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FAMILY AND EMERGENCY MEDICINE RESEARCH: 2021

Department of Family and Emergency Medicine,
Faculty of Medicine and Health Sciences, Stellenbosch University

Departmental capacity building event at Goudini, 2021

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INTRODUCTION

This booklet presents the research output from the Department of Family and Emergency Medicine, Faculty of Medicine and Health Sciences at Stellenbosch University for the year 2021. The research projects that were completed or published during this year are presented in abstract format. An email address for one of the authors is given for each abstract and a link to the full publication where appropriate.

An important part of the research process is the dissemination of the findings to stakeholders and policymakers, particularly the Department of Health in the Western Cape where the majority of the research was performed.

We realise that many people may even be too busy to read the abstracts and therefore we have tried to capture the essential conclusions and key points in a series of "sound bites" below. Please refer to the abstract and underlying study for more details if you are interested.

We have framed this body of work in terms of a typology suggested by John Beasley and Barbara Starfield:

Basic research: Studies that develop the tools for research

Clinical Research: Studies that focus on a particular disease or condition within the burden of disease.

Health Services Research: Studies that focus on service delivery and issues such as access, continuity, co-ordination, comprehensiveness, efficiency or quality.

Health Systems Research: Studies that speak more to the building blocks of the health system and development of policy.

Educational Research: Studies that focus on issues of education or training of health professions.

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"SOUND BITES" FOR POLICY AND DECISION MAKERS

Clinical research

Patients presenting with COVID-19 (corona virus disease 2019) to district hospitals were more likely to die if they were male, older, overweight or obese, had diabetes, HIV or chronic kidney disease. TB, asthma, structural lung damage and COPD were not related to mortality. Two thirds had a comorbidity. The turn-around-time for a laboratory diagnosis was longer than hospital admission. One study highlighted the need to remain vigilant for TB in those admitted on suspicion of COVID-19. Another study described patients with multisystem inflammatory syndrome that typically included fever, gastrointestinal symptoms, cardiorespiratory abnormalities, mucocutaneous changes, and a low left ventricular ejection fraction. Patients needed steroids, intravenous immunoglobulin and inotropic support. Other COVID related studies concluded that chloroquine should not be used to prevent COVID-19.

A number of studies documented the burden of various diseases in the emergency centres of district hospitals. Studies found that 8% of people presented with adverse drug reactions, 8% with diabetic emergencies, and 25% with trauma. During COVID-19 lockdown there was a 51% decrease in trauma cases and fewer children presented. Over the whole of 2020 there was a 15% reduction in trauma cases and a dose-response reduction in relation to the extent of restrictions on alcohol sales. Trauma cases were commonest on the weekends and amongst younger men. Intentional trauma accounted for 45% and accidental trauma 49%. In those that were assaulted 14% returned again within 15 months and this was related to prior criminal activity and enrolment in school. Trauma places a significant burden on the emergency care system. Alcohol use reduction and violence prevention are two target areas to mitigate this.

Of those with adverse drug reactions, 8% were on anti-retroviral drugs and these patients tended to be more severe and require admission. Anti-retroviral drugs were also common in attempted suicide, but most cases were discharged home and did not pose a serious clinical risk.

Half of diabetic emergencies were for diabetic ketoacidosis (DKA), 23% for severe hyperglycaemia and 22% for hypoglycaemia. Amongst this poorly controlled group, 51% were seen again within 6 months. Acute kidney damage was also a common complication in 41%.

Of those patients entering the resuscitation area of the emergency centre in a district hospital, 38% were due to HIV and 14% to TB. Those with TB took longer and those with HIV required more investigations and antibiotics, when compared to other patients. In those presenting with undifferentiated hypotension (shock) the use of point-of-care ultrasound (POCUS) may help identify those with cardiogenic shock (63% sensitivity, 94% specificity).

In paediatric emergencies the expected critical actions were completed in 63% of those with polytrauma and 90% of those with respiratory distress. The completion of the expected actions improved in those who were more seriously ill and younger children.

In primary care there were gaps in the training of nurses to insert intrauterine contraceptive devices (IUCD) (48% did not have training) and hormone implants (32% did not have training) and higher numbers expressed the need for more training (IUCD 61%, implants 45%).

In Ugandan primary care there were basic gaps in the availability of equipment to measure BP in primary care. In South Africa patients with hypertension lacked knowledge of their condition, struggled with lifestyle change and lacked trust in the advice of their primary care providers. Primary care providers were supportive of introducing group education and empowerment, while patients worried this might reduce the quality of individual care.

Health service and systems

A review of primary health care in the COVID-19 era for the World Health Organization (WHO) pointed towards the importance of integration, workforce strengthening and digital solutions in the model of care. Key strategic levers included political commitment and leadership, governance and policy, funding and allocation of resources as well as community and stakeholder engagement. Improvement required persistent attention to these issues over time.

A review of primary health care and COVID-19 in Africa identified a number of issues. Health systems with a model of community-orientated primary care (COPC) were able to make good use of their community health workers (CHW). Information technology blossomed for communication and telehealth. Family physicians ensured that the needs of the whole person were not forgotten, offered leadership, enabled multidisciplinary teamwork and continuity of care. Problematic issues included a lack of effective community engagement and social mobilisation, ineffective laboratory services, loss of essential non-COVID services, and disruption of training programmes. In South Africa a framework was created to prioritise surgery using six recommendations and a surgical risk calculator.

A review of alternative mechanisms for delivery of chronic medication identified a variety of options (e.g. pick-up-points, delivery by community health workers, and more recently smart lockers and even pharmaceutical dispensing units). Alternative delivery systems supported adherence, appeared to be cheaper and beneficial for patients. More economic analysis of options and scale up is needed.

African family physicians reflected on the nexus of climate change, migration and health(care). They noted the impact of climate change on migration and that people also migrated in search of better health and healthcare. Both climate change and migration impacted on health and healthcare services. Key suggestions to respond to this nexus included the need to strengthen multisectoral policy and action at all levels, training of the primary health care team in the issues, strengthening of primary health care in general, advocacy by primary health care professionals for attention to these issues by policymakers and the responsibility of high-income countries.

In South Africa there were 969 family physicians on the specialist register in 2019, although only 194 came from the new training programmes. The number of family physicians per 10000 population had quadrupled over 10 years, but was still low at 0.16/10000. Of these only 29% were in the public sector. The characteristics of family physicians were more diverse, although unequally

distributed between provinces. To make better use of family physicians we need to increase the numbers trained, improve throughput rates in training and retention in the public sector.

The VulaApp was shown to reduce the number of inappropriate referrals from primary health care to district hospitals. It also enabled advice and clarification of information by the receiving doctor. The opportunity to give feedback to primary health care on the referral was missed. However only 15% of referrals came from the primary health care platform and used the VulaApp, suggesting that the majority were self-referred.

In one district hospital emergency centre the clinician output was found to be relatively low at only 0.7 patients per hour. Output was related to shift type, type of clinician and cumulative shifts. Output decreased during the shift and with the number of 'boarders'. Output increased if there was a large queue at the beginning of the shift. Staffing models need to take into account the burden of non-clinical work, timing and capacity in order to more accurately predict need.

Imaging with computed tomography (CT) scans and magnetic resonance imaging (MRI) scans at a regional hospital was found to be appropriate in 81% of cases, possibly appropriate in 7% and not appropriate in 11%. Inappropriate scanning was related to medical officers requesting imaging after hours.

Members of the public were found to have low levels of knowledge of bystander cardio-pulmonary resuscitation (CPR). They were willing to be trained in chest compressions, but not mouth-to-mouth resuscitation. Regular re-training would be needed.

