptable policy document on RHCP competence framework, individual organisations and remotely operating industries could leverage on guidance's with three sources of derivation including consensus, systematic review and focus group exploration such as the outcomes of this research. Training organisations and accreditation authorities should weave and deepen elements of remote healthcare education into the training curricula of students and RHCPs. Given that the field of medicine is broad, it is not practicable to include the entire breadth of these elements in periodic refreshers. However, it is imperative to provide RHCPs with evidence-based training in the effective management of commonly occurring life-threatening conditions and skills that are bespoke to the regions of practice.

5.4 Strengths and Limitations

Strengths – Use of a standardized JBI and peer review methods in the systematic review process brought structure, rigour and validity to the research. It involved two reviewers working independently on title and textual screening, methodological assessment and data extraction phases. The use of such globally recognised instrument and research method potentially makes the research reproduceable. Furthermore, involvement of subject matter experts in the Delphi study and exploratory study afforded this research evidence-based inputs with value add to the both internal and external validity. The inclusion criteria ensured participation of diverse remote healthcare experts with years of experience in the topic area, which served as a source of tested comprehensive information. Additionally, the iterations the Delphi process, post-round feedbacks and fluidity of communication injected clarity with informed and reflective inputs from the expert panel.

Limitations – The paucity of literature, institutional policy and guidance documents was a major set-back in the systematic review. Some documents were excluded due to either lack of depth or poor methodological quality and thus limited selected literatures for review. As this research was conducted in Nigeria with participants drawn from the same region, the external validity of outcomes may have been threatened in terms of limiting the generalizability of the Delphi study findings. Relatedly, the Delphi study being administered on internet platform via the survey monkey and electronic mail constitute a potential limitation due to intermittent internet accessibility, electronic and internet literacy and inconvenience of inputting responses. The Likert method used during the Delphi and pre-selected questions used in the focus group discussions may have limited the respondents' choice of expression. Although, the potential for bias exists when questions are pre-selected[87], it was limited by ensuring the questions were formulated using the outcome of the Delphi study.

5.5 Originality of the Research

Given the paucity of literature, policy statements and guidance in the subject, the three phases of this research produced original findings not previously found in studies conducted in Nigeria, O&G industry, or any remotely operated industry. Additionally, the research methods (systematic review, Delphi study and exploratory study) leveraged on primary sources of information to logically arrive at findings. While the systematic review synthesized novel findings using selected data sources, the Delphi and focus group discussion generated outcomes based on analysis of data from individual participants.

5.6 Future Research and Pathway to Impact

Given the exploratory nature of this doctoral research, the aspect beyond its remit is the ascertainment of effectiveness of integrating identified competencies and skills. Thus, future translational research is needed to test this competency model for effectiveness prior to integration[90] into the training curriculum. Moreover, an understanding of the effectiveness and impact of training is imperative for capturing and sharing best practice as well as for championing its adoption as a regional standard of training, which to date has been non-existent. Involvement of key stakeholders and training providers (the American Heart Association training providers of Nigeria) will pay dividends in enabling that pathway to impact.

1. Proof of Concept study - This could involve administering training to two cohorts of RHCP participants using current and proposed competency requirement for different groups and later analyse the impact on effectiveness in executing MER.

Research Questions – Potential research questions could be:

What impact was made on the numbers of medical evacuations in a representative remote workplace? How effective was the RHCPs on stabilising life threatening emergencies.

Research Method – Cohort study involving pilot testing of both current and proposed models.

2. Management of change study – This study should explore opinions of RHCPs on best approaches to integrating both competencies into the training requirement

Research Questions – What should be the essential elements of the implementation plan? What should be the transition safeguards?

How can the proposed competencies be integrated into training courses and programs?

Research Method – Approach to undertaking this study could be by nominal group technique, unstructured open discussion or in-depth interview. This should involve identification and strategic engagement with key stakeholders to forge a management of change programme across the O&G industry and RHCP training sectors.

3. *Competency development framework* – Further study will be required to develop a competency development framework for RHCP. A universally acceptable framework is presently lacking; thus, this research outcome presents an opportunity to develop a working document from which remotely operating organisations could adapt.

Research Questions – What are the globally acceptable training requirements for RHCPs? How can the outcomes of this study and the IRHC be integrated into a training framework?

Method: A combination of delphi method, survey & focus grouped might be efficient in undertaking this study.

Certain models underpins above translational studies, namely the co-design, co-production and the training effectiveness evaluation models. The latter is particularly pertinent given the medical education context as well as addressing the theories that inform educational program evaluation models[90]. The potential impacts and implications of this doctoral research cuts across multiple facets, namely academic; EHCP profession; O&G industry, societal domain and body of knowledge.

Academic Impact –The JBI systematic review protocol of this study has been published in JBI Evidence Synthesis and is also available in the PROSPERO database (For reference see: https://www.crd.york.ac.uk/PROSPERO/#searchadvanced). The JBI systematic review and findings from Delphi study and focus group discussions are at varying stages of publication. These outputs will benefit other researchers with academic interest in the field as this doctoral research is the first to present findings derive from synthesised data on remote MER and related RHCP skill requirement for training RHCPs in Nigeria. There have been several viewerships of the published protocols with one citation (see Figure 5.1). The mixed-methods approach used to enable the data synthesis also demonstrates that it is feasible to obtain findings that are of potential applied value to the practice field with a reasonable investment of resources. The implications are that such approach could provide a practical and adaptable research model to inform the future development of

evidence-based MER-related competencies and skills for RHCPs – not only within the O&G industry of Nigeria, but potentially in other countries with an O&G industry and other organisations that operate in remote and hostile locations.

A practical implication of this research is that it provides contemporary empirical data on MER in the O&G industry of Nigeria. This is pertinent given that the only comparable study was conducted around 20 years ago[26,27,29]. Trends in the epidemiology of injury and illness offshore have changed over time and relatedly there have been advances in medical treatment and technology as evidenced by published literature[2,3]. Thus, contemporary data are necessary to inform the continuous improvement of RHCPs skills and competency. Obtaining such data are also the critical first step to inform the MER-related training requirements for RHCPs in the O&G industry of Nigeria in order to help training providers design and deliver pertinent training based on the types of remote MER that RHCPs actually encounter in the field.

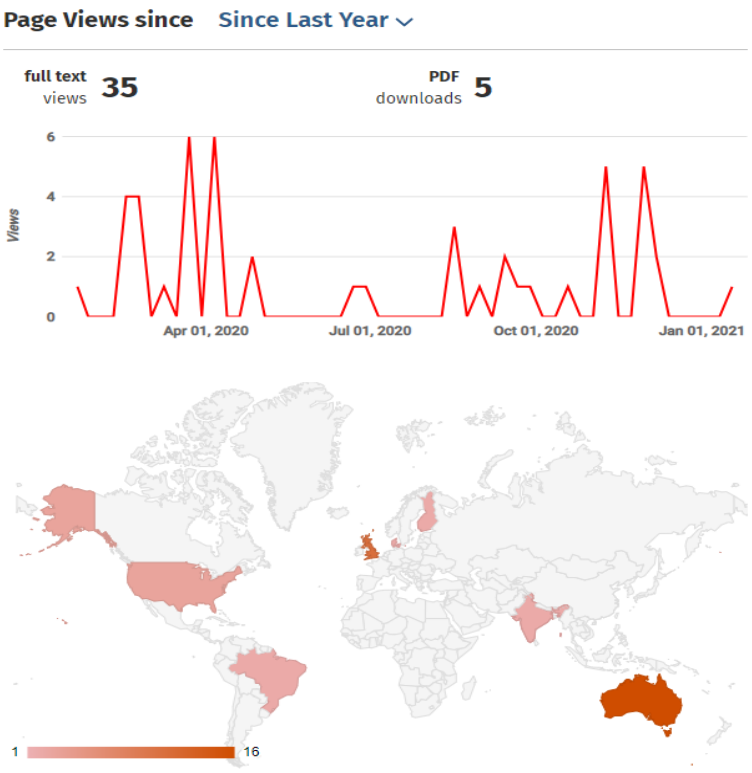


Figure 5.1 Social sharing & Distribution of Article

RHCP profession – The training of RHCPs is recognised as a high priority for an effective and safe healthcare system as evidenced, for example, by the establishment of the Faculty of Remote and Rural Healthcare in November 2018 by The Royal College of Surgeons of Edinburgh. Given that the Faculty has more recently incorporated 'Humanitarian' in its structure in August 2020 to become the Faculty of Remote, Rural and Humanitarian Healthcare.

Body of Knowledge – The two-way engagement with key stakeholders (as opposed to a one-way communication of findings) provides feedback that enabled the researcher to make the research approach as relevant and useful as possible. Collaboration with key stakeholders for the purpose of co-designing the research increases the likelihood of uptake because the body of knowledge would perceive research outputs to be more relevant and have a sense of shared ownership. Moreover, engagement with key stakeholders (RHCPs, Delphi experts and training specialist) potentially affords recognition by major funding bodies and thus would enhance the potential for impact that extends beyond academia supports impact activities.

O&G Industry – Adoption of the research findings will positively improve MER outcomes and reduce remote medical evacuation due to improved RHCPs competence. Additionally, it will reduce or eliminate worksite fatality, enhance workers performance and increase productivity. Relatedly, organisations could adopt outcomes of this study as a guidance on remote healthcare strategy for their operations.

Societal impact – Adoption of research outcomes will indirectly deliver better quality health services to host communities of industries as this will be hinged on trained and competent RHCPs. Delivery of medicare to host communities is a critical corporate social responsibility requirement for industries operating in remote locations.

5.7 Conclusions

While it was obvious that no available evidences had all the competencies identified in this survey, it is noteworthy that the outcome and attained outcomes addressed the objectives of this research which was to principally evaluate current practices in remote Medical Emergency Response (MER) in the O&G industry of Nigeria, with the purpose of identifying training needs of RHCPs and strategy for development. The management of MER in remote work location such as the offshore O&G rigs should focus on enabling the skillset of RHCPs through establishment of training framework using this research outcomes as guide.

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APPENDIX

Appendix I: Search strategy

Database	Keywords/search terms	Number of records
IPIECA http://www.ipieca.org/resources/?search=Offshore%20or%20remote%20or%20oil%20rig%20or%20remote%20healthcare%20or%20medical%20emergency Searched on 10/01/2019	Offshore or remote or oil rig or remote healthcare or medical emergency	221  Resources _ IPIECA.pdf
OnePetro https://www-onepetro-org.ezproxy.rgu.ac.uk/ Searched on 7/31/2018	"remote healthcare " AND "medical emergency " AND "O&G"	5  OnePetro.pdf
HSE http://www.hse.gov.uk/index.htm Searched on 7/31/2018	(medical emergency or first aid or remote healthcare) or (offshore or O&G)	120  HSE Literatures.doc.docx
ScienceDirect http://www.sciencedirect.com.ezproxy.rgu.ac.uk/ Searched on 7/31/2018	(medical emergency or first aid or remote healthcare) or (offshore or O&G)	25  ScienceDirect.pdf

Google Scholar Click link Searched on7/31/2018	(medical emergency or first aid or remote healthcare) or (offshore or O&G)	17900 Google S.pdf
O&G Uk Click link Searched on 7/30/2018	Offshore medical emergency response	21 Oil and Gas UK 2.pdf Oil and Gas UK 1.pdf
Sakhalin Energy Russia Click link Searched on 7/30/2018	Medical Emergency response	2 Sakhalin Energy - Search.pdf
British Gas Searched on 4/12/2017	Offshore OR Remote OR Rig OR O&G or injury OR illness OR medical emergency OR Remote Healthcare OR Health OR Telemedicine OR medevac	165 Literature Search i British Gas.pdf
PubMed	(remote healthcare or medical emergency) AND (O&G)	38

Click link Searched on 7/30/2018		PubMed Literatures.pdf
Medline Click link Searched on 7/30/2018	(offshore or remote or oil rig) AND (medical emergency or remote healthcare) AND (O&G)	7 Medline.pdf
CINAHL with Full Text Click link Searched on 7/30/2018	(offshore or remote or oil rig) AND (medical emergency or remote healthcare) AND (O&G)	4 CINAHL With Full Text.pdf
IRHC (Institute of Remote Healthcare) https://irhc.site-ym.com/members/membership.asp?id=CFA644DA-4AA6-42C9-BB8E-0C610A63A295& 7/30/2018	Offshore or remote or oil rig or remote healthcare or medical emergency	126 IRHC Literatures.docx
Total		18,634

Appendix II: Excluded studies (At Textual Screening)

1. IPIECA (International Petroleum Industry Environmental Conservation Association). Health aspects of work in extreme climates: A guide for O&G industry managers and supervisors. 2008; Report 393:18.

Reason for exclusion: There is no named author, although it is written by a regulatory organization of repute the document does not contain policies, guidance statements relating to the management of medical emergencies in remote locations in the O&G industry. The central focus of the document is not relevant to the theme and content of the review and thus did not meet the inclusion criteria.

2. Thibodaux D, Bourgeois R, Loeppke R, Konicki D, Hymel P & Dreger M. Medical evacuations from oil rigs off the Gulf Coast of the United States from 2008 to 2012: reasons and cost implications. Journal of Occupational and Environmental Medicine*.2014;* 56(7):681-685.

Reason for exclusion: This is a cross-sectional study, not a policy or guidance statement and does not meet the inclusion criteria.

3. Valentine M. Developing Primary Care in Remote O&G Operations. The Journal of the Institute of Remote Health Care.2015; 6 (1):7-10

Reason for exclusion: It is not a policy, guidance document; it is a narrative that did not meet the phenomenon of interest.

4. Acker J, Johnston T, Lazarsfeld-Jensen A. Industrial paramedics, out on site but not out of mind. Rural and Remote Health.2014; 14: 2856.

Reasons for exclusion: It is not a policy, guidance document; it is a narrative that did not meet the phenomenon of interest.

5. Health & Safety Executive (HSE). Study of Medical Evacuation from Offshore Installations 1987 to 1992. Offshore Technology report.1999; OTO 98171

Reason for exclusion: It is not a policy or guidance document; the context did not meet the phenomenon of interest.

6. Norman J, Wilcock S, Gauld S, Valentine M, Roythorne C, Mawdsley J, Ballantine N, Brebner J, Brown B.Medical evacuations from offshore structures. British Journal of Industrial Medicine.1988; 45:619-623

Reason for exclusion: It is not a policy or guidance document; it did not meet the phenomenon of interest.

7. Benson K. Care at sea, remote medics working on oil rigs. Emergency. 1995; 27 (9): 0162-5942

Reason for exclusion: It is not a policy or a guidance document; the textual context did not meet the phenomenon of interest.

8. Davidson G. Paramedics at work, emergency offshore on board Britain's oil-rigs. ***Nursing Times; 1982;*** 78:0954-7762

Reason for exclusion: It is neither a policy nor a guidance document; the textual context did not meet the phenomenon of interest.

9. Mair F, Fraser S, Ferguson J & Webster K. Telemedicine via satellite to support offshore oil platforms*. J Telemed Telecare*.2008; 14(3):129-31.

Reason for exclusion: It is neither a policy nor a guidance document; the textual context did not meet the phenomenon of interest.

10. Stuhr M, Dethleff D, Weinrich N, et al. **Medical Emergency** Preparedness in **offshore** wind farms: New challenges in the German north and Baltic seas. *Anesthetist.*2016; 65: 369.

Reason for exclusion: It is not a policy or a guidance document; the textual context did not meet the phenomenon of interest.

11. Parkes K, Swash S. Offshore sickbay consultations in relation to age, job factors, and self-reported health. 2005; Research Report 364

Reason for exclusion: It is not a policy or a guidance document; the textual context did not meet the phenomenon of interest

12. United Kingdom Health Safety Executive (UK HSE). Marine Offshore Rescue Advisory Group: Good practice in offshore rescue. Offshore Technology Report 2001/040

Reason for exclusion: It is not a policy or a guidance document; the textual context did not meet the phenomenon of interest

Appendix III: Characteristics of included studies

Authors/year/ country	Aims/purpose	Design and methods	Setting	Conclusion	Supporting Argument
Ponsonby et al. [2]2009 The Netherlands	Firstly, to establish the challenges for MER in in the offshore environment. Secondly to present the regulations and industry standards to manage MER. To unpack existing and emerging practice in managing these challenges.	The study employed the review of published literature supplemented with a summary of current and emerging practice in the industry.	MER in the offshore O&G industry	This guidance document is a collection of literature review on industry best practice. Remoteness of offshore facilities presents unusual challenges for medical emergency response (MER). The need for a harmonized guidance document is rife	A review of published literature was supplemented with a summary of current practice in the industry [2(p.298)] The remoteness of the offshore platforms and vessels coupled with the potential risk of being cut off by bad weather presents particular challenges for medical emergency response (MER)[4(p.298)] Where there is no national legislation,

				in remote healthcare delivery	industry and company guidance is used to define the MERstandards.[4] (p.298)
				The diverse epidemiology of injuries and illnesses necessitate a broad range of skill set.	The types of illness and injury occurring in these locations necessitate the availability of medical staff and facilities that are able to cope with a broad range of medical emergencies in addition to the management of minor ailments.[4(p.299)]
				A wide range of medical equipment might be	Several countries have

				required in remote healthcare depending on site peculiarity. Training, qualification, competence and resource availability are significant consideration needed for remote healthcare provision.	legislated minimum medical equipment levels at remote sites and some have requirements for minimum numbers of medical personnel.[2(p.299)] The lack of an overall identifiable qualification requirement coupled with the need to find practitioners willing to work in isolated environments for weeks at a time can lead to competency issues.[2(p.300)]

				Competence development is a challenge that requires additional training for offshore medics. A plan of MER should be integrated into the overall site emergency plan**.**	To mitigate this problem, some medical provider companies provide additional training designed to prepare paramedics for working offshore.[2(p.300)] A medical emergency plan can then be drawn up which should be documented and make up part of the overall emergency response plan for the facility.[2(p.300)]

				Types and amount of equipment and drugs should be suitable for primary health care MER and stabilization.	The medical equipment and drugs should be suitable to provide a limited primary care service for minor ailments that present while workers are offshore and also to provide emergency care and stabilization for more serious illnesses and injuries.[2(p.301)]
				Telemedicine may improve remote healthcare delivery to offshore locations.	Telemedicine continues to offer opportunities to improve medical emergency management in remote locations. [2(p.302)]

