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SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 (SARS-COV-2) PANDEMIC IN SUB-SAHARAN AFRICAN COUNTRIES: CHALLENGES FACING HEALTH WORKERS.

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ABSTRACT

Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of the COVID-19 pandemic has spread across the globe, posing serious threat to healthcare workers and health systems. The theme for the 2020 World Patient Safety Day (WPSD), Health worker safety: Priority for patient safety is both relevant and timely. **Objectives:** Patient Safety Africa conducted a survey of health workers in some Sub-Saharan African countries to assess threats associated with the COVID-19 pandemic faced by health workers and explore immediate and remote factors contributing to identified challenge(s) with the aim of ensuring safety and wellbeing of healthcare workers (HCW) and the protection of health systems. **Methods:** A combination of online and paper-based questionnaire were used for the survey involving a wide range of health workers' groups from nine different countries including Nigeria, Zimbabwe, Zambia, South Sudan, Ghana, Sudan, Kenya, Botswana, and Uganda. **Results:** Five hundred and ninety six responses were received out of 800 (74.5%). All the respondents identified stress from fear of contracting COVID-19 and inadequate equipment such as PPEs and ventilators as their major challenge. Fatigue from excessive workload, 524 (88%) and lack of clear guidance for diagnosing, treating and reporting COVID-19 cases were also reported by 375 (63%) as significant concern. **Conclusion:** This study shows that significant resource, psychological and training needs exist for the health worker in the frontline of the battle against COVID-19 in Sub-Saharan Africa. It also highlights unmet needs in diagnostic, treatment and reporting standards. These unmet needs require urgent attention to prevent further loss of health workers' lives and to protect and improve health services in Sub-Saharan Africa now and in the future.

Key words: COVID-19, Sub-Saharan Africa, Health workers, Safety.

Introduction

In May 2019, the World Health Assembly (WHA) endorsed the establishment of World Patient Day (WPSD) at the 72nd World Health Assembly (resolution 6) in recognition of patient safety as a global health priority to be marked annually on 17th September of every year (WHA72.6). The objectives of World Patient Safety Day (WPSD) are to increase public awareness and engagement, enhance global understanding, and spur global solidarity and action to promote patient safety. The WPSD celebration is also an opportunity for reflection on what has gone well and what has not with a view to improving safety for all. The theme for the 2020 WPSD: Health worker safety: priority for patient safety is particularly relevant against the background of the on-going COVID-19 pandemic.

Severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2), the causative agent of the COVID-19 pandemic.^[17] has spread across the globe at an alarming rate. As at 11th March, 2021, a year after the WHO declared the COVID-19 a pandemic, global figures had reached 119.2 million infections and 2,642,570 deaths (JHU, 2021). Healthcare workers (HCW) in Africa who have become pillars upon whom all infection prevention and control (IPC) strategies rest have in too many cases literally used their lives as pillars and shields in the current battle against COVID-19 pandemic in Sub-Saharan Africa (SSAFR.). Concerns about this alarming rates of loss of health workers' lives have

been raised by the Nigerian Medical Association (NMA), Zimbabwean Medical Association (ZiMA), Kenyan Medical Association (KMA) and the Conference of Medical Associations of Africa (CAMAA), to ensure a sustenance of the dedication, excellence and resilience of healthcare workers and by extension of a strengthened, dependable and resilient healthcare system in Sub-Saharan Africa, the safety and wellbeing of healthcare workers should be a priority of governments and all stakeholders.

Globally, most health systems are weak with staggering unmet needs in healthcare safety: for in-patients, there is a 1:10 chance of experiencing a patient safety incident, out of this, 1% suffer severe harm or die, 6% experience moderate harm, 24% have low harm with only 69% experiencing no harm. Half of these cases occur in the peri-operative period, but with system-wide active prevention strategies, 50% of these cases are preventable.^[10,14] The fear of surgery is therefore a rational fear as unsafe surgical care remains a serious challenge affecting all countries with major complication rates ranging from 3 to 16% and death rates ranging from 0.2 to 10% annually; the result is at least 7 million disabling complications and one million deaths each year.^[14] In response to the distressing surgical statistics above, the World Health Organization (WHO) launched a global patient safety initiative; 'Safe Surgery Saves Lives'.^[19] The Safe Surgery Saves Lives programme involved trial of a checklist by surgical teams which demonstrated a 36% reduction in post-operative

complications.^[7] Consequently, the WHO made the checklist an essential requirement for hospital surgical teams in all countries but the compulsory use of this simple surgical safety tool remains lacking in majority of Nigerian hospitals (PSA survey, 2018).