Research on universal access to anti-retrovirals (ARV) has focused on individual factors and health system factors, but neglected the relational aspects of care as a key factor.

Midwives in Kenya were confident in knowledge and skills related to the labour ward, but not to more general competencies. Confidence was higher in tertiary hospitals compared to county level hospitals. Midwives trained exclusively to be midwives were more confident than those trained as both nurses and midwives.

Educational research

Although psychological distress is common amongst university students, aspects of mindfulness (acting with awareness, non-reactivity, non-judgement) were associated with lower levels of distress, particularly acting with awareness.

In response to the COVID-19 pandemic educators developed a crisis curriculum analysis framework to help teachers adapt and respond to disruption.

In emergency medicine registrars like to learn from podcasts. Podcasts should be suitable for mobile devices, fairly short (5-15 minutes), make use of multimedia and not just be a recorded lecture.

International elective students are very keen on emergency medicine sites in Western Cape. They mostly come from UK, USA and Canada and include both undergraduate and postgraduate students. They rate the experience highly for both personal and professional development – the district hospital more than the tertiary hospital.

CLINICAL RESEARCH

The surgical team at Mossel Bay District Hospital

Adult medical emergency unit presentations due to adverse drug reactions in a setting of high HIV prevalence.

Johannes P. Mouton, Nicole Jobanputra, Christine Njuguna, Hannah Gunter, Annemie Stewart, Ushma Mehta, Sa'ad Lahri (slahri@sun.ac.za) et al.

Introduction: South Africa has the world's largest antiretroviral treatment programme, which may contribute to the adverse drug reaction (ADR) burden. We aimed to determine the proportion of adult non-trauma emergency unit (EU) presentations attributable to ADRs and to characterise ADR-related EU presentations, stratified according to HIV status, to determine the contribution of drugs used in management of HIV and its complications to ADR-related EU presentations, and identify factors associated with ADR-related EU presentation.

Methods: We conducted a retrospective folder review on a random 1.7% sample of presentations over a 12-month period in 2014/2015 to the EUs of two hospitals in Cape Town, South Africa. We identified potential ADRs with the help of a trigger tool. A multidisciplinary panel assessed potential ADRs for causality, severity, and preventability.

Results: We included 1010 EU presentations and assessed 80/1010 (7.9%) as ADR-related, including 20/239 (8.4%) presentations among HIV-positive attendees. Among HIV-positive EU attendees with ADRs 17/20 (85%) were admitted, versus 22/60 (37%) of HIV-negative/unknown EU attendees. Only 5/21 (24%) ADRs in HIV positive EU attendees were preventable, versus 24/63 (38%) in HIV-negative/unknown EU attendees. On multivariate analysis, only increasing drug count was associated with ADR-related EU presentation (adjusted odds ratio 1.10 per additional drug, 95% confidence interval 1.03 to 1.18), adjusted for age, sex, HIV status, comorbidity, and hospital.

Conclusions: ADRs caused a significant proportion of EU presentations, similar to findings from other resource limited settings. The spectrum of ADR manifestations in our EUs reflects South Africa's colliding epidemics of infectious and non-communicable diseases. ADRs among HIV-positive EU attendees were more severe and less likely to be preventable.

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The clinical course & outcomes of patients presenting with antiretroviral drug overdose to two integrated public sector Emergency Centres in Cape Town, South Africa.

Raeesa Goga, Heike Geduld (hgeduld@sun.ac.za), Katya Evans, Candice Van Koningsbruggen

Introduction: The use of antiretroviral drugs (ARVs) in suicide attempts has not been widely studied. Recent South African publications describing emergency centre presentations of acute poisonings noted that ARVs were a common drug of choice. The aim of this study is to describe the clinical course and outcomes of patients presenting with acute ARV poisoning to two integrated Emergency Centres in Cape Town, Western Cape.

Methods: A quantitative, retrospective chart review was performed describing cases between 01/03/2017 to 31/10/2020. Data was collected by identifying potential patients from the electronic patient tracking register, followed by a manual review of medical records of the identified cases. Summary statistics were used to describe all variables.

Results: A total of 228 patients were included in the analysis over the 44-month period. There was a notable female preponderance. The median age was 27 years (IQR: 20 – 33 years). 257 different drugs were taken in overdose and the most common agent taken was a combination drug comprising of Emtricitabine/Tenofovir/Efavirenz (16.3%). Co-ingestants were taken by 30.3% patients. Of those without co-ingestants, 38.3% of patients were symptomatic. The majority of biochemical investigations were within normal ranges and no life-threatening electrocardiography (ECG) changes were noted. 86% of patients were discharged home.

Conclusion: This study describes the largest cohort of patients with acute ARV overdose. ARV overdoses are reasonably benign in terms of drug toxicity and majority of patients do well. Those who have taken co-ingestants are at a higher risk for drug toxicity. This study will assist healthcare workers to manage patients presenting with an acute ARV appropriately.

The burden of HIV and tuberculosis on the resuscitation area of an urban district-level hospital in Cape Town.

Lynne Swarts, Sa'ad Lahri (slahri@sun.ac.za), Daniel J. van Hoving

Introduction: Many patients present to emergency centres with HIV and tuberculosis related emergencies. Little is known about the influence of HIV and tuberculosis on the resuscitation areas of district-level hospitals. The primary objective was to determine the burden of non-trauma patients with HIV and/or tuberculosis presenting to the resuscitation area of Khayelitsha Hospital, Cape Town.

Methods: A retrospective analysis was performed on a prospectively collected observational database. A randomly selected 12-week sample of data from the resuscitation area was used. Trauma and paediatric cases (<13 years) were excluded. Patient demographics, HIV and tuberculosis status, disease category, investigations and procedures undertaken, disposition and in-hospital mortality were assessed. HIV and tuberculosis status were determined by laboratory confirmation or from clinical records. Descriptive statistics are presented and comparisons were done using the $\chi 2$ -test or independent t-test.

Results: A total of 370 patients were included. HIV prevalence was 38.4% (n = 142; unknown n = 78, 21.1%), tuberculosis prevalence 13.5% (n = 50; unknown n = 233, 63%), and HIV/tuberculosis co-infection 10.8% (n = 40). HIV and tuberculosis were more likely in younger patients (both $p < 0.01$) and more females were HIV-positive ($p < 0.01$). Patients with tuberculosis spend 93 min longer in the resuscitation area than those without ($p = 0.02$). The acuity of patients did not differ by HIV or tuberculosis status. Infectious-related diseases and diseases of the digestive system occurred significantly more in the HIV-positive group, and endocrine-related diseases and diseases of the nervous system in HIV-negative patients. HIV-positive patients received more abdominal ultrasound examinations ($p < 0.01$), blood cultures ($p < 0.01$) and intravenous antibiotics ($p < 0.01$). In-hospital mortality was 17% and was not influenced by HIV status ($p = 0.36$) or tuberculosis status ($p = 0.29$).

Conclusion: This study highlights the burden of HIV and tuberculosis on the resuscitation area of a district level hospital. Neither HIV nor tuberculosis status were associated with in-hospital mortality.

Citation: African Journal of Emergency Medicine https://doi.org/10.1016/j.afjem.2020.09.016

Factors that influence the provision of long-acting reversible contraception in primary healthcare facilities in the Eastern metropole, Western Cape – A descriptive survey.

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Background: The Implanon and the Copper intra-uterine contraceptive device (IUCD) are the two forms of long-acting reversible contraceptives (LARC) available in the public primary healthcare (PHC) setting of South Africa. These methods are the most effective forms of contraception if used correctly. Less unwanted and unplanned pregnancies, with less maternal, neonatal and childhood morbidity and mortality may arise from effective contraception provision.