The Institute of Remote Health Care (IRHC)[45] 2013 UK	A guidance textual document aimed at assisting RHCP deliver remote health support in remote work location.	A collective of views and discussion points of subject matter experts in a workshop	Health support in remote locations within the energy and associated marine operations.	This document was derived through a consensus of expert opinion. Remote locations present many challenges to Medical Emergency Response (MER).	This document is based on the workshop participants' individual views, derived from their involvement in providing healthcare in remote locations in the energy industry and its associated maritime activities.[45 (p.6)] Remote locations are associated with higher risks (e.g. hot or cold extremes in deserts or polar regions, or infectious diseases in tropical areas), limited access

					to basic necessities (e.g. clean water), and limited supplies (due to logistical challenges of re-supply).[45] (p.7)
				Preventive health controls are essential to the prevention of medical emergencies in remote offshore locations	Appropriate planning and prevention steps prior to mobilization to a remote location are essential.[45] (p.7)
				Broad range of skill sets are required to work in remote locations.	Health professionals working in these locations thus require a number of competencies, including managing medical

					emergencies, advanced life support, emergency transportation, communications and the use of medical technology.[45] (p.7)
				Telemedicine has a positive multiplier effect in remote healthcare.	In addition to facilitating diagnosis and treatment, telemedicine connection to a competent topside has been shown to reduce delays in medical evacuations (e.g. through faster diagnosis) and reduce unnecessary evacuations (e.g. through

					accurate specialist assessments).[45] (p.7)
				MER resources needed in a remote location should include competent medical personnel, medical equipment, communication and telehealth facilities.	Resources required for the successful implementation of a MERP include: • Competent MER Team members (e.g. First Aiders, Doctor, Nurse, Paramedic); • Effective means of communications; • Adequate means of transportation (ground, water, air); • Local health facilities with adequate medical

					structures (primary, secondary and tertiary health-care units), equipment and supplies.[45 (p.10)]
				MER plan makes response to emergency effective.	To effectively manage medical emergencies in remote locations, a site-specific medical emergency response plan (MERP) needs to be developed prior to mobilization.[45 (p.10)]
				There is the need for a harmonized competence development standard.	There is currently no universally accepted "standard"

					training, or accreditation schemes for remote healthcare practitioners.[45] (p.15)
				Remote healthcare practitioners are the traditional health care providers with additional trainings	Site health professionals in remote locations are usually nurses, paramedics, nurse practitioners, physician's assistants, and sometimes physicians.[45] (p.15)
				The competence development of the topside team should be factored into remote MER.	To enable topside to provide accurate and timely advice to the RHCP, it is important that

					the topside possess technical competency in managing medical emergencies, understands the hazards and risks of the site he/she is covering, and has knowledge of the capabilities available health facilities within the site's medical emergency response plan.[45 (p.19)]
The Institute of Remote Health Care (IRHC)- Competency and Training for Health Care Practitioners – Working in	To define the competency expectations and training requirements for RHCPs working in remote O&G	A Delphi study conducted to harvest the opinion of experts in the field of	A document on Healthcare practitioners working in a remote environment	Guidance document was derived from engagement of RHCP and a Delphi study.	This was followed by a Delphi Study completed by Professor Susan Klein (attached as Appendix 3)

Remote Environments[35]2017 UK	operations around the globe.	remote healthcare.			From this consultation, the consensus document was constructed. [35] (p.5)
				By virtue of the consensus, a harmonized guidance document should include Responsibility; Mindset; Competency and Training; Formal RHCP Training and Assessment for Prevention of Skill Decay; Training in Emergency Medicine; Common Medical Emergencies; Common Surgical Emergencies; Common Psychiatric Emergencies; Common Traumatic Emergencies; First Aid and Defibrillation; Primary Health Care; Preventative Medicine, and Health Service Administration.	Overall, consensus was achieved for the 61% of statements, with the majority pertaining to 16 of the 22 topic areas as follows: RHCP Responsibility; Mindset; RHCP Competency and Training; Formal RHCP Training and Assessment for Prevention of Skill Decay; RHCP Training and Assessment in: Emergency

					Medicine; Advanced Life Support (ALS); Common Medical Emergencies; Common Surgical Emergencies; Common Psychiatric Emergencies; Common Traumatic Emergencies; Training Staff in First Aid and Defibrillation; Extreme Remote Locations; Primary Health Care; Preventative Medicine, and Health Service Administration. [35(p.18)]
Sakhalin Energy Investment	To present a structured approach	A compendium	MER in O&G industry	The guidance document adopted industry best	This specification

Company Ltd (Sakhalin Energy)[44] 2014 Russia	to minimizing the potential health consequences of workplace injury or acute illness in Sakhalin energy locations.	of best industry practice in medical emergency response in work locations		practice using a risk-based approach. Tier response approach to MER based on Tier 0,1,2,3,4 MER resources a significant consideration in remote MER.	adopts a risk-based approach for MER embracing two key concepts: it applies a time-dependent tiered set of responses to an incident, and it sets differing response requirements depending on the nature of the hazards and the activities on the Site. [44 (p.1)] Tier response times and MER requirements [44 (p.1)] Requirements – MER resources[44 (p.3)]

				MER management to be reviewed annually in remote locations Every part of the MER sequence should be evaluated.	Review MER arrangements for *Remote Worksites* annually[44 (p.5)]; Monitor the effectiveness of allelements of MERmanagement. Thisincludesaddressingallrelevantchanges to the Siteand reflecting these in risk assessments, the MER manual, MER procedures and resources (including staff numbers and competency, facilities and equipment) [44 (p.5)];

				Emphasis on implementation of the MER specification Several resources are needed for MER First responders need training; skill development and maintenance. Tier 2 MER resources needs training, skill development and maintenance.	Support implementation of MER. [44 (p.6)] Medical Emergency Response Specification.[44 (p.12)]; First Response Training Components and Skill Maintenance; DFA Training Components and skill maintenance[44 (p.20)]; Tier 2 MER Professional Training Components and Skills Maintenance[44 (p.22)]

Health & Safety Executive (HSE).Offshore medic training and qualifications for the purposes of The Offshore Installations and Pipeline Works (First-Aid) Regulations 1989: A guide for training organizations. 2009.[46]	To present a guidance on the approved content of offshore medic training and acceptable qualification.	A guidance document on approved code of practice with statutory requirements on the content of offshore medic training and qualification	A guidance to enable training organizations that wish to run offshore medic training on packaging the content to enable competent offshore medic	This guidance document is derived from the Approved Code of Practice and regulations. The standard qualification for offshore medics should have an in-depth training which should include management of medical emergencies of conditions involving body systems with appropriate interventions.	The Approved Code of Practice associated with these regulations is aimed mainly at employers.)The Offshore Installations and Pipeline Works (First-Aid) Regulations 1989require employers to provide suitable equipment, facilities and personnel. [46(P.1] Offshore medics should study and be examined in greater depth than is required for offshore first-aiders and should include airway

					maintenance, artificial ventilation; intravenous infusions; urinary bladder catheterization; endotracheal intubation; communicable (including sexually transmitted) diseases and infectious conditions; common eye conditions; common ear conditions; common skin conditions; common dental conditions; hyperbaric environment; decompression and its complications; individual

					clinical instruction as required; emergency medical services; communications, installation/vessel to shore; offshore occupational hazards and the prevention of risks to health; offshore hygiene requirements; psychiatric conditions; background to the offshore industry and offshore activities; standing orders and emergency plans; use and administration of drugs; stores

					and equipment; statutory requirements and keeping of detailed records.[46(P.17)]
Health &Safety Executive (UK HSE). Health care and first aid on offshore installations and Pipeline Works(First-Aid) Regulations 1989. Approved Code of Practice and Guidance L123 (third edition) HSE 2016. [47]	How to maintain appropriate standards of offshore medic training	A guidance document	Training providers	Guidance document derived as an extract from HSE publications. Guidance document derived as an extract from health and safety regulations. Offshore medics and offshore first-aiders will	The training content has been aligned with the HSE publications. [22(P.5)] The rest of this introduction describes how far it fits in with general health and safety legislation and with certain offshore specific regulations. [47] (P.5) The treatment role of offshore

				need to communicate with topside medical team. Remote Healthcare Practitioners would require requalification training for competence development.	medics is crucial in the event of an injury or acute illness and they may be called upon suddenly to exercise skills which they have few opportunities to practise. [47 (P.5)] Requalification courses should include the following subjects: acute medical and surgical emergencies; treatment of immersion; treatment of hypothermia and hyperthermia; management of the unconscious patient;

					treatment of shock, bleeding; hyperbaric environment; minor ailments; revision of practical techniques and procedures; medical services and communications; transport of patients; drugs and equipment; records; update on developments in occupational health, hygiene and health promotion and update on statutory requirements. 47(P.24)
United Kingdom Health Safety Executive (UK	Aimed at asset owners to ensure that they	A guidance document on health care	Asset owners, first aiders and	Document was derived from a descriptive retrospective and	Following a retrospective study (1976-

HSE). Study of Medical Evacuation from Offshore Installations 1987 to 1992. Offshore Technology report.1999; OTO 98171[54]	understand and provide adequate first aid and basic health care for all personnel on offshore installations	and first aid on offshore facilities	offshore medics	prospective study of medical evacuations in the North Sea. Offshore medical emergencies consist of a variety of injuries and illnesses necessitating evacuation.	1984) of medical evacuations from North Sea installations, a five-year prospective study involving a consortium of nine North Sea oil companies.[54] (P.74) Further examples of patterns which emerged in the findings of the study include: the prevalence of back and spinal conditions requiring evacuation; the high incidence of finger andhand injuries; the number of

					evacuations taking place for medical reasons on the first day or very early in the scheduled tour of duty. 54(P.71)
				Training standards can be derived by studies and researches in the field.	Recommendations based on the findings of such research allow changes to the industry's medical or training standards to be appropriately targeted. 54(P.74)
				The effectiveness of standards should be monitored.	Also the effectiveness of any such initiatives can be monitored

					during the continuation of the research project. [54(P.74)]
International Petroleum Industry Environmental Conservation Association (IPIECA) & International O&G Producers (IOGP).Multiple casualty planning and preparation: Checklist for medical emergency response planning for the O&G industry. International Oil & Gas Producers (IOGP) Report 578; 2017.[49]	Intended to guide the user through the key elements that is need to be considered when developing a medical emergency response plan (MERP) for multiple casualty incidents in the O&G industry.	A guidance document on MERP for multiple casualty	Medical Emergency Responders	The key elements in an MERP should include Risk assessment; Organization, Structure and Roles; On-site facilities; External facilities; Triage equipment; Training; Drills; Communication; Notification to employees, dependents and psychological support and Documentation, reporting and tracking.	The checklist is intended to guide the user through the key elements that need to be considered when developing a medical emergency response plan, or when assessing the thoroughness of an existing medical emergency response plan. [49(P.2)]
IPIECA (International Petroleum Industry	A guide for managing health in O&G locations	A guidance document on MERP in O&G field locations	Supervisors of medical emergency responders	Preventive control measures will make an effective health	The occupational health aspects of a health

Environmental Conservation Association). Managing health for field operations in O&G activities – a guide for managers and supervisors in the O&G industry. London, UK: IPIECA; 2011.[42]				management system in O&G operations.	management system, which should be applied to field operations in O&G activities, include activity in all of the following: health risk assessment and planning; industrial hygiene and control of workplace exposures; medical emergency management; management of ill-health in the workplace; fitness for task assessment and health surveillance; health impact assessment;

					health reporting and record management; public health interface and promotion of good health; and control of food, water and sanitation issues. [42 (P.3)]
				A MERP should be put in place to manage medical emergencies in remote location effectively.	To manage medical emergencies, each location should develop a site-specific medical emergency response plan (MERP). [42(P.5)]
				The RHCP should include the first aiders in addition to the nurses, doctors and specialist.	Health-care personnel range from trained first aiders to medical specialists

					capable of diagnosing and treating complex medical conditions.[42] (P.6)

Appendix IV: Assessment of methodological quality of included studies

Legend- Y = yes, N = no, U = unclear

	Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7
1	Ponsonby et al.[2]	Y	Y	Y	Y	Y	Y	Y
2	Sakhalin Energy Investment Company Ltd. [44]	Y	Y	Y	Y	Y	Y	Y
3	The Institute of Remote Health Care (IRHC)- 2013[45]	Y	Y	Y	Y	Y	Y	Y
4	The Institute of Remote Health Care (IRHC)- 2017[35]	Y	Y	Y	Y	Y	Y	Y
5	Health & Safety Executive (HSE) L123[47]	Y	Y	Y	Y	N	N	Y
6	Health & Safety Executive (HSE) Offshore -2009[46]	Y	Y	Y	Y	N	N	Y
7	Health & Safety Executive (HSE) OTO 98171[54]	Y	Y	Y	Y	N	N	Y
8	International Petroleum Industry Environmental Conservation Association (IPIECA) & International O&G Producers (IOGP). Multiple casualty planning and preparation: Checklist for medical emergency response planning for the O&G industry. International Oil & Gas Producers (IOGP) Report 578; 2017[49]	Y	Y	Y	Y	N	N	Y
9	IPIECA (International Petroleum Industry Environmental Conservation Association). Managing health for field operations in O&G activities – a guide for managers and supervisors in the O&G industry. OGP Report Number 3432011[42]	Y	Y	Y	Y	Y	Y	Y
Percentage of response to each question (%)		100	100	100	100	Y- 56	Y-56	Y-100

Review Questions: Q1- Is the source of the opinion clearly identified?,**Q2**- Does the source of the opinion have standing in the field of expertise?,**Q3**- Are the interests of patients/clients the central focus of the opinion? , **Q4**- Is the opinion's basis in logic/experience clearly argued?,**Q5**- Is the argument developed analytical? , **Q6**-Is there reference to the extant literature/evidence and any incongruency with it logically defended?,**Q7**- Is the opinion supported by peers?

Appendix V: Results of meta-synthesis of qualitative research findings (synthesized finding 1)

Conclusions	Categories	Meta - synthesized findings
This document was derived through a consensus of expert opinion (U)	Delphi	*Policies and guidance statements on MER for RHCP have to date been derived through consensus of expert opinions, engagement of subject experts, outcomes of narrative literature review, collection of industry best practices, extraction from relevant publications and outcomes of various industry studies.*
Guidance document was derived from engagement of RHCP and a Delphi study(U)		
This guidance document is a collection of literature review on industry best practice(U)	Narrative literature review	
Guidance document derived as an extract from HSE publications (U)		
Guidance document derived as an extract from health and safety regulations(U)		
Training standards can be derived by studies and researches in the field(U)		
Document was derived from a descriptive retrospective and prospective study of medical evacuations in the North Sea(U)		
This guidance document is derived from the Approved Code of Practice and regulations(U)	Compendium of Industry Practice	
The guidance document adopted industry best practice using a risk-based approach(U)		

C, credible; U, unequivocal

This finding was created from three categories, 'Delphi', 'Narrative literature review' and 'Compendium of Industry Practice'; which were derived from 9 conclusions. The levels of credibility as detailed by the JBI-NOTARI are also included for each conclusion (Table 2).

Results of meta-synthesis of qualitative research findings (synthesized finding 2)

Conclusions	Categories	Meta - synthesized findings
Remoteness of offshore facilities presents unusual challenges for medical emergency response (C)	Remote Terrain	*The documents largely present the diverse nature of remote medical emergencies and challenges to remote MER however, similarities were evidenced by the need for a broad spectrum of competences and MER resources, but the documents differed in the required type and development of competences thus necessitating the need for this review.* .
Remote locations present many challenges to Medical Emergency Response (C)		
The diverse epidemiology of injuries and illnesses necessitate a broad range of skill set(C)	Skillset	
Offshore medical emergencies consist of a variety of injuries and illnesses necessitating evacuation(U)		
Broad range of skill sets are required to work in remote locations(C)		
Training, qualification, competence and resource availability are significant consideration needed for remote healthcare provision(C)		

The competence development of the topside team should be factored into remote MER(C)	Competence development	
First responders need training; skill development and maintenance(C)		
Designated First Aiders need training skill development and maintenance(C)		
Tier 2 MER resources need training, skill development and maintenance(C)		
The standard qualification for offshore medics should have an in-depth training which should include management of medical emergencies of conditions involving body systems with appropriate interventions(C)		
Remote Healthcare Practitioners would require requalification training for competence development(C)		
Competence development is a challenge that requires additional training for offshore medics (C)		
A plan of MER should be integrated into the overall site emergency plan(C)		
MER plan makes response to emergency effective(C)		
The key elements in an MERP should include Risk assessment; Organization, Structure and Roles; On-site facilities; External facilities; Triage equipment; Training; Drills; Communication; Notification to employees,		

dependents and psychological support and Documentation, reporting and tracking(C)	MER plan	
A MERP should be put in place to manage medical emergencies in remote location effectively(C)		
A wide range of medical equipment might be required in remote healthcare depending on site peculiarity(C)		
Types and amount of equipment and drugs should be suitable for primary health care MER and stabilization(C)		
MER resources a significant consideration in remote MER(C)	MER Resources	
Tier response approach to MER based on Tier 0,1,2,3,4(C)		
Several resources are needed for MER (C)		
Offshore medics and offshore first-aiders will need to communicate with topside medical team(C)		
The RHCP should include the first aiders in addition to the nurses, doctors and specialist(C)		
MER resources needed in a remote location should include competent medical personnel, medical equipment, communication and telehealth facilities(C)		
Telemedicine may improve remote healthcare delivery to offshore locations(C)		
Telemedicine has a positive multiplier effect in remote healthcare(C)		

There is the need for a harmonized competence development standard(C)	Telemedicine	
The need for a harmonized guidance document is rife in remote healthcare delivery(C)		
By virtue of the consensus, a harmonized guidance document should include Responsibility; Mindset; Competency and Training; Formal RHCP Training and Assessment for Prevention of Skill Decay; Training in Emergency Medicine; Common Medical Emergencies; Common Surgical Emergencies; Common Psychiatric Emergencies; Common Traumatic Emergencies; First Aid and Defibrillation; Primary Health Care; Preventative Medicine, and Health Service Administration(C)	Harmonization of Standards	
Preventive health controls are essential to the prevention of medical emergencies in remote offshore locations(C)	Preventive health measures	
Preventive control measures will make an effective health management system in O&G operations(C)		

C, credible; U, unequivocal

This finding was created from 8 categories, 'Remote Terrain', 'Skillset', 'Competence development', 'MER plan', 'MER resources', 'Telemedicine', 'Harmonization standards 'and 'Preventive Health Measures'; which were derived from 32 conclusions. The levels of credibility as detailed by the JBI-NOTARI are also included for each conclusion (Table 3).

Results of meta-synthesis of qualitative research findings (synthesized finding 3)

Conclusions	Categories	Meta - synthesized findings
The effectiveness of standards should be monitored(C)	Implementation	*The effectiveness of the MER standards, policies and guidance statements is made possible by the implementation of the MER specifications with periodic evaluation of the various components of the MER sequence.*
Emphasis on implementation of the MER specification(C)		
MER management to be reviewed annually in remote locations(C)	Evaluation	
Every part of the MER sequence should be evaluated(C)		

C, credible; U, unequivocal

Appendix VI: Ethical review panel of the School of Pharmacy- Online Delphi

ROBERT GORDON UNIVERSITY ABERDEEN

SCHOOL OF PHARMACY & LIFE SCIENCES
Robert Gordon University
Sir Ian Wood Building
Garthdee Road
Aberdeen
AB10 7GJ
United Kingdom
Tel. 01224 263300/3303
www.rgu.ac.uk

10th May 2018

Dear Kennedy,

Re.: S129 - Investigation of the impact on employee health following medical evacuation from the oil rig

NOT APPROVED – MINOR AMENDMENTS

Thank you for submitting your proposal to the School Ethical Review Panel. We have reviewed this application and feel that it requires some minor amendments to be made before it can be approved.

You may proceed with the online survey, but must resubmit an updated proposal with more detail on the focus group (as per reviewer comments) if you wish to proceed with that portion of the data collection.

Should you have any questions about the ethical review process please consult the information in this module or speak to your supervisor.

I look forward to receiving your revised application.

Best Regards

Dr Colin Thompson
Convener of the School of Pharmacy and Life Sciences Ethical Review Panel.