With this burden of healthcare quality deficits in Sub-Saharan Africa (SSAFR) health systems prior to the COVID-19 pandemic, deficits such as inadequate skilled health workforce, poor infrastructure like good roads, power to operate healthcare equipment and non-availability of basic hand hygiene facilities like water in the health facilities, there were concerns about the ability of Sub-Saharan Africa healthcare system to withstand the challenges of the novel and highly disruptive COVID-19 pandemic without significantly compromising the safety of health workers.

Patient Safety Africa conducted this survey in the month before and during the World Patient Safety Day (WPSD), 2020 celebrations with the aim of ascertaining the threats associated with the COVID-19 pandemic faced by health workers in Nigeria, Zimbabwe, Zambia, South Sudan, Ghana, Sudan, Kenya, Botswana, Rwanda and Uganda in order to explore factors contributing to identified challenges and to find possible solutions.

Materials and Methods

A descriptive, cross sectional, analytical study design was utilized to administer an online and paper based survey. The Cochrane formula for sample size determination for single proportion. (Cochrane WG. Sampling Techniques,

3rd Edition. New York: John Wiley and Sons. 1977) was used to calculate sample size of 385 using a 95% confidence level and a $\pm 5\%$ margin of error.

Trained research assistants ensured that those who had completed the survey online did not repeat the process during the conferences to avoid duplication of data. Pre-tested, structured self-administered semi-structured quantitative questionnaire were used for data collection.

The questionnaire was used to collect data on socio-demographic characteristics such as age, sex and professional health groups; these constituted the independent variables in the analysis, while the perception of threat posed by COVID-19 and challenges in delivering quality health services were the outcome measure (dependent variable) for the logistic regression. To ensure participants understood the questions, participants were given a brief talk by the trained research assistants, on how to answer each questions. Instructions were also written on the questionnaire paper prior to each questions asked. This was mostly done for the online survey given to participants. In order to reduce sampling bias for the online survey, the survey was distributed through various channels so as to increase its visibility among participants. Survey was shared through social media, emails, as well as text messages for participants who may not have access to the internet. Questions on challenges faced using equipment, fear of contracting COVID-19, lack of adequate amenities in COVID-19 centres, as well as psychological challenges were posed to participants. The data collected

was for health workers who have been in the Frontline of the COVID-19 pandemic. Out of a total of 800 questionnaires that were distributed, 596 participants completed the survey having a response rate of 74.5%

The data obtained from the study were screened for completeness and entered into the IBM-SPSS statistics 20.0 software for analysis.

Ethical clearance to conduct this research was sought and obtained from the audits/research unit of Patient Safety Africa and methodological quality was ensured through training and supervision of research assistants and the use of standardised team approach to data collection and verification to ensure reliability. Consent was sought and obtained from each respondent. Infection prevention and control protocol for COVID-19 (social and physical distancing, facemasks and hand hygiene practices) were maintained during the distribution of these questionnaires at the various venue of the World Patient Safety Day (WPSD) celebration conferences in Nigeria at Igbinedion University, Okada, University of Benin Teaching Hospital, Benin-City, Ahmadu Bello University Teaching Hospital, Central Hospital, Benin-City, Lafia General Hospital, Lafia. Also in Zimbabwe at the PGH hospitals, Harare and at the WPSD celebration (conferences) of the Ministries of Health of South Sudan, Zambia, Uganda, Ghana, Kenya and Botswana.