Aim: To evaluate the knowledge, beliefs, and practices of contraception providers as well as the barriers that influence the provision of LARC in PHC facilities in the Khayelitsha Eastern substructure (KESS) drainage area.

Setting: All nurses permanently employed in public PHC facilities within KESS, who provide contraception to women, were invited to take part in the study.

Methods: Data was collected from 72 participants (80% response rate) by completion of a validated questionnaire and evaluated using SPSS.

Results: Participants had a mean age of 41.3 years. Most were professional nurses (57%) and clinical nurse practitioners (29%). About 75% had more than 5 years' experience. Less than 50% of patients were routinely counselled for LARC methods. Fifty-two percent of staff were trained to insert IUCDs, while 68% were trained to insert the Implanon. Over 75% of trained staff performed insertions. However, confidence for IUCD insertion was low (61%) and 61% and 45% required further training in IUCD and Implanon provision, respectively. Trained staff had superior knowledge on insertion criteria. A mean score for Implanon knowledge was 8.56/11 (SD 1.42) vs 7.16/11 (SD 2.83) for the trained and untrained staff, respectively. The mean score for IUCD knowledge was 10.42/12 (SD 1.80) vs 8.03/12 (SD 3.70) for the trained and untrained. Lack of time (21%), space (12%), and privacy (13%) were identified, while inaccessibility to training courses (30%), no skilled person available (25%) and staff shortages (38%) were further established as barriers.

Conclusion: The knowledge, beliefs and practices pertaining to LARC provision differ among healthcare providers with different levels of training and qualification. Lack of training and poor confidence at insertion and counselling skills were identified as the major barriers to effective provision of LARC. The evaluation in this study is in keeping with previous findings, although a few system barriers 3 have been identified that may be addressed to improve provision of LARC uptake among women.

Cross-sectional study of paediatric case mix presenting to an emergency centre in Cape Town, South Africa, during COVID-19.

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Objective: To describe and compare the effect of level 5 lockdown measures on the workload and case mix of paediatric patients presenting to a district-level emergency centre in Cape Town, South Africa.

Methods: Paediatric patients (<13 years) presenting to Mitchells Plain Hospital were included. The level 5 lockdown period (27 March 2020-30 April 2020) was compared with similar 5-week periods immediately before (21 February 2020-26 March 2020) and after the lockdown (1 May 2020-4 June 2020), and to similar time periods during 2018 and 2019. Patient demographics, characteristics, International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) diagnosis, disposition and process times were collected from an electronic patient tracking and registration database. The χ^2 test and the independent samples median test were used for comparisons.

Results: Emergency centre visits during the lockdown period (n=592) decreased by 58% compared with 2019 (n=1413) and by 56% compared with the 2020 prelockdown period (n=1342). The proportion of under 1 year olds increased by 10.4% (p<0.001), with a 7.4% increase in self-referrals (p<0.001) and a 6.9% reduction in referrals from clinics (p<0.001). Proportionally more children were referred to inpatient disciplines (5.6%, p=0.001) and to a higher level of care (3.9%, p=0.004). Significant reductions occurred in respiratory diseases (66.9%, p<0.001), injuries (36.1%, p<0.001) and infectious diseases (34.1%, p<0.001). All process times were significantly different between the various study periods.

Conclusion: Significantly less children presented to the emergency centre since the implementation of the COVID-19 lockdown, with marked reductions in respiratory and infectious-related diseases and in injuries.

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Assessment of documented adherence to critical actions in paediatric emergency care at a district-level public hospital in South Africa.

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Introduction: The provision of high-quality care is vital to improve child health and survival rates. A simple, practice-based tool was recently developed to evaluate the quality of paediatric emergency care in resource-limited settings in Africa. This study used the practice-based tool to describe the documented adherence to critical actions in paediatric emergency care at an urban district-level hospital in South Africa and assess its relation to clinical outcomes.

Methods: This study is a retrospective observational study covering a 19-month period (September 2017 to March 2019). Patients <13 years old, presenting to the emergency centre with one of six sentinel presentations (seizure, altered mental status, diarrhoea, fever, respiratory distress and polytrauma) were eligible for inclusion. In the patients' files, critical actions specific for each presentation were checked for completion. Post-hoc, a seventh group 'multiple diagnoses' was created for patients with more than one sentinel disease. The action completion rate was tested for association with clinical outcomes.

Results: In total, 388 patients were included (median age 1.1 years, IQR 0.3–3.6). The action completion rate varied from 63% (polytrauma) to 90% (respiratory distress). Participants with ≥75% action completion rate were younger ($p < 0.001$), presented with high acuity ($p < 0.001$), were more likely to be admitted (adjusted OR 2.2, 95%CI: 1.2–4.1), and had a hospital stay ≥4 days (adjusted OR 3.4, 95%CI: 1.5–7.9).

Conclusion: A high completion rate was associated with young age, a high patient acuity, hospital admission, length of hospital stay ≥4 days, and the specific sentinel presentation. Future research should determine whether or not documented care corresponds with the quality of delivered care and the predictive value regarding clinical outcome.

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The burden of diabetic emergencies on the resuscitation area of a district-level public hospital in Cape Town.

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Introduction: Diabetes and its complications continue to cause a daunting and growing concern on resource-limited environments. There is a paucity of data relating to the care of diabetic emergencies in the emergency centres of entry-level hospitals in Africa. The aim of this study was to describe the burden of diabetic emergencies presenting to the emergency centre of an urban district-level hospital in Cape Town, South Africa.

Methods: The Khayelitsha Hospital Emergency Centre database was retrospectively analysed for patients presenting with a diabetic emergency within a 24-week randomly selected period. The database was supplemented by a retrospective chart review to include additional variables for participants with diabetic ketoacidosis (DKA), uncomplicated hyperglycaemia, severe hypoglycaemia and hyperosmolar hyperglycaemic state (HHS). Summary statistics are presented of all variables.

Results: The prevalence of all diabetic emergencies was 8.1% (197/2424) (DKA n = 96, 48.7%; uncomplicated hyperglycaemia n = 45, 22.8%; severe hypoglycaemia n = 44, 22.3%; HHS n = 12, 6%). The median age was 48 years, with those presenting with DKA being substantially younger (36 years). A likely precipitant was identified in 175 (88%) patients; infection was the most common precipitant (n = 79, 40.1%). Acute kidney injury occurred in 80 (40.6%) cases. The median length of stay in the resuscitation area was 13 h (IQR 7.2–24) and 101 (51.3%) participants represented with a diabetic- related emergency within six months of the study period. The overall mortality rate was 5% (n = 10).

Conclusion: This study highlights the high burden of diabetic emergencies on the provision of acute care at a district-level hospital. The high prevalence of diabetic emergencies (8%) consisted of DKA (48.7%), uncomplicated hyperglycaemia (22.8%), severe hypoglycaemia (22.3%), and HHS (6%). The high infection rate (40%) and the high percentage of patients returning with a diabetic emergency (51%) could be indicative of the need for improved community-based diabetic programmes.

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A situational analysis to inform the design of group education programme for hypertension in primary care, South Africa.

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Background: Hypertension-related complications and overall prevalence of hypertension remain high, despite the implementation of evidence-based treatment modes. Multiple barriers faced by patients, healthcare workers and the healthcare system cause the translation of knowledge of hypertension and counselling about lifestyle issues to be suboptimal. Effective group education programmes for hypertension have been conducted in other low- and middle-income settings, increasing patient knowledge and self-management and improving risky lifestyle habits. It also results in reduced systolic and diastolic blood pressure.