Appendix VII: Pilot Delphi Statements

For Sections A- G, please indicate to what extent you agree or disagree on the face and content with each statement based on your expert opinion . There are no right or wrong answers.

Section A – Emergency treatment of common illnesses & injuries in offshore Oil and Gas (O&) locations in Nigeria

Treatment of common illnesses

1.0	**The Remote Healthcare Practitioner should be knowledgeable in the emergency treatment of the following illnesses…….**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
1.1	Tropical diseases					
1.2	Diseases of the musculoskeletal system					
1.3	Diseases of the respiratory system					
1.4	Diseases of the digestive system					
1.5	Mental health disorders					
1.6	Diseases of nervous system					
1.7	Diseases of skin and subcutaneous tissue					
1.8	Diseases of the genital and urinary system					
1.9	Diseases of the cardiovascular system					
1.10	Other					

Treatment of common injuries

2.0	**The Remote Healthcare Practitioner should as a minimum be knowledgeable in the emergency treatment of the following injuries……**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
2.1	Fractures					
2.2	Cuts and/ or abrasion					
2.3	Burns					
2.4	Dental emergencies					
2.5	Gunshot injury					
2.6	Gas or fume inhalation					
2.7	Head injuries					
2.8	Bruises					

2.9	Crush injuries					
2.10	Other					

Section B- RHCP competency requirements

RHCP mandatory skill sets

3.0	**The Remote Healthcare Practitioner mandatory skill sets should include……**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
3.1	Administration of emergency medications					
3.2	Emergency treatment of common illnesses					
3.3	Emergency treatment of trauma and common surgical cases					
3.4	Communication skill					
3.5	Telemedicine facilities					
3.6	Health, Safety and Environmental aspects					
3.7	Occupational & Public Health concepts and controls					
3.8	Clinic administration					
3.9	Facilitation of Helicopter landing operations					
3.10	Other					

RHCP diagnostic skill sets

4.0	**The Remote Healthcare Practitioner mandatory skill sets should include the following diagnostic procedure**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
4.1	Physical assessment					
4.2	Ultrasound					
4.3	Pulmonary diagnostics procedures e.g Spirometry, Vitallograhphy					
4.4	Microscopic urinalysis					

4.5	Cardiovascular diagnostic procedure e.g Electrocardiography (ECG)					
4.6	Eye diagnostic procedure e.g Visual Acuity (VA), Ophthalmoscopy					
4.7	Ear diagnostic procedure e.g Otoscopy, Audiommetry					
4.8	Blood test – e.g Blood glucose, Complete Blood Count, Hematocrit, Hemoglobin, Blood sugar test and Malaria Rapid Diagnostic Test					
4.9	Stool for Ova and Parasite					
4.10	Other					

C – RHCP training requirements in basic competencies

5.0	**Additional trainings capable of providing competence requirements to the Remote Healthcare Practitioner include…….**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
5.1	Basic Life Support (BLS)					
5.2	Advance Cardiac Life Support (ACLS)					
5.3	Advance Trauma Life Support (ATLS)					
5.4	Pre-hospital Trauma Life Support (PHTLS)					
5.5	Statutory Offshore Rig Medic (STORM)Training					
5.6	Advanced First Aid					
5.7	Advance Trauma Care for Nurses (ATCN)					
5.8	Mandatory Continuous Professional Development trainings					
5.9	Pre-hospital Advance Life Support (ALS)training					
5.10	Other					

Section D – Remote site clinic (RSC) requirements

6.0	**Minimum requirements for an RSC should include……**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
6.1	Easy access and exit by wheel chair and stretcher					
6.2	Consultation table with chair, lockable cabinet & Couch					
6.3	Adequate space					
6.4	Ventilation, illumination & temperature control					
6.5	A medical waste disposal system					
6.6	Communication and remote healthcare facilities					
6.7	Drug refrigerator and shelves					
6.8	Potable water (running or in containers)					
6.9	Washing facilities (Shower)					
6.10	Comment					

Section E- Resources for Effective MER

7.0	**Requirements for effective MER in a remote work site should include-**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
7.1	Medical Emergency Response Plan (MERP) & procedures					
7.2	Competent MER professionals					
7.3	Effective means of communication					
7.4	Suitable means of transportation					
7.5	Topside health support with specialist and adequate equipment					
7.6	Essential MER equipment including AED, emergency medications, Oxygen and intravenous infusion.					

7.7	Telemedicine & Remote Healthcare facility					
7.8	Remote health facilities					
7.9	Onboard translators					
7.10	Comment					

Section F – Prevention of medical emergencies at remote work locations

9.0	**Prevention of medical emergencies at offshore Oil and Gas locations in Nigeria requires the implementation of……**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
9.1	Medical emergency risk assessment and controls					
9.2	Satisfactory Fitness to Work (FTW) medical examinations					
9.3	Workers Health Promotion Programmes (WHPP)					
9.4	Effective security coverage					
9.5	Satisfactory periodic medical examinations					
9.6	Immunizations					
9.7	Healthy and balanced dietary regimen					
9.8	Worksite safety management					
9.9	Topside medical consultations for onboard personnel					
9.10	Comment					

Section G – Skill maintenance requirements

10.0	**Periodic training of the Remote Healthcare Practitioners should be in the form of……**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
10.1	Face-to-Face training					
10.2	Online self study & exercises					
10.3	Virtual teleconference or videoconference training					
10.4	Combination of Face to Face with Virtual & online training					

10.5	Mandatory Continuous Professional Development (CPDs) courses					
10.6	MER Drills					
10.7	MER reviews					
10.8	Clinical exchange programme					
10.9	Periodic trainings					
10.10	Comment					

Appendix VIII : Participant Information Sheet

Research Team

Robert Gordon University (RGU): Kennedy A. Osakwe
Professor Cherry Wainwright
Professor Kay Cooper
Professor Derek Stewart
Nicholas DillonExternal Advisor
Professor Susan Klein External Advisor

Title of Delphi Survey: Developing consensus on management of medical emergency response in the O&G operations in Nigeria: A Delphi study

As you are being invited to take part in a Delphi study, it is important that you understand the purpose of the study and what it will involve. Please take time to read through the following information carefully before you come to a decision whether to participate. Feel free to ask questions or request further information by contacting Kennedy A. Osakwe (1117922@rgu.ac.uk) or feel free, if you wish, to talk to others about the study.

What is the purpose of the study?

The aim of the study is primarily to achieve a consensus of expert opinion on basic statements pertaining to the management of Medical Emergency Response (MER) in the O&G industry of Nigeria upon which an accepted standard can be built, and secondarily to inform the training and practice of Remote Healthcare Practitioners (RHCPs) based on the best available advice from experts and practitioners in the field.

What methods does the study use?

The Delphi method of enquiry recognizes the value of experts' opinions and experience when full scientific knowledge is lacking. It is a well-established method for guideline development. The aim of a Delphi Study is to determine whether consensus is possible by asking experts to indicate the level to which they agree or disagree with statements presented in two rounds. After each round, a facilitator provides an anonymous summary of the experts' views and comments

for comparative purposes. Consensus is typically determined by 70% or more of participants scoring each statement in the same direction.

Who is taking part in the study?

Within the context of the Energy Industry and its associated Maritime activities, experts within the remote healthcare domain have been invited to participate in the Delphi Study based on the following target categories: Health Advisers; Training Providers; Subject Matter Expert (Academic and Retired) and RHCPs (senior doctors, senior nurses and first aiders with more than 7 years).

Why have I been selected?

You have been selected as someone who has been identified as being representative of key stakeholders within the four target categories above. You are requested to provide your consent in the consent sections, thereafter tick your preferred answer to the statement under the Likert scale.

Do I have to take part?

No, it is up to you whether you take part or not. While we would very much value your contribution, you should appreciate that your participation in the study is entirely voluntary. You are free to decline from participation If you do not wish to take part in this study with no affectation on your employment or services.

What will happen if I do choose to take part?

If you choose to participate in the study, you will receive two rounds of statements which will be emailed to you over a 3-week period. You will have 3 weeks to complete each round. Reminders will be sent to you on day 12 and day 14 of the three-week period. Simple and specific instructions will be provided for each round. The amount of time necessary for completion of the rounds will vary with each individual participant but should range from approximately 15-30 minutes for each round. There are no right or wrong answers to the statements. The purpose of this study is solely to seek your expert opinion. You will be notified of the result at the end of each round.

Will my taking part in this study be kept confidential?

If you do choose to participate, any information that you provide will be treated in confidence and the results of the study anonymized. Your name will not be recorded; instead you will be allocated a unique code only identifiable to the research team.

What are the benefits of you taking part?

There are no direct benefits to you from taking part in the study. The study will assist in gaining a consensus from key stakeholders on what they perceive as essential requirements for effective MER in remote work locations such as in the offshore O&G industry. It will also inform the training and practice of RHCPs based on the best available advice from experts and practitioners in the field.

I sincerely hope you will agree to participate in this study.

If you have any questions, please contact Kennedy A. Osakwe (e-mail: 1117922@rgu.ac.uk , phone: +2348035648990)

Appendix IX : CONSENT FORM

Title: Developing consensus on management of medical emergency response in the Oil and Gas operations in Nigeria: A Delphi study.

Researcher

Kennedy A. Osakwe
PhD Student
Robert Gordon University
Scotland
E-mail: 1117922@rgu.ac.uk

Participant Study Number.....

Please initial box

I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. ☐

I agree to take part in the above study. ☐

I agree to the use of anonymised quotes in publications. ☐

_____ _____ _____
Name of Participant Date Signature

_____ _____ _____
Name of Researcher Date Signature

Appendix X : Delphi Statements

Part 1: Participant Background Questions

1. Please select any statement or statements that best describes your work experience in delivering remote healthcare services in the O&G industry of Nigeria.
    - I have held a leadership role in the delivery of remote healthcare services in the O&G industry
    - I am highly trained and competent in the delivery of remote healthcare services in the O&G industry.
    - I am informed but not competent in delivery of remote healthcare services in the O&G industry

2. Number of years of experience working in the delivery of remote healthcare in Nigeria.

3. Number of years of experience working in remote healthcare in the O&G industry of Nigeria overall _____

4. Main professional area of current work. Please select one area.
    - Training Provider
    - Subject Matter Expert (academic)
    - Remote Healthcare Practitioner (RHCP)
    - Subject Matter Expert (Retired)
    - Other

Part 2: Delphi Study Round 1 Statements

Definitions-

Remote Healthcare Practitioner- Health personnel trained and certified to provide healthcare in a remote or isolated terrain.

Medical emergency care- Medical interventions and activities given to an acutely ill or injured person from the moment of injury or commencement of an acute health challenge to when the individual is stable with no acutely life-threatening presentation.

Point-of-Care Testing (POCT)- Laboratory testing conducted close to the site of patient care, typically by clinical personnel whose primary training is not in the clinical laboratory sciences, or by patients (self-testing).

Competency- Sets of learned and tested abilities to perform medical care with positive outcomes.

Hyperbaric oxygen therapy (HBOT) – Treatment method for patients with decompression sickness which entails administering pure oxygen (100% oxygen) in a recompression chamber (pressurized room or tube). This method is commonly used in treatment of divers with decompression sickness.

Glasgow Coma Scale – A neurological scale and practical method for assessing the impairment of conscious level in response to specific stimuli.

For Sections A- F, please indicate to what extent you agree or disagree with each statement based on your expert opinion. There are no right or wrong answers.

A – Competencies for Diagnostic Procedures

1.0	**The Remote Healthcare Practitioner should be able to:**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
1.1	Obtain patient history, conduct clinical assessment and focused examinations like ophthalmoscopy, otoscopy and laryngoscopy.					
1.2	Perform and interpret a 12-lead electrocardiogram.					
1.3	Perform and interpret emergency ultrasound.					
1.4	Perform and interpret plain radiography of the chest, pelvis, c-spine, extremity and skull.					
1.5	Assess the level of consciousness using the Glasgow Coma Scale (GCS).					
1.6	Assess vital signs (respiration, heart rate, temperature, and blood pressure), perform pulse oximetry and cardiac monitoring.					
1.7	Perform and interpret Point-of-Care-Tests (POCT) namely Complete Blood Count; Basic Metabolic Panel (calcium/phosphate/magnesium); Cardiac markers; electrolyte; Blood glucose; malaria screening; haemoglobin test; Arterial blood gas and clotting screen.					
1.8	Perform and interpret diagnostic peritoneal lavage and rectal examination.					
1.9	Perform triage in multiple emergency cases					
1.10	Others					

B- Competencies for Therapeutic Procedures

3.0	**The Remote Healthcare Practitioner should be knowledgeable and able to:**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
3.1	Inert surgical (tracheotomy, needle & surgical cricothyroidotomy) and non-surgical airways (laryngeal mask, nasopharyngeal and oropharyngeal airways)					
3.2	Perform needle decompression of tension pneumothorax					
3.3	Perform and manage Chest drain or tube insertion					
3.4	Pass urinary catheter (suprapubic and transurethral) and Gastric tube.					
3.5	Perform Transcutaneous pacing					
3.6	Maintain airway using chin-lift manoeuvre, Jaw thrust manoeuvre, recovery position and able to perform suctioning of secretion					
3.7	Perform a Bag-Mask ventilation and administer supplemental oxygen					
3.8	Perform Pericardiocentesis					
3.9	Administer emergency medications and pharmacological agents through enteral and parenteral routes such as sublingual, oral, per rectum, intravenous, intraosseous, endotracheal, topical and subcutaneous.					
3.10	Other					

C- General Competencies

2.0	**The Remote Healthcare Practitioner should be knowledgeable and able to:**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
2.1	Establish peripheral intravenous access using intravenous catheter or cannula, perform venous cut down and establish intraosseous access (upper and lower extremity) with administration of different types of intravenous infusion.					
2.2	Perform Basic Life Support (BLS) using Automated External Defibrillator (AED)					
2.3	Recognize and initiate emergency treatment for exposures to acute toxic substances (asphyxiates, irritants, allergens and sensitizers), corrosives and toxins.					
2.4	e Identify ST segment elevation, Ventricular Fibrillation, Pulseless Ventricular Tachycardia and perform Advance Life Support.					
2.5	Recognize and initiate treatment of shock and unconsciousness.					
2.6	Perform winching of an acutely ill personnel from an awkward site (floating boat or platform) to a remote clinic					
2.7	Administer emergency hyperbaric oxygen therapy (HBOT) and therapeutic recompression treatment for decompression illness arising from immersion and drowning.					
2.8	Perform incision and drainage in simple superficial abscess					
2.9	Advise management of the need for an evacuation					
2.10	Others					

D- Competencies required to initiate treatment of Trauma cases

2.0	**The Remote Healthcare Practitioner should be knowledgeable and able to:**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
2.1	Initiate treatment (reduce and immobilize) of fractured bones (extremities, pelvic, thorax and spine)					
2.2	Reduce and immobilize dislocated joints (Jaw, Shoulder, Elbow, Digits, Hip, Knee, and Ankle)					
2.3	Recognize and initiate treatment of Increased Intracranial Pressure					
2.4	Perform wound care, apply suture to uncomplicated lacerations and dressing to wounds.					
2.5	Initiate treatment and stabilize acute abdomen.					
2.6	Initiate and stabilize burns cases.					
2.7	Control external bleeding, epistasis and recognized internal bleeding and initiate treatment.					
2.8	Type and cross match blood facilitate blood donation and administer blood transfusion.					
2.9	Initiate the management of pain using suitable analgesics					
2.10	Other					

E - Competencies required for the treatment of acutely ill personnel.

2.0	**The Remote Healthcare Practitioner should be knowledgeable and able to:**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
2.1	Initiate emergency treatment of acute psychosis severe anxiety depressive disease					
2.2	Initiate treatment and stabilize Seizures and convulsion					
2.3	Identify and initiate treatment for Deep Vein Thrombosis (DVT), Ischemic Heart Disease Pulmonary embolism with Acute Myocardial Thrombolytic Medication and perform Primary Percutaneous Coronary Intervention (PPCI)					
2.4	Initiate treatment for Hypertensive crisis and acute stroke					
2.5	Initiate treatment of asthmatic attack using nebulizer and medications					
2.6	Administer emergency medications and pharmacological agents through enteral and parenteral routes such as sublingual, oral, per rectum, intravenous, intraosseous, endotracheal, topical and subcutaneous.					
2.7	Initiate treatment for acute Gastro Intestinal haemorrhage					
2.8	Identify and initiate treatment for acute anaphylaxis					
2.9	Initiate treatment and stabilize acute metabolic conditions (Diabetic Keto Acidosis, Acute Thyrotoxicosis etc.)					
2.10	others					

F- Miscellaneous Competencies

2.0	**The Remote Healthcare Practitioner should be knowledgeable and able to:**	Strongly Agree	Agree	Neither Agree nor Agree	Disagree	Strongly Disagree
2.1	Communicate effectively with topside medical team while working on emergency cases.					
2.2	Identify and initiate treatment for acute malaria and other acute presentations of tropical diseases.					
2.3	Identify and initiate treatment for contagious diseases like Chicken pox, Ebola etc					
2.4	Initiate treatment for Food poison					
2.5	Identify and initiate management for acute anxiety resulting from kidnapping.					
2.6	Administer local anesthesia including infiltration					
2.7	Initiate treatment for traumatic tooth injuries					
2.8	Use telemedicine equipment (Tempus Pro, potable telemedicine equipment) to transmit voice, images, data and work on patient under the guide of an onshore team.					
2.9	Use eyewash and shower stations in initial treatment of chemical burns					
2.10	Others					

Appendix XI : Interview topics and guide

Opening Question

1. What are the courses administered to RHCPs in the Oil & Gas industry of Nigeria?

Introductory Question

2. What are the gaps in content and delivery format?

Transition Questions

3. Who are the current course providers?
4. What are the strengths?

Main Question

5. What should be the bespoke competencies for remote emergency care in the O&G Industry of Nigeria?

Final Questions

6. What competencies should the background training of RHCPs comprise?

7. What need to be introduced or implemented to optimise the development and training of a competent RHCP and how?

Appendix XII : LIST OF APPROVED SCHOOLS OF NURSING

S/N	NAME OF SCHOOL	STATUS	ADMISSION
1.0 Abia State			
1.1	School of Nursing, Abia State University Teaching Hsp.		
1.2	School of Nursing, Umuahia.	Provisional 2015	30 Students
1.3	School of Nursing, Amachara	Provisional, 2015	50 Students
1.4	School of Post Basic Midwifery, Umuahia	Provisional, Jan. 2013	50 Students
1.5	School of Post Basic Midwifery, Abia State University Teaching Hospital, Aba	Nil	Nil
1.6	School of Post Basic Midwifery, Abiriba	Provisional 2016	50 Students
1.7	School of Psychiatric Nursing, Aba.		Nil
1.8	School of Basic Midwifery, Amachara		Nil
1.9	Dept. of Nursing, Abia State University, Uturu	Provisional 2015	40 Students
2.0 Adamawa State			
2.1	College of Nursing & Midwifery, Dept. of Nursing, Yola	Full, February, 2016	50 Students.
2.2	College of Nursing & Midwifery, Adamawa	Provisional, 2016	40 Students
3.0 Akwa-Ibom State			
3.1	School of Nursing, Anua-Uyo.	Provisional, 2014	40 Students
3.2	School of Nursing, Eket	Provisional, r 2014	40 Students
3.3	School of Nursing, Ikot-Ekpene	Provisional, 2014	40 Students
3.4	School of Nursing Ituk-Mbang.		Nil
3.5	School of Psychiatric Nursing, Eket		Nil
3.6	School of Post Basic Midwifery, Anua-Uyo	Provisional, Jan. 2013.	50 Students
3.7	School of Post Basic Midwifery, Iquita-Oron	Provisional, Jan. 2013.	50 Students
3.8	School of Post Basic Midwifery, Ituk-Mbang	Provisional, 2013.	50 Students
3.9	School of Post Basic Midwifery, Urua-Akpan		Nil