Results

Results: Five hundred and ninety six (596) responses (328 online and 268 paper-based questionnaire) were received out

of 800, comprising e-mails/text messages (500) and paper-based questionnaires (300) that were distributed.

Total responses were: doctors/dentists 183 (30.7%), nurses/midwives, 263 (44.1%), other healthcare professionals – Pharmacists, Biomedical Scientists, therapists, 55 (9.2%) and non-professional groups – technicians, nursing assistants/auxiliaries, porters, cleaners and catering staff all amounted to 95 (16.0%), as shown in the chart in figure 1b below. Majority of respondents came from Nigeria (58%) and Zimbabwe (21%).

The proportion of health workers identifying factors which pose significant threats to their lives and their abilities to deliver qualitative and safe healthcare during this COVID-19 pandemic were as follows: all the respondents, 596 (100%) had Stress/Fear of contracting COVID-19 and inadequate equipment such as PPEs as their major challenge. Inadequate psychological/wellbeing support services was 566 (95%), fatigue from excess workload, 524 (88%), lack of adequate diagnostic, care and reporting guidance or protocols, 489 (82%), lack of adequate isolation facilities, 477 (80%), poor testing protocols, 447 (75%), lack of adequate supply of water and sanitizers, 387 (65%), blame culture, 370 (62%), worries over diversion of services from non-COVID-19 emergencies to COVID-19 care, 119 (20%) and concerns over stigmatisation, 10 (1.7%). These figures are as displayed in Table 2 below. Table 1 below shows the breakdown of respondents into various professional and non-professional groups. Professional groups comprising of Doctors, Dentists, Nurses, Midwives, Pharmacists, Biomedical scientists, and therapists all sum up to 591 responds.

While the Non-professional groups comprising of technicians, nursing assistants/auxiliaries, porters, cleaners and catering staffs, had 95 respondents

Table1: Response rates.

	Online	Paper	Total
Questionnaires Sent	500	300	800
Responses Received	328	268	596
Breakdown of Respondents into Professional groups			
Doctors/ Dentists	183		
Midwives/ Nurses	263		
Other professional Groups	55		
Non-professional Groups	95		

Figure 1b: Survey Respondents

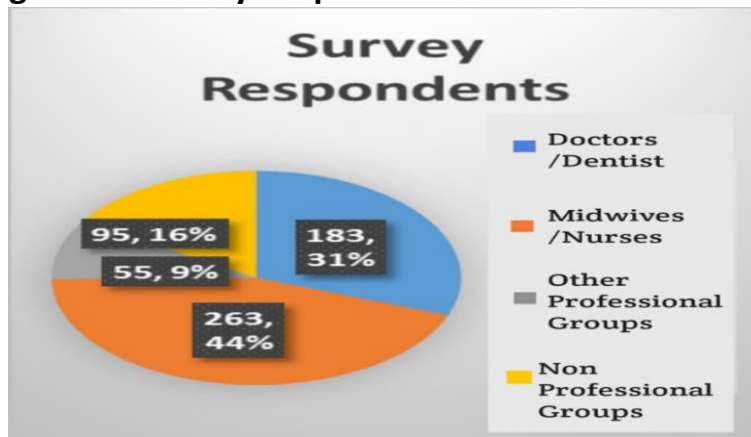


Table 2: Reported Threats.

Reported Threats	
Stress/Fear of contracting COVID-19 and inadequate equipment such as PPEs	596 (100%)
Inadequate psychological/wellbeing support services	566 (95%)
Fatigue from excess workload	524 (88%)
Lack of adequate diagnostic, care and reporting guidance or protocols,	489 (82%)
Lack of adequate isolation facilities,	477 (80%)
Poor testing protocols	447 (75%)
Lack of adequate supply of water and sanitizers	387 (65%)
Blame culture	370 (62%)
Worries over diversion of services from non-COVID-19 emergencies to COVID-19 care	119 (20%)
Concerns over stigmatisation	10 (1.7%)

Discussions

Prior to the COVID-19 pandemic, healthcare in Sub-Saharan Africa was

challenging, but the dedication and resilience of health workers sustained the delivery of safe care. This study has shown that disruptive human factors brought by the COVID-19 pandemic have negatively affected the wellbeing of respondents with implications for the ability of health systems to deliver qualitative and safe care.