Aim: To explore patients' beliefs on hypertension and patients' and primary care providers' (PCP) perspectives on current treatment of hypertension, lifestyle modification and group education programmes for hypertension.

Setting: Jamestown Clinic in Stellenbosch.

Methods: Qualitative interviews conducted with two groups of 5–8 patients each, and four available PCPs working at the clinic.

Results: Patients struggled to understand the cause and diagnosis of hypertension, and PCPs do not feel adequately equipped to educate patients. Patients found it difficult to adapt to recommended lifestyle modifications, easily returning back to unhealthy lifestyle. Social factors, unpalatable diets, cost of healthy food and a lack of motivation were barriers that prevented patients to adhere to lifestyle modification recommendations. Patient lacked trust in the advice and treatment supplied by PCPs, which prompted them to make important health decisions independently. Patients worried that group education for hypertension might compromise the quality of individual care. PCPs felt group education might provide as a possible relief on workload by task shifting.

Conclusion: This study explored patients' beliefs on hypertension and the perspectives of patients and PCPs regarding hypertension, lifestyle modification, current treatment of hypertension and group education for hypertension. Evidence obtained from this study, could contribute to designing and developing a group education programme for hypertension in our setting.

Sonographic Findings of Left Ventricular Dysfunction to Predict Shock Type in Undifferentiated Hypotensive Patients: An Analysis From the Sonography in Hypotension and Cardiac Arrest in the Emergency Department (SHoC-ED) Study.

Sam Keefer, Paul Atkinson, Kavish Chandra, Ryan J. Henneberry, Paul A. Olszynski, Mandy Peach, Laura Diegelmann, Hein Lamprecht (hl@sun.ac.za), et al.

Introduction: Patients that present to the emergency department (ED) with undifferentiated hypotension have a high mortality rate. Hypotension can be divided into four categories: obstructive, hypovolemic, distributive, and cardiogenic. While it is possible to have overlapping or concomitant shock states, being able to differentiate between cardiogenic shock and the other categories is important as it entails a different treatment regime and extra cautions. In this secondary analysis, we investigate if using focused cardiac ultrasonography (FOCUS) to determine left ventricular dysfunction (LVD) can serve as a reliable test for cardiogenic shock.

Methods: We prospectively collected FOCUS findings performed in 135 ED patients with undifferentiated hypotension as part of an international study. Patients with clearly identified etiologies for hypotension were excluded, along with other specific presumptive diagnoses. LVD was defined as the identification of a generally hypodynamic left ventricle in the setting of shock. FOCUS findings were collected using a standardized protocol and data collection form. All scans were performed by emergency physicians trained in ultrasound. Final shock type was defined as cardiogenic or noncardiogenic by independent specialist blinded chart review.

Results: In our findings, 135 patients had complete records for assessment of left ventricular function and additional follow-up data and so were included in this secondary analysis. The median age was 56 years and 53% of patients were male. Disease prevalence for cardiogenic shock was 12% and the mortality rate was 24%. The presence of LVD on FOCUS had a sensitivity of 62.50% (95% confidence interval 35.43% to 84.80%), specificity of 94.12% (88.26% to 97.60%), positive likelihood ratio (LR) 10.62 (4.71 to 23.95), negative LR 0.40 (0.21 to 0.75) and accuracy of 90.37% (84.10% to 94.77%) for detecting cardiogenic shock.

Conclusion: Detecting left ventricular dysfunction on FOCUS may be useful in the early identification of cardiogenic shock in otherwise undifferentiated hypotensive adult patients in the emergency department.

Citation: Cureus 13(7): e16360. DOI 10.7759/cureus.16360

Availability, functionality and access of blood pressure machines at the points of care in public primary care facilities in Tororo district, Uganda.

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Background: Early diagnosis of hypertension prevents a significant number of complications and premature deaths. In resource-variable settings, diagnosis may be limited by inadequate access to blood pressure (BP) machines. We sought to understand the availability, functionality and access of BP machines at the points of care within primary care facilities in Tororo district, Uganda.

Methods: This was an explanatory sequential mixed-methods study combining a structured facility checklist and key informant interviews with primary care providers. The checklist was used to collect data on availability and functionality of BP machines within their organisational arrangements. Key informant interviews explored health providers' access to BP machines.

Results: The majority of health facilities reported at least one working BP machine. However, Health providers described limited access to machines because they are not located at each point of care. Health providers reported borrowing amongst themselves within their respective units or from other units within the facility. Some health providers purchase and bring their own BP machines to the health facilities or attempted to restore the functionality of broken ones. They are motivated to search the clinic for BP machines for some patients but not others based on their perception of the patient's risk for hypertension.

Conclusion: Access to BP machines at the point of care was limited. This makes hypertension screening selective based on health providers' perception of the patients' risk for hypertension. Training in proper BP machine use and regular maintenance will minimise frequent breakdowns.

Citation: S Afr Fam Pract. 2021;63(1), a5118. https://doi.org/10.4102/ safp.v63i1.5118

Multisystem inflammatory syndrome (MIS): A multicentre retrospective review of adults and adolescents in South Africa.

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Objectives: The aim of this study was to add to the descriptive data pertaining to the epidemiology, presentation, and clinical course of multisystem inflammatory syndrome (MIS) temporally associated with coronavirus disease 2019 in adults and adolescents from low- and middle-income countries.

Methods: Patients presenting to the adult wards (14 years and older) of three academic hospitals in South Africa, who were diagnosed with MIS between August 1, 2020 and May 31, 2021, were reviewed retrospectively. The presentation, laboratory and radiographic findings, and clinical course are described.

Results: Eleven cases of MIS were reported, four in adolescents (14–19 years) and seven in adults (≥19 years). Fever was universal. Gastrointestinal symptoms (90.9%), cardiorespiratory abnormalities (90.9%), and mucocutaneous findings (72.7%) were prominent. Echocardiography in 10/11 patients (90.9%) showed a median left ventricular ejection fraction of 26.3% (interquartile range 21.9–33.6%). All patients required high care admission and 72.7% required inotropic support. Glucocorticoids were initiated in all cases and 72.7% received intravenous immunoglobulin.

Conclusions: This constitutes the largest multicentre review of adults and adolescents with MIS in Africa. MIS may be overlooked in resource-limited settings, and heightened suspicion is needed in patients with multi-organ dysfunction, especially where repeated investigations for other aetiologies are negative.

Citation: International Journal of Infectious Diseases https://doi.org/10.1016/j.ijid.2021.08.042

Demographics and clinical characteristics of hospitalised patients under investigation for COVID-19 with an initial negative SARS-CoV-2 PCR test result.

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Background: The COVID-19 pandemic is placing abnormally high and ongoing demands on healthcare systems. Little is known about the full effect of the COVID-19 pandemic on diseases other than COVID-19 in the South African setting.

Objective: To describe a cohort of hospitalised patients under investigation for SARS-CoV-2 that initially tested negative.

Methods: Consecutive patients hospitalised at Khayelitsha Hospital from April to June 2020, whose initial polymerase chain reaction test for SARS-CoV-2 was negative were included. Patient demographics, clinical characteristics, ICD-10 (International Statistical Classification of Diseases and Related Health Problems 10th Revision) diagnosis, referral to tertiary level facilities and ICU, and all-cause in-hospital mortality were collected. The 90-day re-test rate was determined and comparisons were made using the $\chi 2$ -test and the independent samples median test.