4.0 Anambra State			
4.1	School of Nursing, Ihiala	Provisional, February, 2014	30 Students
4.2	School of Nursing, Iyi-Enu	Provisional, July, 2016	50 Students
4.3	School of Nursing, Nnamdi Azikiwe University Teaching Hospital, Nnewi	Provisional, October 2015	50 Students
4.4	School of Nursing, Odumegwu Ojukwu University Teaching Hospital, Nkpor	Provisional, October 2015	50 Students
4.5	School of Basic Midwifery,Adazi	Provisional March, 2016	60 Students
4.6	School of Basic Midwifery, Odumegwu Ojukwu University Teaching Hospital, Nkpor	Provisional, March 2016	50 Students
4.7	School of Post Basic Midwifery, Ihiala.	Provisional, May 2014	50 Students
4.8	School of Post Basic Midwifery Iyi-Enu.	Provisional, February, 2016	50 Students
4.9	School of Post Basic Midwifery, Waterside, Onitsha	Provisional, June 2014	50 Students
4.10	Dept. of Nursing, Nnamdi Azikiwe University, Nnewi.	Full, September 2015	50 Students
5.0 Bauchi State			
5.1	School of Nursing, Abubakar Tafawa Balewa Teaching Hospital, Bauchi	Provisional, October, 2015	50 Students.
5.2	School of Basic Midwifery Abubakar Tafawa Balewa Teaching Hospital, Bauchi	Provisional, March 2016	50 Students
5.3	Community Midwifery Programme-School of Basic Midwifery, Abubakar Tafawa Balewa Teaching Hospital, Bauchi	Provisional, September, 2015.	40 Students
6.0 Bayelsa State			
6.1	School of Nursing, Tombia	Provisional, October, 2015	30 Students
6.2	Dept. of Nursing, Niger Delta University, Wilberforce	Provisional, Jan. 2013.	50 Students
7.0 Benue State			
7.1	School of Nursing Makurdi.		Nil

7.2	School of Nursing, Mkar		Nil
7.3	School of Basic Midwifery, Makurdi		Nil
7.4	School of Basic Midwifery, Mkar.	Regained Provisional 2014	30 Students
7.5	School of Nursing, Warri	Provisional, October. , 2015	50 Students
7.6	School of Post Basic Midwifery, Asaba.	Visited in 2015 and directed to act on the report.	Nil
7.7	School of Post Basic Midwifery, Sapele	Provisional, Sept. 2015.	50 Students
7.8	Dept. of Nursing, Delta State University, Abraka	Provisional, Jan. 2013.	50 Students
8.0 Ebonyi State			
8.1	School of Nursing, Afikpo	Provisional, May 2014	75 Students
8.2	School of Nursing, FETHA	Provisional, October, 2014	50 Students
8.3	School of Post Basic Midwifery Afikpo	Full, September, 2015.	50 Students
8.4	School of Basic Midwifery, FETHA	Provisional, October 2014	50 Students
8.5	Dept, Of Nursing, Ebonyi State University, Abakaliki	Provisional, October 2015	50 Students
9.0 Edo State			
9.1	School of Nursing, Benin City.	Jan. 2013	Nil
9.2	School of Nursing, University of Benin Teaching Hospital, Benin	Provisional, June, 2012.	50 Students
9.3	School of Nursing, Igbinedion University Teaching Hospital, Okada	June, 2012.	Nil
9.4	School of Post Basic Midwifery, U.B.T.H. Benin-City.	Full, June, 2012.	50 Students
9.5	School of Post Basic Paediatric Nursing, University of Benin Teaching Hospital, Benin	April,2014.	Nil

9.6	School of Post Basic Ophthalmic Nursing , University of Benin Teaching Hospital, Benin	Provisional, Feb. 2014.	30 Students
9.7	School of Post Basic Peri- Operative Nursing, University of Benin Teaching Hospital, Benin	Provisional, Feb. 2014.	25 Students
9.8	School of Post Basic Peri- Operative Nursing, Irrua Specialist Hospital, Irrua	Provisional, Feb. 2014	25 Students
9.9	School of Psychiatric Nursing, Uselu.	Provisional February, 2016	30 Students
10.0 Borno State			
10.1	School of Nursing Maiduguri	Provisional, Jan. 2013	50 Students
10.2	School of Nursing, Uni. of Maiduguri Teaching Hsp.	Provisional February, 2016	50 Students
10.3	School of Basic Midwifery, Maiduguri	Provisional, Jan. 2013.	30 Students
10.4	School of Post Basic Nursing Peri-Operative, University of Maiduguri Teaching Hospital, Maiduguri	Provisional, February, 2016	30 Students
10.5	School of Psychiatric Nursing, Maiduguri.	Full Accreditation	
10.6	Dept. of Nursing, University Of Maiduguri.	Embargo on admission	Nil
11.0 Cross River State			
11.1	School of Nursing Calabar.	Embargo, June, 2012	Nil
11.2	School of Nursing, Uni. of Calabar Teaching Hsp	Provisional, October, 2015.	40 Students
11.3	School of Nursing, Itigidi.	Provisional, July, 2016.	50 Students
11.4	School of Post Basic Midwifery Calabar	Provisional, July 2016.	50 Students
11.5	School of Post Basic Midwifery, Obudu.	Embargo, Jan. 2013	Nil
11.6	School of Post Basic Midwifery, Ogoja	Provisional, Jan. 2013.	50 Students
11.7	School of Post Basic Nursing, E.N.T. University of Calabar Teaching Hospital	Embargo June, 2012.	Nil
118	School of Psychiatric Nursing, Calabar	Provisional, Jan. 2013.	30 Students
11.9	Dept. of Nursing, University Of Calabar	Provisional, Sept. 2015.	50 Students

12.0 Delta State			
12.1	School of Nursing, Agbor	Provisional, October, 2015	30 Students
12.2	School of Nursing, Eku	Provisional, October, 2015	50 Students
13.0 Ekiti State			
13.1	School of Nursing, Ado-Ekiti.	Provisional, Feb. 2016	50 Students
13.2	School of Nursing, Ido-Ekiti.	Nil	Nil
13.3	School of Post Basic, Midwifery Ado-Ekiti	Provisional, Feb. 2016	50 Students
13.4	Dept. Of Nursing, Afe Babalola University, Ekiti	Provisional, Sept. 2015	50 Students
14.0 : Enugu State			
14.1	School of Nursing, Bishop Shanahan Hospital, Nsukka.	Embargo on Students' intake August 2015	NIL
14.2	School of Nursing, Enugu State University of Technology Teaching Hospital, Parklane, Enugu	June, 2012.	Nil
14.3	School of Nursing, University of Nigeria Teaching Hospital, Enugu	Full, November, 2008.	60 Students
14.4	School of Post Basic Midwifery Shanahan Hospital, Nsukka	Provisional, Jan. 2014.	50 Students
14.5	School of Post Basic Midwifery, Enugu State University of Technology Teaching Hospital, Parklane, Enugu	Full, September, 2015.	50 Students
14.6	School of Post Basic Midwifery University of Nigeria Teaching Hospital, Enugu	Full, Jan. 2013.	50 Students
14.7	School of Post Basic Nursing, Cardiothoracic, University of Nigeria Teaching Hospital, Enugu	Full, February, 2009.	30 Students
14.8	School of Post Basic Nursing, Anaesthetics, Enugu State University Teaching Hospital, Enugu	Full, February, 2009.	50 Students
14.9	School of Post Basic Nursing, Ophthalmic, University of Nigeria Teaching Hospital, Enugu	Full, Jan. 2013.	30 Students

14.10	School of Post Basic Nursing, Burns & Plastic, National Orthopaedic Hospital, Enugu	Provisional, Jan. 2013.	30 Students
14.11	School of Psychiatric Nursing, Federal Neuropsychiatric Hospital, Enugu	Provisional, April, 2012.	30 Students
14.12	School of Post Basic Peri- Operative Nursing, University of Nigeria Teaching Hospital, Enugu	Provisional, January 2013	30 Students
14.13	School of Post Basic Orthopaedic Nursing, National Orthopaedic Hospital, Enugu	Provisional, Jan. 2013.	20 Students
14.14	Dept. of Nursing, University of Nigeria, Enugu Campus	Provisional, January 2013.	50 Students
15.0 Gombe State			
15.1	School of Nursing Gombe	Provisional, Jan. 2013	30 Students
15.2	School of Basic Midwifery, Gombe	Provisional, Jan. 2013	30 Students
16.0 Imo State			
16.1	School of Nursing, Amaigbo	Provisional, Oct. 2015	50 Students
16.2	School of Nursing, Emekuku	Provisional, June, 2012	50 Students
16.3	School of Nursing, Mbano	Provisional, Oct. 2015	40 Students
16.4	School of Nursing, Owerri		Nil
16.5	School of Nursing Umulogho, Obowu	Provisional, August 2013	50 Students
16.6	College of Nursing & Health, Orlu	Provisional, October 2014	50 Students
16.7	School of Basic Midwifery, Aboh Mbaise	Embargo on admission, August, 2008.	Nil
16.8	School of Post Basic Midwifery, Awo-Omamma	Provisional, July. 2016.	50 Students
16.9	School of Post Basic Midwifery Emekuku	Provisional, June, 2012.	50 Students

16.10	Dept. of Nursing, Imo State University, Owerri.	Provisional, October, 2015.	40 Students
17.0 Jigawa State			
17.1	School of Nursing, Birnin-Kudu	Full, February, 2014.	100 Students
17.2	School of Basic Midwifery. Birnin-Kudu	Provisional, March 2013.	50 Students
18.0 Kaduna State			
18.1	School of Nursing, Ahamadu Bello University Teaching Hospital, Zaria	Provisional, October 2015	30 Students
18.2	College Of Nursing, Kafanchan	Provisional, Oct. 2015	50 Students
18.3	School of Nursing St. Gerald's Hospital, Kakuri.	Provisional, Oct. 2015	30 Students
18.4	School of Nursing, Wusasa.	Provisional, June 2014	30 Students
18.5	School of Basic Midwifery. Tundan Wada	Provisional, Feb. 2014	40 Students
18.6	School of Basic Midwifery. Zonkwa	Provisional, January, 2013.	50 Students
18.7	College of Basic Midwifery, Kafanchan.	Provisional, March 2016	50 Students
18.8	School of Midwifery, Ahamadu Bello University Teaching Hospital, Zaria	Provisional, Jan. 2013	30 Students
18.9	School of Post Basic Midwifery Wusasa	Provisional , May 2014	20 Students
18.10	School of Post Basic Nursing, Ahmadu Bello University Teaching Hospital, Zaria		Nil
18.11	School of Post Basic Nursing, Paediatric, Ahmadu Bello University Teaching Hospital, Zaria		Nil
18.12	School of Post Basic Nursing, Ear Nose and Throat, Kaduna.	Provisional, October, 2015	40 Students
18.13	School of Post Basic Ophthalmic Nursing, Kaduna National Eye Centre	Full, 2012	30 Students
18.14	School of Psychiatric Nursing, Federal Neuropsychiatric Hospital, Barnawa, Kaduna	Provisional, Jan. 2013	50 Students

18.15	Dept. Of Nursing, Ahmadu Bello University, Zaria	Provisional, Sept. 2015	40 Students
19.0 Kano State			
19.1	School of Nursing, Kano.	Full, May 2012	100 Students
19.2	School of Nursing, Madobi	Provisional, May 2014	40 Students
19.3	School of Basic Midwifery, Kano	Provisional March 2015	40 Students
19.4	Community Midwifery Programme, School of Basic Midwifery, Danbatta, Kano	February, 2016	22 Students
19.5	School of Basic Midwifery, Kano.	Provisional, Feb. 2016	40 Students
19.6	School of Post Basic Midwifery, Gezawa	Provisional , May 2014.	30 Students
19.7	School of Post Basic Orthopaedic Nursing, National Hospital, Dala – Kano	Provisional, Jan. 2013.	30 Students
19.8	School of Post Basic Paediatric Nursing, AKTH	Provisional, May. 2016	30 Students
19.9	Dept. of Nsg. Sc. FAHS, Bayero University Kano.	Provisional, Jube, 2016.	50 Students
20.0 Katsina State			
20.1	School of Nursing, Katsina.	Provisional, February, 2014.	50 Students
20.2	School of Basic Midwifery, Malumfashi	Provisional, February, 2014.	50 Students
20.3	Community Midwifery Programme, School of Basic Midwifery, Malumfashi	Provisional, September,2015	30 Students
21.0 Kebbi State			
21.1	School of Nursing, Birnin-Kebbi	Provisional, Jan. 2013.	50 Students
21.2	School of Basic Midwifery, Birnin-Kebbi.	Provisional, Jan. 2013.	50 Students
22.0 Kogi State			
22.1	School of Nursing, Obangede.	Provisional, October, 2015	50 Students

22.2	School of Nursing, Egbe.	Provisional, October, 2015	50 Students
22.3	School of Post Basic Midwifery, Anyigba	Provisional, Sept., 2015.	30 Students
22.4	School of Post Basic Midwifery, Egbe	Provisional, Sept., 2015.	30 Students
23.0 Kwara State			
23.1	School of Nursing, Ilorin.	Provisional, October, 2013	30 Students
23.2	School of Nursing, University of Ilorin Teaching Hospital	Provisional, October, 2015	50 Students
23.3	College Of Nursing, Oke-Ode	Provisional, October, 2014	40 Students
23.4	School of Post Basic Midwifery, Ilorin.		Nil
23.5	School of Post Basic Nursing A. &E. University of Ilorin	Provisional, October , 2015	20 Students
23.6	School of Post Basic Nursing Paediatric, University of Ilorin Teaching Hospital, Ilorin	Full, October, 2015	30 Students
24.0 Lagos State			
24.1	School of Nursing, Igando.	Provisional, October 2013	40 Students
24.2	School of Nursing, Lagos University Teaching Hospital, Idi-Araba	Provisional, Jan. 2013	70 Students
24.3	School of Nursing, Military Hospital, Yaba	Provisional, August, 2015	30 Students
24.4	School of Basic Midwifery, Igando	Provisional, March 2014	30 Students
24.5	School of Post Basic Midwifery, Lagos University Teaching Hospital, Idi-Araba	Provisional, Jan. 2013	

24.6	School of Post Basic Midwifery, Military Hospital, Yaba	Provisional, October,2015	30 Students
24.7	School of Post Basic A&E Nursing, Lagos University Teaching Hospital	Provisional, Jan. 2013	30 Students
24.8	School of Post Basic Paediatric Nursing, Lagos University Teaching Hospital	Provisional, Jan. 2013	30 Students
24.9	School of Post Basic Ophthalmic Nursing, Lagos University Teaching Hospital	Provisional, Jan. 2013	30 Students
24.10	School of Post Basic Peri-Operative Nursing, Lagos University Teaching Hospital	Provisional, Jan. 2013	30 Students
24.11	School of Post Basic A&E Nursing, National Orthopaedic Hospital, Igbobi, Lagos	Provisional, March 2013	30 Students
24.12	School of Post Basic Orthopaedic Nursing, NOH. Igbobi, Lagos	Provisional, Jan. 2013	30 Students
24.13	School of Psychiatric Nursing, Federal Neuropsychiatric, Yaba.	Provisional, July 2012	30 Students
24.14	DEPT OF NSG. SC. UNILAG.	Provisional, June 2016	50 Students
25.0 Nasarawa State			
25.1	School of Nursing, Lafia	Provisional, July, 2016	50Students
26.0 Niger State			
26.1	School of Nursing, Bida.	Provisional, Jan. 2013	50 Students
26.2	School of Basic Midwifery. Minna.	Provisional, Jan. 2013	50 Students
27.0 Ogun State			
27.1	School of Nursing, Abeokuta.	Provisional, January 2013.	30 Students
27.2	School of Nursing, Ijebu-Ode.	Jan. 2013	Nil
27.3	School of Nursing, Ilaro.	Provisional, Feb. 2013	30 Students

27.4	School of Nursing, Lantoro.	Provisional, Jan. 2013	50 Students
27.5	School of Post Basic Midwifery, Abeokuta.	Jan. 2013	Nil
27.6	School of Post Basic Midwifery, Ijebu-Ode.	Jan. 2013	Nil
27.7	School of Psychiatric Nursing, Aro, Abeokuta	Provisional, Jan. 2013	30 Students
27.8	Dept. of Nursing, Babcock University, Illishan-Remo	Provisional, Jan. 2013	50 Students
28.0 Ondo State			
28.1	School of Nursing, Akure.	Provisional, July, 2016	50 Students
28.2	School of Basic Midwifery, Akure.	Provisional, July, 2016	50 Students
29.0 Osun State			
29.1	School of Nursing, Obafemi Awolowo University Teaching Hospital Complex, Ilesa	Provisional, October, 2015	50 Students
29.2	School of Nursing, OAUTH Complex, Ile- Ife	Provisional, May, 2014	50 Students
29.3	School of Nursing, Osogbo.	Provisional, October 2015	30 Students
29.4	School of Nursing, Seventh Day Adventist Hospital, Ile-Ife	Provisional, October 2015	30 Students
29.5	School of Post Basic Midwifery, OAU Teaching Hospital, Ilesa	Provisional, June, 2012	50 Students
29.6	School of Post Basic Midwifery, Osogbo	Provisional, September 2015	30 Students
29.7	School of Post Basic Peri- Operative Nursing, OAU Teaching Hospital Complex, Ile-Ife	Provisional, October,2015	25 Students
29.8	Dept. of Nursing, Ladoke Akintola University Of Technology, Osogbo	Provisional, July, 2016	50 Students

29.9	Dept. Of Nursing, OAU , Ile-Ife	Provisional, Jan. 2013.	50 Students
30.0 Oyo State			
30.1	School of Nursing, Baptist Medical Centre, Saki	Provisional, Jan. 2013.	30 Students
30.2	School of Nursing, Bowen University Teaching Hospital, Ogbomosho	Provisional, October, 2014.	20 Students
30.3	College of Nursing and Midwifery, Dept. of Nursing, Eleyele, Ibadan	Provisional, July, 2016.	50 Students
30.4	School of Nursing, UCH, Ibadan	Full, Jan. 2013.	50 Students
30.5	School of Basic Midwifery, Muslim Hospital, Saki	Provisional, Sept. 2015.	30 Students
30.6	School of Post Basic Midwifery, Baptist Medical Centre, Saki.		Nil
30.7	School of Post Basic Midwifery, Bowen University Teaching Hospital, Ogbomosho	Provisional, Jan. 2013.	50 Students
30.8	School of Post Basic Midwifery, Oluyoro, Ibadan.	Jan.2013	Nil
30.9	School of Post Basic Midwifery, University College Hospital, Ibadan.	Jan. 2013	Nil
30.10	College of Nursing and Midwifery Dept. of Post Basic Midwifery, Eleyele, Ibadan	Provisional, July, 2016.	50 Students
30.11	School of Post Basic Nursing, Occupational Health, University College Hospital, Ibadan	March 2013	Nil