All respondents in this survey reported being over-worked, stressed and living in significant fear of contracting COVID-19 and in need of essentials such as personal protective equipment (PPEs), ventilators, infusion pumps, care guidance and psychological/wellbeing support services. Unmet needs constituting significant sources of anxiety for healthcare workers in this study also include, lack of satisfactory isolation facilities, worries over hand hygiene facilities like water and hand sanitizers and adequate testing facilities, including difficulties with understanding COVID-19 case definition because of the use of both laboratory and subjective clinical criteria. This is of significance not only for patient safety and care quality research in Africa but also has immediate consequences for healthcare staff in the frontline.

The lack of basic facilities and the increasing number of healthcare workers paying the ultimate price in Sub-Saharan Africa are feeding a vicious circle of fear, absenteeism, increased workload, increased clinical risks and harm to the health workforce leading to worsening of human resource challenges for non COVID-19 services like follow up care for chronic medical conditions like hypertension, diabetes, HIV, cancer, immunisation services and safer motherhood programs.

This survey also shows concerns by health workers about the persistence of blame culture in these Sub-Saharan Africa health services. Over three-fifth (62%) of respondents reported this problem and consider it a significant source of anxiety. Blame culture is not only generally unhelpful to the delivery of safe care^[4], it is also inappropriate in these study environments with demonstrable dedication and altruism. The blame culture should be replaced by 'Just' Culture which is more quality and safe care friendly because it creates a sense of ownership of the system and a desire to ensure safe care for the patient, having in mind that justice will be served always.^[4] It is of note that unnecessary additional burden of anxiety over "super spreader" stigmatization was being borne by some respondents, although this number was small (1.7%); this is totally unwarranted from the public they are protecting. The general public should approach health workers with more empathy and support to prevent these health workers from becoming demoralised and disillusioned.

The lack of facilities for wellbeing and life insurance for most Sub-Saharan Africa health worker including those in the high risk isolation centres may contribute to the incessant health workers' strikes and restiveness that represent the greatest threat to patient safety in Africa. It is therefore important that attention be paid to the needs of these health workers - needs such as PPEs, essential equipment such as ventilators, infusion pumps, psychological/wellbeing support services, welfare packages, adequate care guidance, satisfactory isolation facilities,

adequate and sustained testing and provision of water and sanitizers for hand hygiene. Despite personal vulnerability problems, many of the respondents reported being significantly concerned about the diversion of resources/services from non-COVID-19 medical services to COVID-19 care ("COVID-19 collateral damage"). This diversion of care has affected services for chronic conditions like hypertension, diabetes, HIV and cancer as well as immunisation services. This concern by some respondents shows altruism, concern, empathy and dedication in the health workforce. Loannidis in his work in 2020 warned of the need to carefully manage COVID-19 information to limit this "collateral damage".

Managing these identified COVID-19 challenges faced by healthcare workers in Sub-Saharan African countries is key to protecting the healthcare worker, protecting health services and for saving lives in Africa. It also holds the key to pre-pandemic preparedness for these countries because as quality is built into every part of the care delivery processes, the health system will become more resilient, better adjusted or adapted for optimal performance and productivity to succeed under varying conditions such as resource and capacity constraints^[5] including novel challenging circumstances like the COVID-19 pandemic, enabling the service to achieve good outcomes for familiar and unfamiliar situations (Safety-II).^[1] The ubiquitous nature and severity of the SARS-CoV2, causative agent of COVID-19

pandemic requires this change of strategy from the traditional reactionary response of how things fail -"what has gone wrong" or 'avoiding that something goes wrong' in Safety-I^[12] to 'ensuring that as many as possible go right'^[8], that the number of intended and acceptable outcomes is as high as possible - everyday work achieves its objectives and safety management becomes proactive with regard to how actions succeed in everyday acceptable performance.