Results: Overall, 261 patients were included: median age 39.8 years, 55.6% female (n = 145). Frequent comorbidities included HIV (41.4%), hypertension (26.4%), and previous or current tuberculosis (24.1%). Nine (3.7%) patients were admitted to ICU and 38 (15.6%) patients died. Ninety-three patients (35.6%) were re-tested and 21 (22.6%) were positive for SARS-CoV-2. The top primary diagnoses related to respiratory diseases (n = 82, 33.6%), and infectious and parasitic diseases (n = 62, 25.4%). Thirty-five (14.3%) had a COVID-19 diagnostic code assigned (26 without microbiological confirmation) and 43 (16.5%) had tuberculosis. Older age ($p = 0.001$), chronic renal impairment ($p = 0.03$) and referral to higher level of care (all $p < 0.001$; ICU $p = 0.03$) were more frequent in those that died.

Conclusion: Patients with tuberculosis and other diseases are still presenting to emergency centres with symptoms that may be attributable to SARS-CoV-2 and requiring admission. Extreme vigilance will be necessary to diagnosis and treat tuberculosis and other diseases as we emerge from the COVID-19 pandemic.

Citation: African Journal of Emergency Medicine https://doi.org/10.1016/j.afjem.2021.09.002

COVID-19 and hyperglycaemic emergencies: perspectives from a developing country.

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Background: Pre-existing diabetes mellitus (DM), hyperglycaemia and obesity emerged as prognostic factors in severe Coronavirus disease 2019 (COVID-19). To date, no published South African studies report on the incidence, presentation and outcomes of DM and diabetic ketoacidosis (DKA) during the COVID-19 pandemic.

Objective: To reflect on the diagnosis, management, obstacles to care and outcome of four patients who were admitted to Tygerberg Hospital, Cape Town, South Africa. The outcome of these cases that presented consecutively with DKA and COVID-19 between May and July 2020 are discussed, the presentation, management and long-term considerations with specific reference to DKA and COVID-19 are reviewed.

Results: Three of the four patients had newly diagnosed DM. These patients presented with non-specific symptoms and signs leading to a diagnosis of both DKA and COVID-19. The single surviving patient in this series was known to have pre-existing DM but discontinued his insulin upon becoming unwell. One patient required insulin therapy at the time of initial presentation a week or two prior to the current admission but received metformin instead. She was diagnosed with COVID-19 after having poor glycaemic control for over one week, after which insulin was initiated. Ultimately she died as a result of severe hypokalaemia. One patient primarily had respiratory complaints, severe COVID-19 pneumonia and received concomitant dexamethasone. Glycaemic control in this patient was complicated by both hypo- and hyperglycaemia.

Conclusion: These cases highlight the management challenges faced by many developing countries, and identify the missed opportunities in persons presenting with COVID-19 and hyperglycaemic emergencies.

Citation: Journal of Endocrinology, Metabolism and Diabetes of South Africa, 27:1, 42-48, DOI: 10.1080/16089677.2021.1939934

Informing future policy for trauma prevention: The effect of the COVID-19 'National state of disaster lockdown' on the trauma burden of a tertiary trauma centre in the Western Cape of South Africa.

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Introduction: Strategies to reduce the burden of trauma are not only a global priority, but also a South African public health priority due to a disproportionately large trauma burden. Identification of the contributors to preventable injuries would assist in guiding policy and prevention strategies at a local and international level. In response to SARS-nCOV-2 (COVID19), a national restrictive lockdown was implemented in South Africa with, amongst other restrictions, a complete ban on non-essential travel and alcohol sales. With the most intensive restrictions implemented between March to May 2020, this period offers an unprecedented opportunity for the assessment of social restrictions on possible effects of trauma burdens.

Methods: A retrospective chart review was conducted between March to May 2019 and compared to data from the same period in 2020. Descriptive analysis was undertaken to understand the influence of lockdown on demographics and injury causation in trauma presentations.

Results: The results showed a 51.42% decline in trauma during the early lockdown period. Sub-analyses however, revealed little change in the mechanism of injury ratios and the demographics of presenting patients.

Conclusion: This study shows that although all cause presentation of trauma cases was reduced following the implementation of lockdown procedures in 2020, the injury patterns and ratios of intentional to accidental harm remained largely unchanged. This prompts the need for further research and root cause analysis into how trauma prevention strategies can be improved. This will assist with the improved efficacy of trauma prevention policies in a country with a well-documented trauma burden and thus a pressing need for an implementable and nationwide harm reduction policy.

Citation: African Journal of Emergency Medicine https://doi.org/10.1016/j.afjem.2021.06.002

Temporal changes in trauma according to alcohol sale restrictions during the South African national COVID-19 lockdown.

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Introduction: The South African government enforced various alcohol sale restrictions during the COVID-19 lockdown in order to reduce hospital admissions related to alcohol-associated injuries. A cross-sectional study was performed to describe the temporal changes in trauma according to alcohol sale restrictions during the South African national COVID-19 lockdown.

Methods: Data from all trauma-related patients presenting to the emergency centre of Mitchells Plain Hospital from 01/03/2020 till 29/9/2020 and corresponding periods during 2019 were exported from an existing database. The relationship between variables was determined with the $\chi 2$ -test, Fisher's exact test, independent samples median test or t-test. A sub-analysis compared similar 2020 lockdown levels when a second alcohol ban were instituted while most business were allowed to operate (level 3b – alcohol banned versus level 3 – alcohol restricted).

Results: Total number of trauma presentations were 539 (14.6%) less in 2020 (n = 3160) than in 2019 (n = 3699); the mean number decreased by 2.5 per day (95% CI – 2.9 to – 2.1). Lockdown levels with an alcohol ban had on average 4.8 less patients per day than corresponding periods in 2019 ($p < 0.001$). No significant difference was observed in lockdown levels with alcohol sale restrictions (mean difference per day – 0.4, $p = 0.195$). Trauma presentations increased significantly (mean difference per day 7.0 (95% CI 6.5 to 7.5)) from 2020 lockdown levels with alcohol sales ban (mean per day 11.4) to 2020 lockdown levels with alcohol sale restrictions (mean per day 18.4). Significantly less patients (mean – 3.2 (95% CI – 3.9 to – 2.5)) presented during 2020 lockdown level 3b (alcohol sales banned, mean 13.9) compared to level 3 (alcohol sales restricted, mean 17.1).

Conclusion: Temporal changes in trauma were observed according to alcohol sale restrictions during South Africa's COVID-19 lockdown periods. Significantly less trauma cases presented during periods with an alcohol ban compared to periods where alcohol sales were only restricted.

Citation: African Journal of Emergency Medicine https://doi.org/10.1016/j.afjem.2021.08.001

Assault-injured youth in the emergency centres of Khayelitsha, South Africa: A prospective study of recidivism and mortality.

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Introduction: Violence is a major cause of death worldwide among youth. The highest mortality rates from youth violence occur in low and middle-income countries (LMICs). We sought to identify risk factors for violent reinjury and emergency centre (EC) recidivism among assault-injured youth in South Africa.

Methods: A prospective follow up study of assault injured youth and controls ages 14–24 presenting for emergency care was conducted in Khayelitsha, South Africa from 2016 to 2018. Sociodemographic and behavioral factors were assessed using a questionnaire administered during the index EC visit. The primary outcomes were return EC visit for violent injury or death within 15 months. We used multivariable logistic regression to compute adjusted odds ratios (OR) and 95% confidence intervals (CI) of associations between return EC visits and key demographic, social, and behavioral factors among assault-injured youth.

Results: Our study sample included 320 assault-injured patients and 185 non-assault-injured controls. Of the assault-injured, 80% were male, and the mean age was 20.8 years. The assault-injured youth was more likely to have a return EC visit for violent injury (14%) compared to the control group (3%). The non-assault-injured group had a higher mortality rate (7% vs 3%). All deaths in the control group were due to end-stage HIV or TB-related complications. The strongest risk factors for return EC visit were prior criminal activity (OR = 2.3, 95% CI = 1.1–5.1), and current enrollment in school (OR = 2.1, 95% CI = 1.0–4.6). Although the assault-injured group reported high rates of binge drinking (73%) at the index visit, this was not found to be a risk factor for violence-related EC recidivism.