30.12	School of Post Basic Peri- Operative Nursing, University College Hospital, Ibadan	Provisional, Jan. 2013.	30 Students
30.13	Dept. Of Nursing, University of Ibadan	Provisional, Jan. 2013.	50 Students
31.0 Plateau State			
31.1	School of Nursing, Jos University Teaching Hospital, Jos (MMH)	Provisional, October, 2015	50 Students
31.2	School of Nursing, Vom, Jos	Provisional, Oct. 2015	50 Students
31.3	School of Basic Midwifery., Vom, Jos	Provisional, March, 2016	60 Students
31.4	School of Post Basic Midwifery, JUTH, Jos (MMH)	Full, Sept. 2015.	50 Students
31.5	School of Post Basic Midwifery, Our Lady of Apostles, Jos.	Provisional, Sept. , 2015	25 Students
31.6	School of Post Basic Anesthetic Nursing, Jos University Teaching Hospital, Jos	Provisional, Nov. 2011	30 Students
31.7	School of Post Basic Critical Care Nursing, Jos University Teaching Hospital, Jos	Provisional, Nov. 2011	30 Students
31.8	Dept. Of Nursing, University Of Jos.	Provisional, September, 2012.	50 Students
32.0 Rivers State			
32.1	School of Nursing, Port- Harcourt	Provisional, October 2015	50 Students
32.2	School of Post Basic Midwifery, Port-Harcourt	Provisional, October 2015	50 Students

32.3	School of Post Basic A&E Nursing, University of Port Harcourt Teaching Hospital	Provisional, February, 2014.	25 Students
32.4	School of Post Basic Paediatric Nursing, UPTH	Provisional, October 2015	20 Students
32.5	Dept. Of Nursing, University Of Port-Harcourt	Provisional, February,2016	30 Students
32.6	Dept. of Nursing, Madonna University, Elele.	Provisional, February, 2016	30 Students
33.0 Sokoto			
33.1	School of Nursing, Sokoto.	Provisional, Jan. 2013.	50 Students
33.2	School of Nursing, Usuman Danfodio University Teaching Hospital, Sokoto	Provisional, June. 2016.	50 Students
33.3	School of Basic Midwifery, Sokoto	Provisional, Jan. 2013.	50 Students
33.4	Community Midwife Programme, School of Basic Midwifery, Sokoto	Provisional, Sept. 2015.	25 Students
33.5	School of Post Basic Midwifery, Usuman Danfodio University Teaching Hospital, Sokoto	September, 013.	50 Students
33.6	School of Psychiatric Nursing, Federal Neuropsychiatric Hospital, Kwara	Provisional, Nov. 2010.	30 Students
34.0 Taraba State			
34.1	School of Nursing Jalingo	Provisional, June, 2015.	40 Students
34.2	School of Basic Midwifery, Jalingo	Provisional, March 2016.	35 Students
35.0 Yobe State			
35.1	School of Nursing, Dr. Shehu Sule, Damaturu	Provisional, February, 2016	50 Students
35.2	School of Basic Midwifery. Dr. Shehu Sule, Damaturu	Provisional, May 2014.	40 Students
36.0 Zamfara State			

36.1	School of Nursing, Gusau	Provisional, May 2014	50 Students
36.2	School of Basic Midwifery, Gusau	Provisional, May 2014	50 Students
36.3	Community Midwifery Programme, School of Basic Midwifery, Gusau	Provisional, June, 2012	28 Students
37.0 FCT			
37.1	School of Nursing, Gwagwalada	Provisional, July 2016.	50 Students
37.2	School of Basic Midwifery, Gwagwalada	Provisional, July 2016.	50 Students
37.3	School of Post Basic Critical Care Nursing, University of Abuja Teaching Hospital, Abuja	Provisional, July 2015	30 Students

Appendix XIII : ACCREDITED MEDICAL AND DENTAL SCHOOLS IN NIGERIA

(A) MEDICAL SCHOOLS ACCREDITED BY MEDICAL AND DENTAL COUNCIL OF NIGERIA (MDCN)

i) FULLY ACCREDITED

	Name of Institution	**Quota**
1	College of Health Sciences, Abia State University Uturu, Abia State.	120
2	College of Health Sciences, University of Uyo, Akwa Ibom.	50
3	College of Health Sciences, Nnamdi Azikiwe University Nnewi, Anambra State.	100
4	College of Medical Sciences, University of Maiduguri, Borno State.	150
5	College of Medical Sciences, University of Calabar, Cross - Rivers State.	100
6	College of Health Sciences, Delta State University, Abraka, Delta State.	50
7	College of Health Sciences, Ebonyi State University Abakaliki, Ebonyi State.	100
8	College of Medical Sciences, University of Benin, Benin-City, Edo State.	150
9	College of Health Sciences, Igbinedion University Okada, Edo State.	75

10	College of Medicine, Ambrose Alli University Ekpoma, Edo State.	50
11	College of Medicine, University of Nigeria Enugu Campus, Enugu State.	180
12	College of Medicine, Enugu State University of Science & Technology, Enugu, Enugu State.	50
13	College of Medicine, Imo State University Owerri, Imo State.	50

14	College of Medicine, Ahmadu Bello University Zaria, Kaduna State.	120
15	Faculty of Medicine, Bayero University Kano, Kano State.	150
16	College of Medicine, University of Ilorin, Kwara State.	150
17	College of Medicine, University of Lagos, Idi-Araba, Lagos State.	150
18	College of Medicine, Lagos State University Ikeja, Lagos State.	100
19	Obafemi Awolowo College of Health Sciences, Olabisi Onabanjo University Ago Iwoye, Ogun Sate.	75
20	College of Health Sciences, Obafemi Awolowo University Ile-Ife, Osun State.	100
21	College of Medicine, University of Ibadan, Oyo State.	180
22	Faculty of Medical Sciences, University of Jos, Plateau State.	150
23	College of Health Sciences, Madonna University Elele, Rivers State.	50

24	College of Health Sciences, University of Port- Harcourt, Rivers State.	100
25	College of Health Sciences, Usmanu Danfodio University Sokoto, Sokoto State.	100
26	College of Health Sciences, Ladoke Akintola University of Technology, Ogbomoso, Osun State.	75
27	College of Health Sciences, Niger Delta University, Wilberforce Island, Bayelsa State.	50
28	College of Health Sciences, Bingham University Karu, Nasarawa State.	50
29	College of Health Sciences, Benue State University, Makurdi, Benue Stae.	75
30	College of Health Sciences, Anambra State University, Uli Anambra State.	50

31	College of Health Sciences, Bowen University, Iwo, Osun State	50
32	College of Health Sciences, Babcock University, Ilisham-Remo, Ogun State	50
33	College of Health Sciences, University of Abuja.	50
34	College of Health Sciences, Afe Babalola University Ado-Ekiti, Ekiti State	50

ii) PARTIALLY ACCREDITED MEDICAL SCHOOLS

	Name	**Quota**
1	Faculty of Medicine, Kaduna State University.	50
2	College of Health Sciences, Gombe State University	50
3	College of Medicine, Ekiti State University, Ado-Ekiti	50
4	University of Medical Sciences, Ondo, Ondo State	50

Appendix XIV : THE LIST OF RECOGNIZED CPD PROVIDER INSTITUTIONS

S/N	NAME	LOCATION
1	Jos University Teaching Hospital	Jos
2	Ebonyi State University Teaching Hospital	Abakaliki
3	University of Calabar Teaching Hospital	Calabar
4	University of Port Harcourt Teaching Hospital	Port Harcourt
5	Lagos State University Teaching Hospital	Lagos
6	College of Medicine, University of Ibadan	Ibadan
7	Federal Medical Centre	Owerri
8	University of Uyo Teaching Hospital	Uyo
9	Olabisi Onabanjo University Teaching Hospital	Sagamu
10	Health and Human Services Hospital Management Board	Abuja
11	Irrua Specialist Teaching Hospital	Irrua- Edo
12	National Postgraduate College of Nigeria	Lagos
13	Imo State University Teaching Hospital	Imo
14	Obafemi Awolowo University	Ile-ife
15	Delta State Hospital Management Board	Asaba
16	University of Abuja Teaching Hospital	Gwagwal ada
17	Guild of Medical Directors	Abuja
18	Federal Medical Centre	Asaba
19	Lagos State Health Service Commission	Lagos
20	Obafemi Awolowo University Teaching Hospital Complex	Ile ife

21	Abia State University Teaching Hospital	Aba
22	University College Hospital	Ibadan
23	State House Medical Centre	Abuja
24	University ofNigeria	Enugu
25	International Academyof Pathology, WestAfrican, Division	Lagos
26	Federal Medical Centre,keffi	Nassarraw a State
27	Nigerian Medical Association	Warri
28	Society of FamilyPhysicians of Nigeria	Lagos
29	Federal Medical Centre	Umuhia
30	Medical Women Association of Nigeria, Lagos Branch	Lagos
31	University ofIlorin Teaching Hospital	Ilorin
32	Ophthalmology Society of Nigeria	Lagos
33	Medical Association of Nigeria Across Britain	London
34	Pediatric Association of Nigeria	Lagos
35	Association of Public Health Physicians ofNigeria	Lagos
36	Aminu KanoTeaching Hospital	Kano
37	College of Health Sciences, Bingham University	Nassarraw a
38	National Hospital,Abuja	Abuja

39	Medical and Dental Consultants Association of Nigeria	Lagos
40	Federal Medical Centre, Makurdi	Makurdi
41	Association of Psychiatrists in Nigeria	
42	College of Health Sciences, Oshogbo	Oshogbo
43	Christian Medical and Dental Association of Nigeria	Abuja

44	Psychiatric Hospital Uselu	Benin
45	Lagos University Teaching Hospital, Idi-Araba, Surulere	Lagos
46	College of Health Sciences, University of Uyo	Uyo
47	National Tuberculosis and leprosy Training Centre. Zaria	Kaduna
48	Military Hospital Ikoyi	Lagos
49	Medical and Dental Consultants Association of Nigeria	Nnewi
50	Association of General and Private Medical of Practitioners of Nigeria	Lagos
51	Wuse General Hospital. Abuja	Abuja
52	Asokoro District Hospital,	Abuja
53	Maitama District Hospital	Abuja

54	Federal Medical Centre, Ebute Meta	Lagos
55	FCT Primary Healthcare Development Board	Abuja
56	Neuropsychiatric Hospital, Aro,	Abeokuta
57	Society of Occupational and Enviromental Health, Physicians of Nigeria, Lagos	Lagos
58	Edo State Hospital Management Board	Benin
59	Medical Women Association of Nigeria	Abuja
60	Military Hospital,Ikoyi	Lagos
61	Medical and Dental Consultants Association of Nigeria, Abuja branch	Abuja
62	Federal Medical Centre, Nguru Yobe State	Yobe
63	Ministry of Health, Asaba	Delta
64	Society for Gastroenterology and Hyptology in Nigeria	Lagos

65	Epidemiology Society of Nigeria	Ibadan
66	Nigerian National Petroleum Corporation,Group Medical Centre	Abuja
67	Bowen University Teaching Hospital	Oyo State
68	MENDS Training Institute MENDS SpecialistHospital	Kaduna

69	Delta State University Teaching Hospital,Oghara,	Delta State
70	Ass. Of Rural Surgical Practitioners of Nigeria. ARSPON.	Imo state
71	Ladoke Akintola University Teaching Hospital.	Osogbo
72	National Orthopaedic Hospital	Kano
73	68 Nigerian Army Reference Hospital	Lagos
74	Nigerian Association of Dermatologists	Lagos
75	College of Medicine University of Lagos	Lagos
76	Intercountry Centre for Oral Health (ICOH) For Africa	Jos
77	Nigerian Society of Neonatal Medicine	UBTH
78	The West African College of Surgeons (WACS)	Lagos
79	College of Medicine, Anambra StateUniversity TeachingHospital,Awka,	Anambra State
80	Central Bank of Nigeria Medical ServiceDepartment	Abuja
81	Mother and Child Hospital. Akure	Akure
82	Association of Rural Surgical Practitioners ofNigeria	Imo state

83	Nigerian Army Reference Hospital	Kaduna
84	Clinical Training and Research Centre	Kaduna
85	Seventh Day Adventist Hospital	Ile Ife
86	Federal Medical Centre	Katsina
87	Ahmadu Bello University Teaching Hospital, Zaria	Kaduna
88	National Orthopedic Hospital Igbobi,	Lagos
89	Endocrine and Metabolism Society of Nigeria	Lagos
90	Federal Medical Centre	Gombe
91	Federal Neuro-Psychiatric Hospital, Yaba	Lagos
92	Federal Medical Centre	Bida
93	Barau Dikko Specialist Hospital	Kaduna
94	College of Medicine, University of Lagos,	Lagos
95	College of Medicine, Lagos State University, Ikeja. Lagos State	Lagos
96	Federal Medical Center, Ido- Ekiti, Ekiti State	Ekiti
97	Medical and Dental Consultants Association of Nigeria (MDCAN) NDUTH, Okolobiri, Belyesa State	Belyesa

98	Benue State University Teaching Hospital, Makurdi	Benue
99	Medical Women's Association of Nigeria (National)	Abuja
100	Faculty of Ophthalmology, National Postgraduate Medical College of Nigeria	Lagos
101	International Academy of Pathology, West African Division	Lagos

102	Nigerian Association of Orthodontists	Lagos
103	Nigerian Navy Reference Hospital	Lagos
104	Nigerian Cardiac Society	Umuahia
105	University of Lagos Medical Centre	Lagos
106	Federal Staff (Medical) Centre, Jabi	Abuja
107	Dalhatu Araf Specialist Hospital, Lafia	Lafia
108	Delta State University College of Health Sciences	Abraka
109	Centre for Health Professional Continuing Education	Minna
110	Family Health International (FHI360)	Abuja
111	Kebbi State Centre for Health Professional Continuing Education	Kebbi
112	Zamfara State Cetre for Continuing Professional Development	Gusau

113	Federal Medical Centre, Yenagoa	Yenagoa
114	Diabetes Association of Nigeria (DAN)	Lagos
115	International College of Surgeons, Nigerian Section	Lagos
116	Department of Paediatrics/University College , Hospital, Ibadan/Nestle Nutrition	Ibadan
117	Society of Emergency Medicine Practitioners of Nigeria (SEMPON)	Port Harcourt
118	Ministry of Health, Cross River State	Calabar
119	Nigerian Dental Association	Warri
120	Babcock University Teaching Hospital	Ilisan- Remo
121	Federal Medical Centre, Birnin Kebbi	Birnin Kebbi

122	HQ445 Nigerian Airforce Hospital, Ikeja	Lagos
123	Niger Delta University Teaching Hospital, Okolobiri	Yenagoa
124	Ministry of Health, Uyo	Uyo
125	Department of Community Medicine, Ahmadu Bello University, Zaria	Zaria
126	Faculty of Dentistry, University of Port Harcourt	Port Harcourt

127	Hospitals Management Board, Kano	Kano
128	School of Dentistry, College of Medical Sciences, University of Benin	Benin
129	Department of Community Medicine/Aminu Kano, Teaching Hospital	Kano
130	Association of Nigerian Physicians in the Americas	USA
131	National Association of Physicians of Alternative Medicine	Lagos
132	Hospital Management Board, Bauchi	Bauchi
133	Ministry of Defence Staff Clinic	Abuja

THE LIST OF RECOGNIZED CPD PROVIDERS (PRIVATE)

S/NO	NAME	LOCATION
1	Emergency Response Services Nigeria Ltd	Port Harcourt
2	Medical Tutors Ltd	Lagos
3	Trigen Healthcare Ltd	Lagos
4	Ace Medicare Clinics Ltd	Ota, Ogun State
5	BMJ West Africa Edition	Calabar
6	Pfizer Specialties Ltd	Lagos
7	United Doctors Nigeria Ltd	Kaduna
8	Abuja Clinics	Abuja
9	Structured Health Care Limited	Lagos
10	153 Consulting Limited	Calabar
11	Pathcare Nigeria Limited	Lagos
12	Glaxo Smithkline Pharmaceutical Nigeria Ltd	Lagos
13	Nordica Fertility Centre	Lagos
14	Medical and Dental Provider Network	Lagos
15	Forest Health Services	Abuja
16	SPO Healthcare Quality Consultancy Services	Benin
17	Zankli Medical Centre	Abuja

18	Premier Specialist Medical Centre	Lagos

19	Grace of God Specialist Medical Centre	Abuja
20	CEDARCREST Hospitals	Abuja
21	Maryland Global Initiative Corporation Nigeria	Abuja
22	Kephalus Health Nigeria limited	Lagos
23	Genesis Health Co. Ltd	Lagos
24	Total Health Trust Limited	Lagos
25	Health Assurance Consultants Limited	Lagos
26	VDG International Limited	Lagos
27	Bey Health Consulting	Lagos
28	Diamond Helix Medical Assistance Limited	Lagos
29	Lilly Hospital	Warri
30	Rainbow Specialist Medical Centre	Lagos
31	Kelina Medical Limited	Abuja
32	DIFF Hospital	Abuja
33	Institute of Human Virology – Nigeria	Abuja
34	IPAS Nigeria	Abuja
35	Safety Health and Environment Limited	Lagos
36	Lagoon Hospitals	Lagos
37	The Eko Hospitals	Lagos
38	Saint Nicholas Hospital	Lagos
39	Aids Prevention Initiative in Nigeria	Abuja

40	First Cardiology Consultants	Lagos

41	Society for Quality in Healthcare in Nigeria	Lagos
42	Funlol Medical Services	Lagos
43	Roche Products Nigeria	Lagos
44	Cardinal Academy of Emergency Care Ltd.	Lagos
45	Department of State Services Medical Centre	Abuja
46	NISA Premier Hospital	Abuja
47	Service Medical International Limited	Port Harcourt
48	Hoare's Memorial Methodist Cathedral Clinic	Lagos
49	Sub Saharan Health Solutions Nigeria Ltd	Lagos
50	TADAM Medical Centre	Jos
51	Outreach Medical Services	Lagos
52	Medical Global Services Limited	Lagos
53	Strategic Insight Healthcare (The Hospital Ltd)	Lagos
54	Life Institute for Endoscopy (Life Specialist Hosp. Ltd.)	Nnewi
55	Sagnoom Associates Nigeria Ltd.	Abuja
56	The Roding Medical Centre	Lagos
57	The Reddington Multi- Specialist Hospital	Lagos
58	D & TET Limited	Lagos
59	Hygeia Nigeria Ltd	Lagos

60	Aubretia Quality Health Care Solutions Ltd	Port Harcourt
61	Angel & Eagle Global Rescue Services Ltd	Abeokuta
62	DentalSolutions(Ent) Ltd	Lagos
63	CPD Nigeria	Abuja
64	The BridgeClinic	Lagos
65	The Byron Institute	Abuja
66	Excellence and Friends Management Consult	Abuja
67	EpiAfric	Abuja
68	Positive Accents Training Solutions Ltd	Abuja
69	Med Enhanz Resources Ltd	Lagos
70	Abol Life Support AHA Training Centre	Warri
71	Global HealthProject & Resources Nig. Ltd	Lagos
72	St CharlesBorromeo Specialist Hospital	Onitsha
73	Sickle CellFoundation Nigeria	Lagos
74	Medical Art Center	Lagos
75	Wellington Clinics Ltd	Abuja
76	CPD Online	Lagos
77	ShellCompaniesin Nigeria	Lagos
78	InSiGHt Health Consulting Ltd	Lagos
79	Mecure Healthcare Limited	Lagos
80	Intelligent Healthcare Solutions	Lagos
81	Restore GlobalProject	Abuja
82.	Minimally Invasive Surgical Solution Limited	Lagos

Appendix XV : Ethical Approval from Robert Gordon University

Fwd: Ethics Approval for PhD Student Project - S134

From: Cherry Wainwright (pals) (c.wainwright@rgu.ac.uk)

To: ken9ken2001@yahoo.com

Date: Friday, November 2, 2018, 7:31 PM GMT+1

Hi Ken

Good news - your ethics have been approved so you can now go ahead and organise your focus groups.