STRENGTH AND LIMITATIONS OF THE STUDY

The survey format of paper-based questionnaire and online provides for wider reach – of those with and without internet access as online survey alone would have under estimated health workers without online access.

This study done in the early part of the pandemic was to provide general insights – challenges faced by healthcare workers from COVID-19 in Sub-Saharan African counties, to inform and stimulate discourse of immediate needs and necessary responses as well as the need or not for a paradigm shift from safety I to safety II approach (see figures 3 and 4), it was not designed to be a tool to assess the responses of governments (countries), for this reason, a breakdown of responses with respect to countries was not done. This lack of breakdown of responses by countries is a potential weakness, it is hoped that future studies on this topic would explore this.

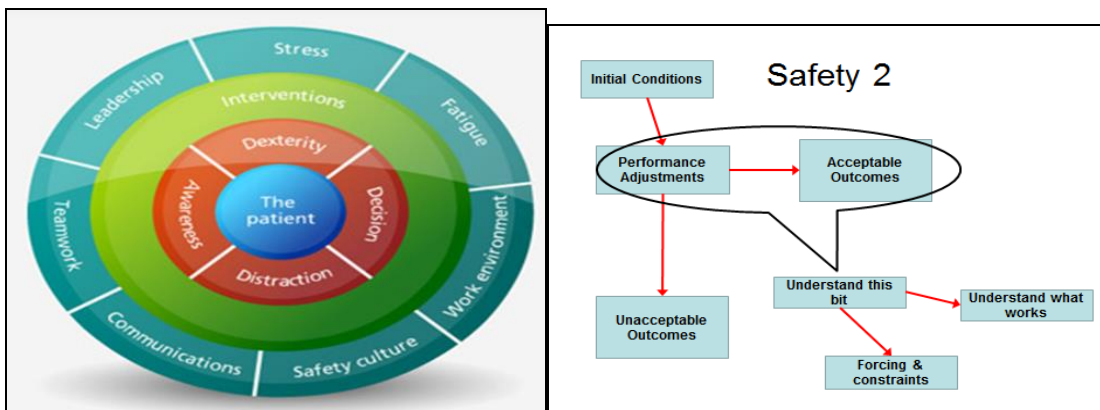
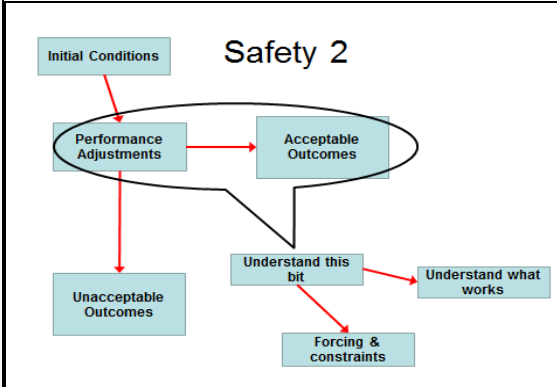


Figure 3: Human factors model.

Figure 4: Safety-II: Performance adjustments for acceptable outcomes under varying conditions.



Conclusions.

This study shows that significant resource, psychological and training needs exist for the health worker in the frontline of the battle against COVID-19 in Sub-Saharan Africa. It also highlights unmet needs in diagnostic, treatment and reporting standards. These unmet needs require urgent attention to prevent further loss of health workers' lives and to protect and improve health services in sub-Saharan Africa now and in the future.

Managing quality deficits through capacity building for healthcare quality is advocated as the key to health systems resilience and pre-pandemic preparedness, in this, these authors argue that the notion of quality healthcare should change from that of an optional extra beyond the reach of Africa to an essential or critical success factor for harm prevention and savings in terms of lives and other costs as the resulting more resilient health system will be better adjusted or adapted for optimal performance and productivity under varying conditions, such as resource and

capacity constraints and novel challenging circumstances like the COVID-19 pandemic. Lessons learnt from this pandemic such as the need for water (WASH), routine use of hand hygiene, PPEs should be supported by appropriate institutional guidance and the need for countries to have strategic PPEs reserves as part of health security should be underpinned by national statutes. Grant: None

Conflict of interest: None

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