Discussion: Our findings suggest that assault-injured youth in an LMIC setting are at high risk of EC recidivism and several sociodemographic and behavioral factors are associated with increased risk. These findings can inform targeted intervention programs.

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Trauma patients at the Helderberg District Hospital emergency centre, South Africa: A descriptive study.

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Introduction: Trauma is a substantial component of South Africa's burden of disease. District hospitals provide primary trauma care for a large proportion of this trauma burden, although most studies are in specialised or tertiary settings. The aim was to evaluate the profile of physical trauma patients attending the emergency centre at Helderberg District Hospital, Cape Town.

Methods: An observational descriptive study was conducted between 1 January and 30 April 2019. Patients with trauma were identified from a register and systematically sampled to achieve a sample size of 377. Retrospective data from medical records was collected and analysed in the Statistical Package for Social Sciences.

Results: Of the 14,873 patients attending the emergency centre 24.6% were trauma related and 381 folders were analysed. Of these patients 30.4% were female and 69.6% male with an average age of 27.8 years. Over 60% of patients used an ambulance to get to the hospital. Sundays were the busiest days with 23.9% of all cases. Intentional trauma accounted for 45.4% of cases and accidental injuries 49.1%. The commonest mechanisms were sharp injuries (27.6%), falls (22.0%) and blunt trauma (19.4%). Intentional trauma made up more than half of all trauma in males, was more prevalent than accidental trauma between 20 and 60 years and resulted in a higher proportion of admissions.

Conclusion: There were high levels of intentional trauma, especially involving young males over the weekend, mostly with sharp objects. This trauma burden resulted in high numbers of admissions and transfer to tertiary hospitals. Family physicians and other generalists need to be well trained in trauma resuscitation and stabilisation. District hospital need to be appropriately equipped and supplied to manage trauma. Further research is needed to identify underlying modifiable factors that can be addressed through community-orientated interventions.

Citation: African Journal of Emergency Medicine. 2021 Jun 1;11(2):315-20.

A living WHO guideline on drugs to prevent COVID-19.

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Clinical question: What is the role of drugs in preventing covid-19?

Why does this matter: There is widespread interest in whether drug interventions can be used for the prevention of covid-19, but there is uncertainty about which drugs, if any, are effective. The first version of this living guideline focuses on the evidence for hydroxychloroquine. Subsequent updates will cover other drugs being investigated for their role in the prevention of covid-19.

Recommendation: The guideline development panel made a strong recommendation against the use of hydroxychloroquine for individuals who do not have covid-19 (high certainty).

How this guideline was created: This living guideline is from the World Health Organization (WHO) and provides up to date covid-19 guidance to inform policy and practice worldwide. Magic Evidence Ecosystem Foundation (MAGIC) provided methodological support. A living systematic review with network analysis informed the recommendations. An international guideline development panel of content experts, clinicians, patients, an ethicist and methodologists produced recommendations following standards for trustworthy guideline development using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach.

Understanding the new recommendation: The linked systematic review and network meta-analysis (6 trials and 6059 participants) found that hydroxychloroquine had a small or no effect on mortality and admission to hospital (high certainty evidence). There was a small or no effect on laboratory confirmed SARS-CoV-2 infection (moderate certainty evidence) but probably increased adverse events leading to discontinuation (moderate certainty evidence). The panel judged that almost all people would not consider this drug worthwhile. In addition, the panel decided that contextual factors such as resources, feasibility, acceptability, and equity for countries and healthcare systems were unlikely to alter the recommendation. The panel considers that this drug is no longer a research priority and that resources should rather be oriented to evaluate other more promising drugs to prevent covid-19.

Updates: This is a living guideline. New recommendations will be published in this article and signposted by update notices to this guideline.

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Evaluation of patient characteristics, management and outcomes for COVID-19 at district hospitals in the Western Cape, South Africa: descriptive observational study.

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Objectives: To describe the characteristics, clinical management and outcomes of patients with COVID-19 at district hospitals.

Design: A descriptive observational cross-sectional study.

Setting: District hospitals (4 in metro and 4 in rural health services) in the Western Cape, South Africa. District hospitals were small (<150 beds) and led by family physicians.

Participants: All patients who presented to the hospitals' emergency centre and who tested positive for COVID-19 between March and June 2020.

Primary and secondary outcome measures: Source of referral, presenting symptoms, demographics, comorbidities, clinical assessment and management, laboratory turnaround time, clinical outcomes, factors related to mortality, length of stay and location.

Results: 1376 patients (73.9% metro, 26.1% rural). Mean age 46.3 years (SD 16.3), 58.5% females. The majority were self-referred (71%) and had comorbidities (67%): hypertension (41%), type 2 diabetes (25%), HIV (14%) and overweight/obesity (19%). Assessment of COVID-19 was mild (49%), moderate (18%) and severe (24%). Test turnaround time (median 3.0 days (IQR 2.0-5.0 days)) was longer than length of stay (median 2.0 day (IQR 2.0-3.0)). The most common treatment was oxygen (41%) and only 0.8% were intubated and ventilated. Overall mortality was 11%. Most were discharged home (60%) and only 9% transferred to higher levels of care. Increasing age (OR 1.06 (95% CI 1.04 to 1.07)), male (OR 2.02 (95% CI 1.37 to 2.98)), overweight/obesity (OR 1.58 (95% CI 1.02 to 2.46)), type 2 diabetes (OR 1.84 (95% CI 1.24 to 2.73)), HIV (OR 3.41 (95% CI 2.06 to 5.65)), chronic kidney disease (OR 5.16 (95% CI 2.82 to 9.43)) were significantly linked with mortality ($p<0.05$). Pulmonary diseases (tuberculosis (TB), asthma, chronic obstructive pulmonary disease, post-TB structural lung disease) were not associated with increased mortality.

Conclusion: District hospitals supported primary care and shielded tertiary hospitals. Patients had high levels of comorbidities and similar clinical pictures to that reported elsewhere. Most patients were treated as people under investigation. Mortality was comparable to similar settings and risk factors identified.

Citation: BMJ Open 2021;11:e047016. doi:10.1136/ bmjopen-2020-047016

HEALTH SERVICES AND HEALTH SYSTEMS RESEARCH

Family physicians gather during the COVID-19 pandemic for a capacity building workshop at the Division.

Innovation in primary health care responses to COVID-19 in Sub-Saharan Africa.

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Background: In May 2020, the African Journal of Primary Health Care and Family Medicine invited submissions on lessons learnt from responses to the COVID-19 pandemic from primary care providers in Africa. This included descriptions of innovations and good practices, the management of COVID-19 in district health services and responses of communities to the outbreak.

Aim: To synthesise the lessons learnt from the COVID-19 pandemic in the Africa region. Methods: A thematic document analysis was conducted on twenty-seven short report publications from Botswana, Ghana, Nigeria, South Africa, Uganda and Zimbabwe.

Findings: Eight major themes were derived from the data: community-based activities; screening and testing; reorganisation of health services; emergency care for COVID-19; maintenance of essential nonCOVID-19 health services; caring for the vulnerable; use of information technology; and reframing training opportunities. Community health workers were a vital community resource, delivering medications and other supplies to homes, as well as following up on patients with chronic conditions. More investment in community partnerships and social mobilisation was proposed. Difficulties with procurement of test kits and turn-around times were constraints for most countries. Authors described how services were reorganised for focused COVID-19 activities, sometimes to the detriment of essential services and training of junior doctors. Innovations in use of internet technology for communication and remote consultations were explored. The contribution of family medicine principles in upholding the humanity of patients and their families, clear leadership and planning, multidisciplinary teamwork and continuity of care was emphasised even in the context of providing critical care.