Have a good weekend

Cherry

Sent from my iPhone

Begin forwarded message:

From: "Susan Duthie (pals)" <s.j.duthie@rgu.ac.uk<mailto:s.j.duthie@rgu.ac.uk>>
Date: 2 November 2018 at 15:58:17 GMT
To: School Ethics Review Committee <SERC@rgu.ac.uk<mailto:SERC@rgu.ac.uk>>
Cc: "Cherry Wainwright (pals)" <c.wainwright@rgu.ac.uk<mailto:c.wainwright@rgu.ac.uk>>
Subject: RE: Ethics Approval for PhD Student Project - S134

Dear SERC,
I have reviewed the revised application and am assured that the necessary amendments have been made. Can you please inform the applicant that ethical permission is granted.
Best wishes
Susan

From: Cherry Wainwright (pals)
Sent: 31 October 2018 14:10
To: Susan Duthie (pals) <s.j.duthie@rgu.ac.uk<mailto:s.j.duthie@rgu.ac.uk>>
Cc: 'ken9ken2001@yahoo.com<mailto:ken9ken2001@yahoo.com>'
<ken9ken2001@yahoo.com<mailto:ken9ken2001@yahoo.com>>
Subject: Ethics Approval for PhD Student Project - S134
Importance: High

Dear Susan

I am contacting you in Colin's absence regarding a revision to a request for ethics permission by my PhD student Ken Osakwe, which I am passing on to you for re-consideration by the School ethics panel in Colin's absence. Ken has completely re-worked his study proposal and participant information/consent form in response to the review panel's comments, and also now has secured permission from the AHA Training Providers of Nigeria to undertake the focus group sessions. I therefore attach an updates study proposal, SPER form and the reviewer's feedback form with responses from Ken to indicate what changes he has made.

Ken is getting very close to his PhD submission deadline and these focus group discussions are the very last piece of work he has to do. In order for him to meet his deadline I would really appreciate it if the reviewers could treat this application as a matter of urgency and respond within a week – we had to wait nearly 6 weeks over the summer for the application to be reviewed, and so this held things up appreciably – we really cannot afford for there to be any further delays if he is to submit within the required timeframe.

With thanks in advance for your support with this

Cherry

Professor Cherry L Wainwright

Director Cardiometabolic Health Research
Co-Director Natural Products Research
School of Pharmacy & Life Sciences
The Robert Gordon University
Sir Ian Wood Building
Garthdee Road
Aberdeen AB10 7GJ
Scotland, UK

Tel: +44 1224 262450
Mobile: +44 7540 675133
Fax: +44 1224 262555
E-mail: c.wainwright@rgu.ac.uk<mailto:c.wainwright@rgu.ac.uk>

Appendix XVI : Formal Approval

Re: Application for Focus Group Discussion with members of the America Heart Association Training providers of Nigeria.

Abol LifeSupport <abol_training@yahoo.co.uk>

Sun 28/10/2018 14:58

To:KENNEDY OSAKWE ADAKPORIA (1117922) <k.a.osakwe-adakporia@rgu.ac.uk>;

Cc:Cherry Wainwright (pals) <c.wainwright@rgu.ac.uk>;

Dear Ken,
Your request was well received and shared with members,
I am happy to inform you that the group has agreed to meet with you for the discuss.
Let us know your intinery for the meet and we shall take it from there.

We wish you success in your educational pursuit.
Thanks

Abraham Olokor
(On behalf of AHA instructors in Nigeria)

On Thu, Oct 11, 2018, 4:01 PM KENNEDY OSAKWE ADAKPORIA (1117922) <k.a.osakwe-adakporia@rgu.ac.uk> wrote:

> Dear Mr. Abraham,
>
> I am a final year doctoral student at Robert Gordon University intending to conduct a Focus Group Discussion with members of your association
>
> (The American Heart Association Training Providers of Nigeria).
>
> As your association is made up of several training providing companies, I would like to apply for your kind permission and approval to hold the Focus Group Discussion
>
> with your members on '**Training and Competency requirements for Remote Healthcare Practitioners in the oil and gas industry of Nigeria: A**
>
> **Focus Group Discussion'** ; the outcome of which would have potential positive impact on your training packages and Remote Healthcare Practice in the Oil and
>
> Gas industry of Nigeria. I have attached an information leaflet for detail answers to key questions about the discussion. The outcome also will be used as part of my
>
> PhD project and thesis. I look forward to your approval and suitable dates for the discussion.
>
> Best Regards,
> Ken

Appendix XVII : Invitation to Participate in a Focus Group Discussion

Dear Colleague,

I am a doctoral research student at Robert Gordon University in Aberdeen, Scotland. I cordially invite you to participate in a Focus Group Discussion "Training and Competency requirements for Remote Healthcare Practitioners in the O&G industry of Nigeria", which has been authorized by my supervisory team from Robert Gordon University. Its purpose is to obtain your opinion and views on a series of questions about training needs and competency development in Remote Healthcare Practitioners in the O&G industry. The data generated from this study will be used as part of my PhD research project and shall be stored electronically in Robert Gordon University research database. Your participation in this study shall be treated in the strictest confidence and your identity will remain anonymous in the reporting of any findings, which will be based on aggregate data.

Please read the Participant Information Sheet to fully understand the nature of the study and what is involved. Thereafter, if you are willing to participate, please provide your consent by signing the Consent Form in advance. Both documents are provided in the following section.

You are welcome to contact me using:

Kennedy A. Osakwe (Doctoral Researcher Student in Robert Gordon University, Aberdeen),
email- 1117922@rgu.ac.uk

I would greatly appreciate the value of your time and expert opinion.

Thank you very much.

Yours faithfully,
Kennedy A. Osakwe (Doctoral Student)

1117922@rgu.ac.uk

Appendix XVIII : Participant Information Sheet

Research Team

Robert Gordon University (RGU): Kennedy A. Osakwe
Professor Cherry Wainwright
Dr. Kay Cooper
Professor Derek Stewart
Nicholas Dillon (External Advisor)
Professor Susan Klein (External Advisor)

Title - Training and Competency requirements for Remote Healthcare Practitioners in the O&G industry of Nigeria: A Focus Group Discussion.

As you are being invited to take part in a Focus Group Discussion, it is important that you understand the purpose of the study and what it will involve. Please take time to read through the following information carefully before you come to a decision whether to participate. Feel free to ask questions or request further information by contacting Kennedy A. Osakwe (1117922@rgu.ac.uk) or feel free, if you wish, to talk to others about the study.

What is the purpose of the study?

The aim of the study is primarily to obtain your views and opinion on several questions concerning the training needs and competency development of Remote Healthcare Practitioners in the O&G Industry of Nigeria.

What methods does the study use?

The Focus Group Discussion recognizes the value of views and experience when full scientific knowledge is lacking. It is a well-established method for in-depth information about a view or question.

Who is taking part in the study?

Within the context of the Energy Industry and its associated Maritime activities, training providers within the remote healthcare domain have been invited to participate in the Focus Group Discussion.

Why have I been selected?

You have been selected as someone who has been identified as being an experienced training provider to Remote Healthcare Practitioner in Nigeria. You are requested to provide your consent in the consent sections.

Do I have to take part?

No, it is up to you whether you take part or not. While we would very much value your contribution, you should appreciate that your participation in the study is entirely voluntary. You are free to decline from participation If you do not wish to take part in this study with no affectation on your employment or services.

How long will the focus group discussion take?

The actual focus discussion will hold for 60 minutes but additional 30 minutes will be required for welcoming, initial documentation, ground rules, refreshment, settling into the group and closing remarks.

What will the participants do during the discussion?

You are expected to participate in a moderated discussion by expressing your opinion or thoughts on the topics asked by the moderator. You will be required to provide your responses to 8 open-ended questions in an informal setting. Your opinion may agree or disagree with another person's opinion; negative or positive but respectful to one another. If someone has spoken your mind, you may not bother to repeat.

What will happen if I do choose to take part?

If you choose to participate in the study, please initial the boxes in the consent form, you will be further informed on a suitable date, time and venue for the Focus Group Discussion coupled with a introduction into how the discussion will be facilitated.

Will my taking part in this study be kept confidential?

If you do choose to participate, any information that you provide will be treated in confidence and the results of the study anonymized. Your name will not be recorded; instead you will be allocated a unique code only identifiable to the research team.

What are the benefits of you taking part?

There are no direct benefits to you from taking part in the study. The study will assist in gaining a deeper understanding on the training needs and competency requirement of Remote Healthcare Practitioners in the offshore O&G industry. It will also inform the training and practice of RHCPs based on the best available advice from experts and practitioners in the field.

I sincerely hope you will agree to participate in this discussion.

If you have any questions, please contact Kennedy A. Osakwe (e-mail: 1117922@rgu.ac.uk , phone: +2348035648990)

Appendix XIX : INTERVIEW CONSENT FORM

Training and Competency requirements for Remote Healthcare Practitioners in the O&G industry of Nigeria: An exploratory study

Researcher: Kennedy A. Osakwe **Please initial boxes below**

1. I agree that I have read and understand the information sheet dated 12/10/2018 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. ☐
3. I agree to take part in the above study. ☐
4. I agree to the interview being audio recorded or documented. ☐
5. I agree to the publication of direct quotations in which no individual participant will be named. ☐

Name.....
Date.....
Telephone contact..... contact.....

Researcher (name)……Kennedy Osakwe
Date..... Signature.....
Version: 12 /10/2018

Appendix XX : Transcript

I - ...on, er, the training and competency requirement for remote health care practitioners in the oil industry of Nigeria. This is going to be an exploratory study. Thank you for your time from your busy schedule from your respective remote location. I also appreciate the fact that, er, all of us here, we have spent and invested much time in remote health practice. Er, as a focus group discussion, please, it would be nice for us to respect each other's opinion, when, whenever anybody is making his or her comment. Thank you. Without much ado, we want to start exploring, exploring the statement. So, the first one, the first question we have here is, what do you think of the current training courses administered to remote health care practitioners in Nigeria. We have said, in the information leaflet, that remote health care practitioner refers to those health care practitioners working in remote locations in the Oil and Gas (O&G) industry of Nigeria, which you are, and also providing to them. I'm very much aware of the fact that we provided a lot of training to first aiders and also to other nurses working in this industry. So, it's a great privilege having you actually here. So, the first one is what do you think of the current training courses? As you also participated in the training, we have BLS, er, basic life support, er, advanced cardiac life support, advanced trauma life support and several, erm, other courses like the emergency first responders, so on and so forth. What do you think of these training courses? Thank you. Any opinion?

P1 - Okay, erm...

I - State you name on the...

P1 - ...my name is H- O-. In my own opinion, the training courses are not bespoke to Nigeria environment. For instance, in Nigeria, if you work in the Oil and Gas, in the, for the remote health care practitioners, you work alone and, the fact that the SCLS, the BLS, ACLS training that we have is something you do as a team and the training we have, you, you have a training of a lone ranger and when you have emergencies, it's always an issue. We have BFAs, fine, there's other first aiders who are trained on how to respond and all that but how robust their training is, we don't know. Most times we don't even monitor the trainings, they just give them certification and they come and the emergencies, you also see yourself, guiding them on what, and what, and what to do. So, we need a more robust training in Nigeria, that is bespoke to our environment which **(3.17)** poorly understand and as we do this training the chance of MER team we have starting, from EFL, BFAs, and the main medic on, on ground, there should be a more robust training for them and when we have this training there should also be an incentive so that you find that most times when you have emergencies, some BFAs run away because

they don't want to follow investigate and no incentive to them, they are not accountable in anyway, whether they make mistakes or not, whether they respond or not, there are no sanctions so, we need to up our game, in terms of remote care, health care in Nigeria. Thank you.

I - Thank you very much Mr H-. You are just spot on, you just mentioned that, er, they are not aligned with the, the training format is not aligned with the reality on ground, which is you are a lone practitioner in a remote location and, erm, the way the programmes are designed, they are designed for medical emergency response circle, where you work with other practitioners. Thank you very much. Any other view, opinion on this? Any other view or opinion on, erm, as we are administering and participating in this training, have we concern to say, wait a minute, something is not working well here or, something could be done in a better way? Any opinion? Yeah, it could be STOM we've done a lot of training on STOM in, in Nigeria, we remember, yeah. Any opinion.

P2 - Yeah, so basically...

I - Name in there first.

P2 - Okay, so, A- J-, erm, basically, as concerns STOM, STOM, you know, the concept of STOM is so the, some, some part within the country, and in your practical week, you are taken elsewhere, where you are fully concentrated and there's no distraction and nothing, nothing and, you are in for STOM and you are in for **(5.37)** and according to practice now, is that there is distant training and it's now deserving a home grown kind of, and therefore, the, the, the practicality which we used to experience is no longer there if I was to see it because a lot of things that you would have loved to see face to face over there, you don't see them, like, when we went to UK, I'm sure as E- will still remember, we went to UK together and I'm sure you, K-, you also remember too, you go there and the way the **(6.16)** are delivered is not the same way. So, when these people come, they come with nothing and they are made to assemble materials and, yeah, even in UK, nothing is perfect. So, at the end of the day, the imperfectness of the materials, yeah, is two, three times more than what you even have over there. For instance, the first six months I had with STOM, I actually wanted to be out there with the real, erm, what do they call it, mannequin and I, until the last moment, I never knew that I was dealing with a mannequin, because you were intubating and then the man, the mannequin was not vomiting or not talking to you, what, of recent, I'm sure in the recent training that we've had, that practicality, that you are actually giving a life-saving care to somebody else is missing. So, I think it's high time we need to look at it again and if we're doing it, we're doing it right because what do they say, what is worth doing is worth doing well. So, I feel that quality has been eroded, kind of. Quality has been eroded and again, the other thing about time, yes, the company may have said, okay, take two or three days for every week to, to, to study. Is that practical at this time? I, I, I, sometimes bringing this reality into sit, to

practice, I think is an issue and if we can look at it and think of some better ways of doing it, I think it would be better. Thank you.

I - Thank you Mr A-. I can see from what you said that, erm, the training material and resources are quite grossly inadequate, they are inadequate, and you think that is also going to affect the skill implantation or skill transfer. You've also highlight on the time, isn't sufficient time is, you know, to teach people and so there may not be adequate given to the thorough rigour of learning. Thank you so much. Are there any other opinion on this? Any other opinion on this, on this training? Okay, so we'll move on. Okay. Yeah, Mr A-, you have something to say?

P3 - Yes.

I - Okay.

P3 - Yeah, my name is A- E-. In the course of carrying out our job as remote health care practitioners, we make use of VC. VC, er, is a virtual display of activities carried out in the remote locations. We now discover that in carrying out those things, the network is an issue and so, you could put on the machine, the ODD might not see the patient that you want him to see through the visual display and so, it cause a lot of problem and the, you know, at the end of the day, you are not able to really pass across what we want the onshore doctor to see. So, it's a major challenge for us.

I - Can you please refresh, for some of us, who are not conversant with the telemedicine unit, can you refresh some of these terms you used, VC, ODD, yeah.

P3 - Yeah, VC, VC is er...

I - **(10.16)**

P3 - Yeah, VC...

I - **(10.22)**

P3 - Okay, do you want to go?

I - Yeah, so, so, VC's...

P3 - VC is a telemedicine kit. It's an application yeah, it's a sharing platform, yes, that is used to visualise the patient...

I - Yes, remotely supports to sees the patient.

P3 - ...remotely supports through the onshore duty doctor. The application, as you're making use of it, the onshore duty doctor is also seeing the patient in your remote location and also examining the patient, whatever you are doing, the onshore duty doctor is seeing what you are doing and be able to arrive at informed decision and make diagnosis that will help in actually managing the patient in remote location.

I - Thank you.

P3 - Thank you.

I - Thank you so much. Thank you. So, what I can deduce from what you just said is, you are using that, you are using that in this environment because of the high, high level and system that we have in this environment, even at that, there are still hiccups with your telemedical units? Talk more of the other people, in other organisations, that we provide training to, er, in the

course of this VLS and BLS, I wonder how many telemedicine units that you use, apart from just mentioning it. So, I think it support and reinforces what Mr -, about inadequate equipment that we don't actually have in this environment. Thank you so much. You, okay, Mr U-, you have something to say on this?

P4 - Thank you for this opportunity. My name is U- A-. Erm, I think that the training that we get, the training courses that we get here, some of them may be repetitive. So, for example, you do a BLS course and then you're also mandated to do an ACLS course whereas on the ACLS there is a huge chunk of BLS. I don't think there will be a need to do BLS when you've done ACLS. Er, also, to ride on some of the points that have been made. I'd say it's somewhat inadequate because in the trainings we have for, let's say, BLS and ACLS, there is no provision for, let's say, remote health care, for example, in the training. Lastly, I think that the standard, let's say country-wide, for example, is not the same so, if you go to a trainer, for example, trainer A could be so good at that and you go to trainer B and you get less than that. The place we go to do it for Shell, for example, is quite, a very good standard and then there are some very smaller places around that people go to get training that they don't get the same kind of quality that we get from the place we do ours. So, I think the quality is not the same across the trainers and then some of, some of the training courses we do are repetitive. Thank you.

I - U-, thank you very much. You just blow my mind, I never thought of that before. That we do have what you call content overlap in some of our courses, it's just repetitive and it's just a sheer waste of time and resources so, that is just spot on and very, very important. You've also made mention of, er, that the BLS and ACLS are just, er, they are just centred on a technical ability without giving consideration to remote health care practice, which is quite different. So, most time, the onus is on you to just innovate. Okay, so, so in essence what you're saying is that remote health care practice also, should be more **(14.23)** on behalf of this training. Thank you so much. Any other opinion on this? This is getting exciting. Any other...

P1 - So, so...

I - Yeah, A- again.

P1 - Yeah, so, just to ride. Sorry, A- again, just to ride on what A- said, when you talked about VC, in relation to telemedicine per say, now, there are two things, on the one hand, we have the software and then on the other hand you have the gadgets. Now, the main issue with the VC, er, as vis-a-vis patient care, in this country, is the issue of the kits. So, the telemedicine kits come with several gadgets. You have the CEG gadget, you have the stethoscope, **(15.14)** stethoscope, then you have the otoscope, you have the ophthalmoscope but, because of issues that are beyond the control of the field medics, these kits have not, never, always worked, and so that is the main albatross but also to mention is that, is it because the question might arise, okay, if you are using VC what is the issue about patient

confidentiality? What, just mention that if we are using VC, VC is HEPA certificated and so the issue of, oh, I'm going to leak patient information to the public is already taken care of. Thank you.

I - Thank you so much. You actually spoke as a telemedicine specialist and a remote health care practitioner. Thank you so much. So, we move on to the next, er, the next statement, the next question we want to explore. I want to say that some of comment, some of comment have delved into that space. On the content, on the content and the format of training. I think A-, you mentioned about the format there was this flexible one from years back where you do some over here and you go over to, to, erm, to the UK to complete. So, that's a flexible one. So, again, we want to really look at, taking, take a look into that. In your own opinion, what, what do you feel about the content of this ACLS, BLS, erm, emergency first response and other, other STOM and other STOM that are put in. What do you think about the contents? Yeah, and the format of training? Yes. Dr A-.

P5 - Okay, so this is F- A-. To address your question about content, erm, I will tell you that content, so far, from my observation, appears to have a slant towards conditions that are common, that are commoner outside the clime, outside our clime. So, there's a need to consider, maybe from epidemiology or from, erm, records, what are those things we tend to see commonly in our clime considering our demography. It would be nice to infuse some of that into the, the training module. Regarding the format of the training, as some of the earlier speakers had alluded to, there's a need for increased practice, should I say, the practical aspects need to be strengthened, for instance, before people go for the BLS, ACLS, it all seems like if I begin a course, the books, the booklets are given a couple of days before and you have to more or less have sleepless nights to digest those modules and dive into the training. Which, to be honest, gives the, gives the benefit of the training a very short half-life because shortly after the training you tend to forget a lot of what you've learned, you know, the training lasts for roughly a week or thereabouts. So, I think that that format needs to be reviewed and made flexible as the effectiveness is in question, quite honestly, because when, when the chips are down in these remote locations, it is what the medic, or the individual can do hands on that really matters, and at that point in time some people may get panic stricken and so on, that is not the time to flick through the pages of the book. So, I think there's a need to strengthen the practical aspect and, let it not be a one-off kind of thing cause **(19.04)** educations are every two years. So, is there, is there a possibility, you know, that there's some sort of practice, I don't know how to put it but, between, before it elapses, you know, there should be an opportunity where these skills are put to use, whether or not the medicines are faced but, just to keep it fresh, you know, in the hands and the minds of these remote medics, when the need arises. Thank you.

I - Thank you very much F- A-, er, you've brought to bear an important issue. You've talked about the skewing of the content towards, erm, epidemiologies

that are not in this clime, and you've also said that for a good, for proper development of training programme, that trainers should try to reflect the common occupational epidemiologies in this area, in the Niger Delta area, erm, into the training programme and, you are just spot on on that because, this also corroborate what the first session that we had, the first session we had went ahead to suggestion scenario, condition scenarios, that I never thought of, that there should be in it and, there's no need to, to, to train on courses that are, that the incident rate is about 1 in 10, 1 in a million, that you never have in Africa. You also made mention of the need for in between certification, orientation, if you like, to avoid and to forestall rustiness, skill rustiness because any other skill should be demonstrable and, at the tip of a finger. Thank you so much. Erm, I want to progress to the next one and that is, what do you think are the strengths? So, we've, we've taken a glint at the gaps, some of the gaps and challenges that we have in the training programme that we have right now but, is it all doom, is it all zero? Are there some strength in it that should be sustained, should we embark on developing another training programme, a training from what, should we take some cue from these ones we have right now and, if I may say, are there limitations also on that. Thank you.

P6 - You wanted to know about the content...

I - Okay, Mr E-, okay.

P6 - ...also in order to adjust the content and four modules.

I - Thank you.

P6 - E- G-'s my name. I want to speak on the content and format of the current training courses for the remote health care practitioner in Nigeria. We find now that most of the condition that we deal with in the field, we must have adequate basic of anatomy and physiology, because if someone comes to you and complain about abdomen pain you must know the areas of the abdomen, the organs are from the abdomen. That is applicable to all the conditions so that we can easily evaluate and come up with a good outcome. I think it is good to have introductory part of anatomy and physiology in all the conditions that are mentioned in the BLS and the ACLS, that is my submission. Thank you.

I - Thank you so much. So, what we are saying is that **(22.59)** anatomy and physiology in this training programmes are also very, very important. So, now, but I want to look at, well, I'm going to jump on the question and I'm going to look straight, thinking, you know, started on what you just said, so question five, that says, how much initial clinical background should the RHCP's have to complement competencies from the currently administered short trainings? Okay. Now, we all the bulk of the remote health care practitioners in Nigeria are medical doctor, they have medial school background and then nursing school background but, it's interesting to note that in Nigeria we also have paramedic who had different training, okay, and we also have some people who are delving into the field of, so, that are called community health extension workers also. I've seen those people also in

remote location working. So, so, what we have said, we have seen a salad of clinic background. Even the so called medics, the so called medical doctor and clinical, and er, the nurses also, there are some of them haven't wanted to follow up on ER and they've not been a follower of a theatre so, and these people sometimes just find themselves in these remote location. The question is, how much clinical background or what initial clinical background, do you think, if your own opinion, that any person who want to venture into remote health practice should have? Yes.

P7 - Yes, my name is I- U-. In this context, I think, excuse me, I have a network of tradition to make care, especially as it concerns nurses. In our institutions, we have different cadres of nurses, BLS, erm, BSc nurses, and those has graduated as RN nurses. Those who register, who graduate as registered nurses, I believe, to my own understanding, have better grades of clinical, erm, clinical background that those that goes to the university and graduate as BSc nurses and just come out and start working immediately. One, they don't have practical experiences as much as those people who are trained in teaching hospitals or, schools of nurses. Those in, trained at the university level, from that place, they come out, you know, not purely practically competent enough to handle some issues. I think, I don't know whether it's because of their exposure or, is it how they're being handled. I cannot really say based from the experiences I have seen, those who are trained from teaching hospitals and schools of nursings and so forth and so forth, they have better clinical background than those are trained from the university background. Thank you.

I - Thank you so much. Okay, A-, you want to comment and react to that? It's just your opinion, yes?

P2 - Yeah, er, just to make a comment on what Madame I- has said. So, we have had reports that people have, who come out of the school with the BSc, have less clinical background, er, it's, it's also evident in the way the curriculum is for our people who go to university because it is more research orientated and they use their holidays for clinical experience. However, this will soon be a thing of the past, so, it's already a thing of the past because there are internship programmes for BSc nurses. So, if you are done with your programme as a BSc person, as a BSc nurse, you have a one year mandatory time to do your internship and also, a one year mandatory NYSC, so you have two years of having clinical experience and, I could say that I have benefitted from having my one year of clinical experience doing my NYSC and I don't think I am, am far away from people who, who did the RN nursing in clinical experience and background. Thank you.

I - Thank you. This is getting more interesting, erm, Mr O- you have something to say?

P1 - Okay, H- O- is here, erm, I want to quickly say that my own interest is the curriculum in the schools, not just for nurses, even for doctors. In Nigeria, our, erm, curriculum does not cover medical emergency response and that is why you can't even speak with a doctor who just finished school, he doesn't

know much about medical emergency response, it's purely on clinical medicine that we major more in Nigeria. So, Nigeria should include all those ACLS and BLS in both schools of nurses and medical schools to widen the knowledge of people so that when they come out and they want to work in Oil and Gas (O&G)industry they will also fit in well. Apart from that, people will be also encouraged, even while you are at school, the short time you have, you can as well enrol to do all these BLS and ACLS and incorporate it into the clinical practices you do in school, cause personally, it was when I joined Shell that I know most of the things I know when it comes to MER. Most thing we saw are theoretical, you don't see them. So, we are more theoretically orientated in Nigeria, apart from schools that are connected to hospitals that do clinical medicine and clinical nursing, when they come to real, working in remote locations, that MER competencies are not well embedded in the curriculums in Nigeria universities and schools of nursing.

I - Thank you for that opinion. This is so rich, er, and I put all our opinions and view together I could say that what we are seeing, all across where **(30.04)** on the hands on practice, the hands on clinical experience, er, to be more, should be more in our content than just theoretical content but, O- also has the point that, if you say that you need more clinical experience, clinical practice, we should precipitate medical emergency response from that because, those who are saying that they, they've got, they're having enough clinical experience, most of them are without medical emergency response experience. Thank you, that's, thank you for your opinion, that is well appreciated. E-, you have something to say?

P2- Yeah, I want to digress a little bit. So, sorry, from administrative point of view, I want to say this, anybody coming into Shell, comes in a specialist. So, nobody comes in here as an ordinary RN or an ordinary RN, and there are set criteria, before you come in as an occupational health practitioner, dovetailing into remote healthcare, you would've specialised in one, two, three things. One, orthopaedics and trauma, trauma, trauma, basically that is management of, okay, one side is the orthopaedic, the other one is management of trauma, on the other hand is, accident and emergency, the other one is theatre, the other one is public health. So, these ones now, that we have not covered because I'm thinking, I'm saying this because, because the, the, the courses are not design, just because as Uche said, as the basic minimum, you probably have not had time to dwell, or **(32.07)** emergency cases so, by the time you have gone one step further to accident and emergency, or to orthopaedic and trauma, to theatre, that bit of emergency bit has already been taken care of. That is the other way I am just raising. Thank you.

I - Alright, thank you very, so I want look, oh, okay, Uche-, you have, you have something to say U-? No worries.

P4 - Just to be a little bit disruptive, I would say, why do you need to have all this when you have remote health care? When you have backing from, let's say IA, for example. So, even if you take the best neurosurgeon, for example, to

the field, and he's working, and he has a cardiac condition, he has to call somebody who is a cardiologist here to get help so, even if you have, you know, 20 years, 30 years experience, as a clinical person, you must seek for help from land, or from people who, who are specialists in their own field. So, I would say that I don't think you, you must be, you must have too much of clinical experience for you to be able to work as a remote health care practitioner. I think that what is really necessary would be, do you have the necessary emergency skills, decision making technology, are you technologically savvy, erm, yeah, I think those are the, for me, if you ask me, those are the very, very important things. Not to downplay clinical competency but, I would say if you the best clinical person on field you may still get the same quality with somebody who's not as good as that person because you have help from, from the land also. Thank you.

I - Thank you. Thank you, Mr U-. So that is just, that's interesting. Interesting to note also that, erm, telemedicine can bridge the gap and that, erm, you, you, you don't need to be a master of all but, you just need basic skill, the basic competencies to respond to medical emergency. Why that is reinforcing the need for telemedicine which, from what you've also said, that is deficient in our clime. It has also brought to the fore the need for relevant emergency skill. On that note, we move onto the next question, as we've over running now, and that is, what are the suitable competencies?

P8 - I think, again, we need talk about the limitations, it's very important.

I - The limitations?

P8 - Yes.

I - Okay, sorry, so let's, let's look into that. Alright, thank you.

P8 - My name is I- S-. I think, erm, limitation of this RHCP is that most times when you have emergency in the field the RNC doctors are not actually configured to VC, most times, and you have difficulty communicating with them. So, I don't know how they are going to bridge that, whether by giving them training or, especially configuring them to the VC so that we can communicate with them when they are on call. That is my only limitation.

I - So, to put this succinctly, what you're saying is that the current training programmes we have in Nigeria, okay, lacks not only the content on telemedicine...

P8 - Yes.

I - ...but, telemedicine deployment in Nigeria is bedevilled by poor connectivity.

P8 - Exactly, and some of the are not confident. They don't even have access to this.

I - Okay, so all that, all that is around telemedicine.

P8 - Yes.

I - That is bedevilled to poor connectivity, poor, er, broadband, er, poor software, erm, and the whole lot that are involved in telemedicine.

P8 - Yes.

I - However, it is important to put this in the content of our training, and that will enhance, enchance...

P8- If you can put that in **(36.40)**

I - ...it will really be of great service. Okay, thank you. A-?

P2 - Yes please. So, this is look at it from the human angle. I'm looking at the operational telemedicine or, remote health care human attitude as one of the limiting factors. You may have all the gadgets, you may have all the connectivity, you may have the techs around a successful remote health care facility but, the attitude becomes a barrier. Do you know why? If I have everything here and Uche is calling me, A-, A-, I have a case, I go, no worry boys they are not the same as what we use, so we have seen it over and over again and it still happen. I come and show you Ken-, and there a lot, many people here, we've had cases, who are emergency doctors, by the way, they are same doctors that we taught in Shell, I also have participated in, I think, inducting a lot many of them, even on hand, setting up VCs, but the same people, the moment they moved away from Shell to the other side, you call them, they say, no, I am not interested. So, attitude is also one key barrier and limiting factor and that has also to be looked into if we are looking at a way of improving RHC in, in the Oil and Gas (O&G) industry. Thank you.

I - Thank you. Thank you so much. It's so rich all what we have just been delivering. So, coming back to what U- had said about the importance, and the prime position, acquisition of skills, to respond to medical emergency, that that should reflect in the training programme we are giving. So, on that, I want to write on this question that what I don't think are the Nigerian centric competency that we should put in the training programme, if we are to develop one, the bespoke competencies that will be handy and very useful for our remote health care practitioners in Nigeria? Er, Uche-, you want to start on that or, any other person? Your opinion and your view.

P2 - So, basically...

I - A-, yeah.

P2 - ...basically, you are working alone in the field and, without, erm, somebody of the relevant qualification with your standing, lifesaving skills, for me, ranks number one, because essentially, the reason why you are in the field is to respond to clinical emergencies. So, clinical lifesaving skills, for me, are number one and, when we are talking about clinical lifesaving skills, of course then the BLS and ACLS it comes to play because we know, of course, depending on the kind of emergency you are dealing with, if it is a respiratory emergency, how are you going to manage respiratory emergency, you must know how to manage the airway properly. If you are dealing with a cardiac emergency then, you have to have competence, of course, in the whole chain of survival processes so, because then others will contribute but, for me, critical lifesaving skills, so there we can't do without the ACLS, and BLS, things that we are talking and also, management of traumatic cases and there we cannot also, erm, do away with management of trauma, traumatic cases, so ETLA's is also key, yeah, so for here, we don't do ETLA's, is they, only the doctors that do ETLA's but, if some bit of it can, we can have a blend of it, without redesigning, I think it would be better because, after all,

suturing, quite, like yeah, quite a lot of people need a lot of suturing in the field, there are massive field injuries and in **(41.16)** I remember **(41.18)** had a lot of surgical cases, about three, then they came, also had another, I had another one so, the list, I want to recall, keep, on and on and on. So, those are the areas that we need to consider and of course, the medical conditions that wouldn't even require surgery too, they are also there. I, if you have a case of, erm, acute abdomen, for instance, it may even end up in a surgery but, then, first and foremost you need to be able to manage this abdominal, acute abdominal condition, down to a safe landing where surgery can take off from. So, that is that.

P1 - Okay, H- here. I think, by and large, the skills we should expect is good assessment skills. You must be able to assess the, the situation you find yourself, that is the client situation, assess it well, give it a good assessment so that you'll be able to arrive at a working diagnosis and also, if you must communicate with the doctors on ground, you must also have good communicative, good communication skill, because if you don't communicate what you assess well, you, you, they will not be able to understand you and give you the necessary remote assistance. So, communicate skills, good assessment skill is one of the major skills we need to have to work there.

I - Thank you very much. Thank you, well put. You've spoken on some critical sets that you think and also, giving us, opened the lead on the occupational epidemiology we have in this, er, environment that these, we have trauma cases more, more common than, erm, than the medical cases and, by the way, I should say that this also corroborates the work done by N- V-, of what was prevalent in the North Sea offshore Oil and Gas (O&G) industry. Thank you very A-, and the Uche has also corroborated the same, has also said that good assessment skill and communication are two skills that are, are very, very essential. Please, I want to encourage everyone to comment on this, er, it could be just one skill that you mention that you think that we should have, that are bespoke to Nigeria environment, please, that would be most valued. Mr U-, please.

P9 - Hello, my name is A- U-. The, the nurses should, er, the RHCA, er, CP practitioners should have clinical competencies because in some, in some of these activities that we are carrying out, like the autoscope, there are sometimes that people put on the batteries, if you don't put it very well you will not have any result, part from it also, the oxygen cylinders need to be able to open it very well and then, before you be able to deliver the oxygen at the right, con, at the right level. Also, the, the telemedicine equipment, you need the technical skills to also be able to manoeuvre in order to save life. Thank you.

I - Thank you, thank you very much Mr A-. I must say that, er, this is the first time I'm also hearing this as one of the skill that we should put in the content, and we all agree that this, there is a paucity of this particular skill in our con, in our training content and that is instrumentation skill. That is not much looked into in this training that we have and so, that it should go beyond the

confines of just knowing the instrument to use, to operating, being able to trouble shoot should there be any teething issues and being able to operate it, to use it in a lifesaving, er, scenario. Thank you so much for that, that is, that is very valuable. Yes, right.

P8 - My name is I- S-. I think, I think listening skills is the best, for me, that's my only understanding, because if you don't listen to the patient very well, just pre-empt the person, he says, I'm having pains, I know, I know, no need to talk, you won't get the best out of it so, you need to listen to the patient very well. Listen and listen good so that I can get the facts from the person before you make you make your diagnosis.

I - So, thank you so much. So, that, that also come out loud and clear that we need to be able to communicate with our patient and so, our training programme should also look into the listening, er, ability of, er, the remote health care practitioners. And also, listening to people that cannot speak English, you will need some special skill to be able to decode what they mean actually, they just gesticulate or speak other lingua franca to you. Thank you so much. Any other opinion on this? Okay, J-.

P10 - I'm J- L-. I'm saying that, er, we should have, er, assistance in house training to perfect on all the skills so that when we go to the field, definitely, we will not lack so much with whatever instrument that will be given to us to use. Some of us, when we get there, you get to the instrument, you cannot operate it, in fact it's worrisome and you can, you can, before you even come, because of network, you cannot able to even call the, the, the base and get what exactly you wanted and you will be in a total, er, dilemma and such a situation. So, persistent inward training, within us, among us, can also help us to really understand. Sometimes we have, in the occupational health, we have some new people who are here, and then they are not even seeing that particular instrument, the telemedicine instrument and if they get to the field, how will they, even the VC, some of them have not even use it, so you just send them to the field and when occasion comes, when condition comes, they cannot operate it and that will devour the, the whole essence of it.

I - Thank you so much, I mean, more insights are just resonating from what you discussed on persistent, persistent practice and this bring to mind also, er, for the docs, that there are some training, some exams you can do if you're experienced but you don't, you've not collated enough experience in that particular area. So, could that be a possibility in redesigning this programmes, such that, before you sit for BLS, you should be able to also cite a number of times that you have, you have had, you know, scenario could be a desk top or a real life practice on that to make you eligible to go for that training, these are all very good stuff. Thank you very much on that, yeah. H-.

P11 - Hello, my name is H- A-. I want to emphasise the fact that when it comes to our training, for example, the ACLS and the BLS, I think most times we have them for three days, I feel those days should be extended, maybe up to five days because most times, during the ACLS, when we will be taking

the last courses, you find it too tough, kind of in a hurry to complete, telling you because of time, because of time. So, I feel those days should be extended so that we have the correct experience as they go about teaching. Then, secondly, for us, as health care providers, I also want us to try and have what we call empathy and not sympathy. If you try as much as possible to have empathy you find out that what the patient is feeling is like we are putting on his own shoes and you'll be able to, you know, administer you care to such a client. Thank you.

I - Thank you. We are coming to end of this, we are working with the period of 60 minutes, as the max, er, so, er, O-, you want to come in?