Conclusions: The community-orientated primary care approach was emphasised as well as long-term benefits of technological innovations. The pandemic exposed the need to deliver on governmental commitments to strengthening primary health care and universal health coverage.

Citation: Primary Health Care Research & Development 22(e44): 1–11. doi: 10.1017/S1463423621000451

Strengthening primary health care in the COVID-19 era: A review of best practices to inform health system responses in low-and middle-income countries.

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Background: Amid massive health system disruption induced by the coronavirus disease 2019 (COVID-19) pandemic, the need to maintain and improve essential health services is greater than ever. This situation underscores the importance of the primary health care (PHC) revitalization agenda articulated in the 2018 Astana Declaration. The objective was to synthesize what was already known about strengthening PHC in low- and middle-income countries prior to COVID-19.

Methods: We conducted a secondary analysis of eleven reviews and seven evidence gap maps published by the Primary Health Care Research Consortium in 2019. The 2020 World Health Organization Operational framework for primary health care was used to synthesize key learnings and determine areas of best practice. A total of 238 articles that described beneficial outcomes were analysed (17 descriptive studies, 71 programme evaluations, 90 experimental intervention studies and 60 literature reviews).

Results: Successful PHC strengthening initiatives required substantial reform across all four of the framework's strategic levers – political commitment and leadership, governance and policy, funding and allocation of resources, and engagement of communities and other stakeholders. Importantly, strategic reforms must be accompanied by operational reforms; the strongest evidence of improvements in access, coverage and quality related to service delivery models that promote integrated services, workforce strengthening and use of digital technologies.

Conclusions: Strengthening PHC is a "hard grind" challenge involving multiple and disparate actors often taking years or even decades to implement successful reforms. Despite major health system adaptation during the pandemic, change is unlikely to be lasting if underlying factors that foster health system robustness are not addressed.

Citation: WHO South-East Asia Journal of Public Health. 2021 Feb 1;10(3):6.

Establishing a South African national framework for COVID-19 surgical prioritisation.

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Background: Since the start of the COVID-19 pandemic, surgical operations have been drastically reduced in South Africa (SA). Guidelines on surgical prioritisation during COVID-19 have been published, but are specific to high-income countries. There is a pressing need for context-specific guidelines and a validated tool for prioritising surgical cases during the COVID-19 pandemic. In March 2020, the South African National Surgical Obstetric Anaesthesia Plan Task Team was asked by the National Department of Health to establish a national framework for COVID-19 surgical prioritisation.

Objectives: To develop a national framework for COVID-19 surgical prioritisation, including a set of recommendations and a risk calculator for operative care.

Methods: The surgical prioritisation framework was developed in three stages: (i) a literature review of international, national and local recommendations on COVID-19 and surgical care was conducted; (ii) a set of recommendations was drawn up based on the available literature and through consensus of the COVID-19 Task Team; and (iii) a COVID-19 surgical risk calculator was developed and evaluated.

Results: A total of 30 documents were identified from which recommendations around prioritisation of surgical care were used to draw up six recommendations for preoperative COVID-19 screening and testing as well as the use of appropriate personal protective equipment. Ninety-nine perioperative practitioners from eight SA provinces evaluated the COVID-19 surgical risk calculator, which had high acceptability and a high level of concordance (81%) with current clinical practice.

Conclusions: This national framework on COVID-19 surgical prioritisation can help hospital teams make ethical, equitable and personalised decisions whether to proceed with or delay surgical operations during this unprecedented epidemic.

Citation: S Afr Med J. https://doi.org/10.7196/SAMJ.2021.v111i5.15603

Family Physician Perceptions of Climate Change, Migration, Health, and Healthcare in Sub-Saharan Africa: An Exploratory Study.

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Background: Although family physicians (FPs) are community-oriented primary care generalists and should be the entry point for the population's interaction with the health system, they are underrepresented in research on the climate change, migration, and health(care) nexus (hereafter referred to as the nexus). Similarly, FPs can provide valuable insights into building capacity through integrating health-determining sectors for climate-resilient and migration-inclusive health systems, especially in Sub-Saharan Africa (SSA). Here, we explore FPs' perceptions on the nexus in SSA and on intersectoral capacity building.

Methods: Three focus groups conducted during the 2019 WONCA-Africa conference in Uganda were transcribed verbatim and analyzed using an inductive thematic approach.

Results: Participants' perceived interactions related to (1) migration and climate change, (2) migration for better health and healthcare, (3) health impacts of climate change and the role of healthcare, and (4) health impacts of migration and the role of healthcare were studied. We coined these complex and reinforcing interactions as continuous feedback loops intertwined with socio-economic, institutional, and demographic context. Participants identified five intersectoral capacity-building opportunities on micro, meso, macro, and supra (international) levels: multi-dimensional and multi-layered governance structures; improving FP training and primary healthcare working conditions; health advocacy in primary healthcare; collaboration between the health sector and civil society; and more responsibilities for high-income countries.

Conclusions: This exploratory study presents a unique and novel perspective on the nexus in SSA which contributes to interdisciplinary research agendas and FP policy responses on national, regional, and global level.

Citation: Int. J. Environ. Res. Public Health 2021, 18, 6323. https:// doi.org/10.3390/ijerph18126323

Midwives' self-perceived confidence in their knowledge and skills in Kenya: An observational cross-sectional study.

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Background: Midwives' confidence in the requisite knowledge, skills and behavior acquired during training is essential for high-quality pregnancy and childbirth care and positive experiences by women and newborns.

Purpose: Assess the midwives' self-perceived confidence in their knowledge and skills based on ICM competencies in Kenya.

Methods: An observational cross-sectional study among 576 midwives from 31 public hospitals using a self-administered questionnaire. Confidence categorized as low, moderate or high and relationships between confidence and midwives' characteristics tested by Kruskal-Wallis tests.

Findings: A total of 495 (85.9%) midwives participated in the study with a median age of 37.0 (32.0-43.0). Most of the midwives were diploma nurse/midwives (295, 59.6%) followed by degree nurse/midwives (156, 31.5%) and diploma midwives (44, 8.9%). Majority of the midwives had high confidence in knowledge (57.2%) and skills (62.0%) in the labor and birth domain while the general competency domain had the least confidence in knowledge (30.5%) and skills (36.6%). Male midwives reported high confidence in skills compared to females (57.7% vs 45.0%, P=0.036) with no differences in knowledge (P=0.148).

Midwives in tertiary hospitals reported higher confidence in knowledge and skills compared to those at county/sub-county hospitals (P<0.001)

There were significant differences between midwives' qualifications and confidence in knowledge on the general competency domain (P=0.02) and skills in the labor and birth domain (P=0.017).

Conclusions: Labour and childbirth domain and working in tertiary facilities were associated with high confidence in knowledge and skills. In-service capacity building opportunities for midwives to build their confidence in obstetric care is needed.

Citation: International Journal of Africa Nursing Sciences (2021), doi: https://doi.org/10.1016/j.ijans.2021.100387

A human resources for health analysis of registered family medicine specialists in South Africa: 2002–19.

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Background: In South Africa, there is a need to clarify the human resources for health policy on family physicians (FPs) and to ensure that the educational and health systems are well aligned in terms of the production and employment of FPs.

Objective: To analyse the human resource situation with regard to family medicine in South Africa and evaluate the requirements for the future.