P12 - It's just a quick one.

I - Okay.

P12 - Erm, O- O- here. So, just to emphasis on what Mr **(50.32)** said earlier on. So, it's one thing to actually have the trainings, in terms of IT components, like using the VC, embedded in your training but, I think that the training's tied to the IT should be specific to what is operational in that organisation. So, for instance, we use VC, and so if we were sending Shell nurses for BLS and ACLS, if we're inculpating the instrumentation aspects, or the IT savvy aspects of that, it should be typically for VC, what we are using, because in trainings like this it's easy for you to have a generic module, so to speak, that everybody says, okay, if you know this then you should be able to do the VC but, when it's, it is organisation specific, or site specific, you've learnt it, you've learnt it, and then there should be updates on that as well. So, if we change from VC to something else, we should then organise an instrumentation training that speaks solely to the new app that we're using. Thank you.

I - Thank you. I struggle with my time, because the more, the more of us express our views, the more I see the beauty in the discussion. Er, so you have brought another facet to this and that is, that, erm, most of our trainings, currently, they are generic, okay, and it does not, it does not align with the, the instrumentation that we have in organisations and so, er, that makes, that makes it inapplicable, okay, in certain scenario. And so, what Olem, you just said now, is just spot on, that we should make, er, beside the generic training we should also look at making it, er, centre specific to what we have in our environment. Okay.

P6 - Good afternoon. E- is my name, just to make comment on the competencies for RHCPs. In my own opinion, I, I suggest that STOM, that is the Statuary Training Offshore Medic, should be, should be done by all, because they also **(52.54)** a different place, because if you don't know the offshore environment very well, how can you even manipulate and see the equipment there? So, narrow place, the corridors, the walkways, so may hazards there so, for me, the, erm, offshore rig medic course is a good training and will enhance our capability to carry out the remote health care. Thank you.

I - Okay, N-.

P13 - Good afternoon. My name is N- E-. Er, I want to talk on our equipment audits. There is a lack there because, at times, when you want to use an equipment, maybe you are in a hurry, maybe there is a scenario for you to use your equipment, you see that the equipment may not function immediately. So, thereby, when I, I recommend that, at times if we have our backup, backup in our equipment, because there was a day we wanted to carry out a glucose test on someone, we find out that the machine was not really working so, if we had a backup that would've been of great help to us. So, I encourage our field, where the nurses in the field, there is this one of our template where we call it equipment, first aid on site equipment, so most of the time we ignore it because we think that the equipment are working but, on a daily basis, before you start your work, you have, you just go through your equipment so, based on that you'll be able to note the one that is not functioning and the one that is functioning because faults can develop at any time. Then on training, again, for competency, I think that when they are doing a training for the North Seas, even in the in-house training, I want to buttress on it, let everybody be carried along. We can still have, for this few hours, let everybody go for this training, thereby we can give our client that, we can just tell the client, or write the impact that we will have the training that everybody's carried along. Sometimes you see some people that are working, they have been going on training from one training to another whereas others are not being carried along. It's a very big gap. Thank you.

P14 - Okay, my name is C- A-. I just want to pin point on accuracy in carrying out our procedures while at certain remote locations because, by the time you attend to a client and dealing with the procedures, doing a, engaging a video call, carrying out procedures, checking the vitals of the clients, it might be, you might be running short of time and before you know it, the necessary things might not be done. So, we have to be able to check out time and make sure we follow our procedures accurately with the, the required we need to use. Thank you.

P15 - I'm P- O-. My contribution for this remote health care practitioners, is consistent, erm, hands on refresher training, maybe an in-house training consistently, in as much as, we usually go for the training for ACLS and BLS once in a while we should be able to have in-house training for these to be able to know, actually, if we still remember what we are taught in a ACLS and BLS class. Thank you.

I - Thank you very much. Thank you very much ladies and gentlemen. My profound gratitude to you all. I think our responses are overlapping to all the questions and we have spoken to all the questions, er, thank you, but if you have more information on this, the study is ongoing in place, I appreciate you, you draw my attention. So, on behalf of my supervisor team, Professor C- W-, Professor K- C-, Professor D- S-, I want to express a profound gratitude to this team of remote health care practitioners and training in the Oil and Gas (O&G) industry of Nigeria. Thank you very much, do have a wonderful day.

P16 - Thank you very much. I'm S-, okay, erm, what I think about the current training courses, right?
I - Yeah.
P16 - I think the courses are sufficient enough, although we need to add more modules or steps to, to the training courses itself to be more elaborate. Thank you.
I - Ah, if you say more modules, more modules like...
P16 - Like...
I - ...on which area?
P16 - On, the cardiopulmonary resuscitation, basic life support.
1 - Is there any aspect of it you think that's not currently in the modules that are...
P16 - Yes, sure, okay. Concerning the, I think the aspect not there is mental health...
I - Okay.
P16 - ...yes, and there's one other one.
I - So, mental health emergencies.
P16 - Mental health emergencies, sorry.
I - Okay.
P16 - Yes. And there's one other one, erm, what was it called?
I - So, maybe as, as we move around...
P16 - Okay.
I - ...as we move around...
P16 - Okay, then, sure, thank you.
I - ... **(1.16)** alright, thank you. Appreciate it. So that is, that is thought provoking and very, very interesting that S- feels that we should include, er, mental health emergency, er, to the training that we have currently in Nigeria. Are there any other views on this particular question? Any other views different from the ones that, er, we have, we have had?
P17 - Okay, K- is my name. I think, erm, the cost of the material, the materials is quite expensive...
I - Okay.
P17 - ...and the availability of, let's say, erm, assessing it is a problem due to the high cost of, erm, the dollar.
I - Okay, against naira.
P17- Against naira, and how you can get down to the patient, most of the times, yes, you get the material but, you can't get, you can't get to you...
I - On time.
P17- ...on time and most of the times, you lost the materials on your way. So, cost of shipping down. So, I think if you look for a suitable way of providing means in which the materials can get to those easily....
I - More efficient ways.
P17 - ...I think would be better. I also concur with the idea of adding more modules to the training programme.

I - Okay, and do you think of any other module, apart from mental health?
P17 - Erm, apart from mental health, without checking the...
I - S-, have you remembered another one now?
P16 - Yeah, well, **(3.31)** is not there.
I - Okay.
P17 - Okay, but...
I - Are you mentioning the skill?
P16 - Any skills, although...
I - Any skill or, any, what about condition? Any condition in mind right now, that you think isn't covered?
P16 - Right. Yeah, in the case of electric shock, I don't think it's inside, it's not inside the module. Something happened to somebody on site, electric shock, what do you do? Apart from the other, I imagine, so them over so, how do you manage this, they're not injured.
I - So, this should include more scenarios?
P16 - More scenarios, thank you, that's it.
P17 - More scenarios, that it, right.
I - More learning scenarios.
P16 - Learning scenarios.
I - In the contents?
P16 - Yes.
I - Okay. Thank you so much. That is, that is very important as well, I've never thought of it from that perspective, that we should increase, we should include more learning scenarios and, S- has just given us a very good example, that scenarios like electric shock, because this is pretty common in developing countries, in developing countries, in remote locations, you have more unsafe conditions and unsafe acts, which are not, erm, which are not common in the Western World and so because it is common in this area that we should include more scenarios to include types of common emergencies that takes place in, in developing countries. Okay, thank, thank you very much, thank you very much. Are there any other opinions or views on this? Please feel free to express your mind on this.
P17 - On the electric shock...
I - Yes.
P17 - ...impact, impact should also be included...
I - Okay.
P17 - ...in the learning, I think. Most of the time injury in fact link **(5.38)** ...
I - Yes.
P17 - ...like chargers...
I - Yes.
P17 - **(5.42)**
I - Wow.
P17 - **(5.43)** so, if you are also aware of that.

I - Okay, okay. Well, that's, that's, that's very interesting, that's interesting. Are there any other scenarios we think should be included? Especially in the, in the remote location?

P18 - Scenarios regarding head injuries. I feel in most of the courses the VLS, SLS, they don't really talk about how to treat head injuries, most times they just talk about flesh wounds on your hands, on your legs, how to deal with that but, head injuries are much more complicated and I feel like we should add a scenario in courses where they tell you how to give first aid to someone having a head injury.

I - Okay, sorry sir, your name?

P18 - My name is E-.

I - E-. thank you so much for that. E- has just spoken that, er, yeah, to him, er, the training content that a little bit deficient on managing scenarios like a head injury and that head injured patients are a predicament from the remote locations service in here in Nigeria, that the more information or modules are dedicated to these scenarios, the remote health practitioners will be well equipped to manage this emergencies. Thank you so much, thank you so much. So, on that note, we'll, call it a day, we'll call it off on question one. Er, please if you have any other idea or opinion please let me know, can you let me know, I will come back on that. So, er, the next question would be, what do you think of the content, I know we have mixed it up, our responses, some of our responses are spoken to this but, should there be any extra points you can also share. The contents, and the formats of the current training, okay, er, before we commence that, we had, we had a talk on the different kind of format, online format, erm, like, er, what E- said about access to internet, online format, er, periodic format, hands on format, currently we are having a classroom and hands on format. Am I, am I correct?

P16 - Yes.

I - So, do you think that is enough? Do you think it will sustain, especially for people who don't have time to come around here? So, what do you think about the content and the format that we have currently?

P19 - Thank you, I'm O-. I feel, for this format, why it's not really sufficient is because it's not Nigerian or African based format we've been using and, that's why it's almost impossible for our, erm, practitioners, health care providers, to actually perform those activities or those, erm, those skills they've learnt in this training. If you go on a survey you find out that our health practitioners, they do not actually follow the due process and, in caring for the victims or casualties, that's because they are not aware, they are not aware, that's not how the African's actually do things and, because of that it's, becomes difficult to actually render care because some persons may be scared of doing the wrong thing or, not doing what they've learned because they have, they've forgotten the steps on how to carry out those procedures. So, I feel we should go back to the drawing board and actually get Nigerian, or African scenarios, on how to manage all these eventualities. Thank you.

I - Thank you very much. Thank you. So, I think that links me then also to what S- had said, that the training, the training packages that we have should dedicate models to scenarios that are common in our African environment, African setting. Can we, can we, can we take a little bit, talk a little bit about some of those emergencies that are common in, in this environment? Can, I can give you some example, like, er, cut, cutlass injury, okay, er, or what they call in the West, machete, machete, you know, injuries, a little bit common in some areas. S- had mentioned, mentioned about electric shock and also heard about, er, head injury but, are there any other ones that are common in this area?

P19 - Okay, thank you much again. Once again, it's O-, I would mention just one, since we are dealing with remote health care practitioners. There's a common injury that perhaps once in a while we all experienced, that is a puncture injury, what do when you have a puncture injury? If to remove the object, to leave, to leave the object inside the wound, in all this actually, I've not seen any of that kind of scenario...

I - A nail...

P19 - ...a nail injury, I don't know...

I - Knife stabbing.

P19 - ...knife stabbing, or what, what have you, and I believe is common in all this locations. Thank you very much.

I - Thank you. Yes sir, you're welcome, that's what you want to say.

P20 - Thank you. This is Mr O-. I want to also add that in our environment here most very common is trauma injuries, particularly if it has to do with gunshot wounds. There are a lot of crises in the remote areas and these are the places the remote health practitioners, they work. There are attacks on the oil workers very frequently so, we find the things like gunshot wounds, bombs, are very common in these areas. So, trauma, generally is common. So, we should also dedicate more trainings for, for this group of injuries.

I - Thank you so much Mr O-. It's, it's, it's outstanding to note that we have, erm, gunshot wounds in Oil and Gas locations, because of the hostilities in this area and what Mr O- has just said is that more materials and content could be developed in this area then it will be bespoke to a Nigerian scenario. He also mentioned the scenario on, on bombs, er, because of the Oil and Gas explosions that are taking place in the remote location, that he feels that emergency management skills, or emergency management for bomb, bomb patients would also be a very good one for the remote health care practitioners in, in Nigeria. Thank you so much. So, we want to move on, erm, we, we have spotted some of the gaps and what we feel should be in the content and, we want to know, do you think there are any, what, what are the strength, what are the strengths in the current training programmes that we have? Just taking a look at it, Mr O-, can you just say, just maybe for you, I said that I'm going to read some of the training programme that we have and then let us know what, what the training, what the strength you think there are in those packages.

P19 - Thank you, the strength we have, er, the training programme we currently run here are the basic life support programmes, the advanced cardiovascular life support programmes, the first aid, CPR **(15.13)** programmes and trauma courses. Er, the strengths of this, as it relates to the people who work in the remote health care settings, are that the basic life support gives the, er, the, the health care practitioner the, the ability and strength and will to be respond to emergencies when they see one. You know, ordinarily, when emergencies happen, everybody is without, they are so, everybody is confused, they don't know what to do but, this training gives them the ability with which to respond instantly and immediately, to be able to save lives. Well, for the advanced cardiovascular life support, it's, er, it's a step forward. In most cases, basic life support helps to bring back patients to, to, responding to normal circulation but, sometimes it doesn't. The cardiac arrest persists so, that's where the advanced life support come in where medications are used and, er, intervention that are higher advanced, other advanced agents are also applied. Yes, these are very useful because without this advanced applications and treatments you are likely to lose such a patient. Now, the trauma course is very important because most of the common, the commonest things we see in Nigeria are more of trauma than cardiac arrest, or than heart attack and stroke, yeah, strokes, heart attack, they're all there but, trauma is most common because of our environment. Unfortunately, we do not have the response system that we have in the first world where you pick up a phone, call 911 and they are, I don't whether this question will, I'm putting aside this question, otherwise...

I - No, no, it's fine.

P19 - ...so, we don't have a system where you can make a call and the emergency team comes to your res, to your response. Outside the big oil companies, if only contracting oil companies, small companies, do not have such a system in place, it's only the big company, but accidents don't happen only in the big companies, accidents happen even to the non, people who are not even working in the companies and they don't have anywhere to go. There are no dedicated, so to speak, 911 systems in Nigeria. There are no EMS's, so own type of response is either getting a vehicle yourself to help to carry the patient to a hospital or, you are stuck there or, you might, even making the call to a known hospital or a known friend, you have to use your own credits, that is if you have. Of course, credit is the cost of, cost of telephone calls and internet are very expensive also here so, you find most people not even having credit on their phones at all times in Nigeria. So, all these are some of the problems that we have, that helps to increase the low success of this, our trainings, otherwise the trainings are there but, implementation is another thing.

I - Alright, thank you. So, Mr O-, you've delved into the strength and also the limitation as well. But, key among your comment is that, erm, the training, the training courses that we have currently, have helped to mitigate or bridge the gaps we have in the national medical emergency response system.

You've, you've thrown light into the fact that, er, there is a great debt of medical emergency response skill in Nigeria, er, however, that this training courses has afforded remote health care practitioners some of the basic skill needed, one, to respond to an acute condition and then to stabilise and also to, to monitor and, we know from, from a practice point of view, that these are strategic in the survival of any victim of a medical emergency, thank you. So, are there any other thoughts, any other views on this? Yes?

P18 - Thank you. My name is E-. On what to do, what do you think about the content and format, I feel like in remote, for remote health care practitioners their locations are usually remote so, when they have a situation where they can't get to an EMS we don't, we don't, they don't have any, well, this modern word, facilities, I suppose at that moment. I think like the courses we are doing now are based on, call EMS, get help, but when you can't get help, when you can't get an EMS, what do you do on the spot when you have to stay with the patient all night all day. So, I feel that's, that's meant to be added in the course content. Thank you.

I - Thank you very much E-. I mean that is, that is eye opening for me, honestly. I have done most of this training and I have never seen it from that perspective. That these courses are designed and developed with an EMS as the go to, er, person, or the go to backup when you need to escalate for a response. Unfortunately, we don't have EMS's in Nigeria and in the remote location so, what do you now do? So, you are, you are the medic yourself, you are the EMS yourself and you are just everything. Thank you very much, this is a very good explanation on the limitation of the system we have currently and the gaps that we have currently. So, that, er, if a training programme is to be designed, we should design this with a mind that, look, there is no go to person over here, er, the remote health care practitioner, we have to provide all the necessary response. Thank you very much. Are there other thoughts on this? It's getting more interesting now, very interesting. Any thoughts? Okay, so the next question we have is, I think we have delved into the kind of competencies that we should require also in this environment on that. So, we want to also look at the next one which is, how much clinical background do you think, er, the remote health care practitioners should have? We had earlier on, you know, explored who the remote health care practitioners are, that these, some of them are nurses, some are doctors, some are paramedics, some are community health workers, what, how much clinical background do think that these, that any person that want to get, get into this profession, should have, or should, should have as a backup before getting into the remote health care practice? Any thoughts? Yeah.

P20 - My name is E- O-, what background should the remote health care practitioner should have, is the questions. For me, er, basic clinical background should include, er, be general nursing, but not limited to it. Paramedics, most paramedics are more grounded than the nurses when it comes to remote health care, by virtue of their training, erm, so properly

trained paramedics and nurses who have gone for, er, A&E are my prescription for remote health care practice. Of course, they should also take regular courses on life support courses, basic life support, advanced life support and, if I may add, medical life support is very important but, currently it's not common around here, medical life support, for the remote health practitioner, it's not only drop down dead that he sees in the location, he sees medical practice so we just assume that, by virtue of his knowledge as a health care practitioner, he should be able to handle that. What of the paramedics, paramedics are not doctors **(25.09)** so, why don't we include this course such as medical life support, for us to be able to carry all the remote health care practitioners along. Thank you.

I - Thank you, thank you so much Mr A-. Erm, yes, so you made a comparison between the nurses and the paramedic and, I want to ask, do we have, any, the paramedics, are they, are they common in Nigeria?

P20 - Paramedics are not common but they are here. Most of them trained outside the country and they are here working in big places such as Total, such as Elf, that's, Elf is Total, Agip, they are there working, they do very well. They are excellent.

I - That's, that's eye opening, yeah, that's eye opening. Yeah, so, so what we are seeing, what, what you are seeing now is that, if paramedic is properly trained, can you throw light on what you mean by 'properly trained', that is to say, er, do you, do you mean to say, er, with good, with the medical life support components...

P21 - Yes.

I - ...in their training?

P21 - Now...

I - …in their training then they can fit into the remote health care area, space of Nigeria. Okay, thank you so much. Yeah, any other thought on this?

P21 - Yes, only...

I - Yeah, S-.

P16 - Okay, this S-. Yeah, I wanted to shed more light on this, this question. I think, yes, the, the health care, remote health care practitioner should have the basic clinical background, yes, and should also be open to learning new procedures or new methods, you know, how to improve them self and also to improve the quality of response they are providing for the patient or those involved in those...

I - Emergencies.

P16 - ...emergencies. So, that's what I think. Thank you.

I - Thank you. Thank you so much, thank you. Ah, so this is, this is very interesting, interesting to note most of these, of our comments. Now, so we have gone through a lot of competencies that we feel that they should have and, er, we've also explained the gaps and the corresponding competencies you think will be bespoke to a Nigerian situation. Now, of all the competencies we have looked at now, do you have any that is very, very key, that is very, very important and, what, what are your reasons for, for such? So, as a, a,

a refresh, we have, er, we have seen that, yes, that our training are not designed with the common emergencies scenarios that we have in our remote locations in Nigeria and, we have said here that it would be proper to include scenarios, common scenario like bomb, like...