Methods: A retrospective review of the Health Professions Council of South Africa's (HPCSA) database on registered family medicine practitioners from 2002 until 2019. Additional data were obtained from the South African Academy of Family Physicians and published research.

Results: A total of 1247 family medicine practitioners were registered with the HPCSA in 2019, including 969 specialist FPs and 278 medical practitioners on a discontinued register. Of the 969, 194 were new graduates and 775 from older programmes. The number of FPs increased from 0.04/10 000 population in 2009 to 0.16/10 000 in 2019, with only 29% in the public sector. On average, seven registrars entered each of nine training programmes per year and three graduated. New graduates and registrars reflect a growing diversity and more female FPs. The number of FPs differed significantly in terms of age, gender, provincial location and population groups.

Conclusions: South Africa has an inadequate supply of FPs with substantial inequalities. Training programmes need to triple their output over the next 10 years. Human resources for health policy should substantially increase opportunities for training and employment of FPs.

Citation: Family Practice. 2021 Apr;38(2):88-94.

Alternative mechanisms for delivery of medication in South Africa: A scoping review.

Mash R (rm@sun.ac.za), Christian C, Chigwanda RV.

Background: The number of people in South Africa with chronic conditions is a challenge to the health system. In response to the coronavirus infection, health services in Cape Town introduced home delivery of medication by community health workers. In planning for the future, they requested a scoping review of alternative mechanisms for delivery of medication to patients in primary health care in South Africa.

Methods: Databases were systematically searched using a comprehensive search strategy to identify studies from the last 10 years. A methodological guideline for conducting scoping reviews was followed. A standardised template was used to extract data and compare study characteristics and findings. Data was analysed both quantitatively and qualitatively.

Results: A total of 4253 publications were identified and 26 included. Most publications were from the last 5 years (n = 21), research (n = 24), Western Cape (n = 15) and focused on adherence clubs (n = 17), alternative pick-up-points (n = 14), home delivery (n = 5) and HIV (n = 17). The majority of alternative mechanisms were supported by a centralised dispensing and packaging system. New technology such as smart lockers and automated pharmacy dispensing units have been piloted. Patients benefited from these alternatives and had improved adherence. Available evidence suggests alternative mechanisms were cheaper and more beneficial than attending the facility to collect medication.

Conclusion: A mix of options tailored to the local context and patient choice that can be adequately managed by the system would be ideal. More economic evaluations are required of the alternatives, particularly before going to scale and for newer technology.

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Investigating the effect of the Vula Mobile app on coordination of care and capacity building in district health services, Cape Town: Convergent mixed methods study.

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Background: Coordinating care is a defining characteristic of high quality primary care. Currently, very little is known about coordination of care in South Africa's primary care setting. The Vula Mobile app was introduced in 2018 to assist with referring patients from primary care facilities to the Eerste River District Hospital (ERDH) emergency centre. The aim of this study was to evaluate the use of the app and its effect on coordination of care and capacity building of staff.

Methods: Convergent mixed methods were used with quantitative data collected from hospital records and the Vula Mobile database, and with qualitative data collected from health professionals in primary care and the district hospital.

Results: Out of 13 321 patients seen in the emergency centre of the district hospital over the 6-month study period, only 1932 (14.5%) of the patients were referred with Vula. Most of these referrals were accepted (85.5%). Sometimes, advice was given to (35.0%) or additional information was requested (27.4%) from the referring doctor. There was little use of Vula in providing other feedback (0.6%). The introduction of the Vula app led to a decrease in the number of inappropriately referred patients (6.7% to 4.2%, p = 0.004). Doctors using the Vula app perceived that it improved care coordination and had the potential for useful feedback.

Conclusion: Vula improved coordination of patients referred from primary care facilities in the Metro Health Services to the district hospital, but missed the opportunity to support continuing professional development and learning. Utilisation of the Vula app should be increased and its potential to provide feedback should be enhanced. Attention should be given to reducing the number of patients self-referred or referred without using the Vula app.

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Emergency Clinician Output in a District Hospital Emergency Centre: A cross-sectional analysis.

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Introduction: Appropriate and efficient staffing is a cornerstone of emergency centre performance. There is however a paucity of literature describing clinician output in low- and middle-income countries with current staffing models based on anecdotal evidence. This study aimed to assess clinician output at a district level emergency centre, and how it varied depending on shift, clinician, and workload factors.

Methods: We conducted a retrospective cross-sectional study using an existing electronic patient registry, to determine the patients consulted per hour (PPH) during each clinician shift and how this is affected by various clinician, shift, and workload factors. Data was collected over three non-contiguous randomly selected four-week cycles from Mitchells Plain Hospital's electronic patient registry. Associations between PPH and various factors were assessed using the ANOVA and post-hoc adjustments where appropriate. The correlation between PPH and workload metrics was calculated with the Pearson's Rank correlation test. Statistical significance was defined as $p<0.05$

Results: A total of 1 289 clinician shifts were analysed with an overall PPH of 0.7. A significant association between PPH and shift type (p 0.021), clinician category ($p<0.001$) and cumulative shifts ($p<0.001$) were shown. There was a decline in clinician output during a shift and output was significantly decreased by the number of boarders in the emergency centre, but increased with higher numbers of patients waiting at the start of the shift.

Conclusion: This study describes a relatively low clinician output as compared to evidence from high-income countries and has highlighted several associations with various shift, clinician, and workload factors. The results from this study will form the basis of quality improvement interventions to improve patient throughput and will inform staff scheduling and surge planning strategies.

A description of the knowledge and attitudes towards bystander CPR amongst participants in a community outreach initiative in Cape Town.

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Introduction: Mortality rates from out-of-hospital cardiac arrest can be reduced by early CPR. A better understanding of the factors that prevent or encourage bystander CPR will assist in tailoring CPR training by community organisations to meet the needs of the communities they serve. The aim of this study was, therefore, to describe the basic CPR knowledge and attitudes towards performing out-of-hospital CPR of laypersons who volunteer for Sisaphila community based CPR courses in Cape Town, South Africa.

Methods: Paper-based surveys were distributed at bystander CPR training events, prior to participants receiving free CPR training. Data captured included participant demographics, indications of prior CPR training, basic knowledge of CPR theory and their attitude towards compression-only versus conventional (mouth-to-mouth) CPR.

Results: Fifty one surveys were completed and captured. Ninety percent of participants were female, and 31% had previously received CPR training. Participants had a low level of baseline CPR knowledge, with only 20% of the participants able to correctly answer 3 out 5 basic questions about CPR. Participants were hesitant to perform CPR including mouth-to-mouth resuscitation on anybody other than a relative, but over a third (36%) were more willing to perform CPR on a family member, 58% were more willing to perform CPR on a friend or colleague, and 66% were more willing to perform CPR on a stranger if compression-only CPR was an option.

Conclusion: We found that South African laypersons have a low level of baseline knowledge of CPR and that they were more willing to perform CPR if hands-only CPR was an option over traditional CPR including mouth-to-mouth breathing, similar to international trends. Our study also indicates that there is a need to regularly retrain those individuals that have had prior CPR training. These findings can assist community based CPR training programmes in their curricular development.

Appropriateness of computed tomography and magnetic resonance imaging scans in a rural regional hospital in South Africa: A 6-year follow-up study.

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Background: Requests for computed tomography (CT) and magnetic resonance imaging (MRI) scans by doctors with different levels of experience have cost and risk implications globally. Evidence-based appropriateness criteria guide doctors to the suitable use of radiology imaging. There are few studies regarding appropriateness of CT requests in the South African (SA) context. Previous research in the Garden Route district of Western Cape Province, SA, evaluated the appropriateness of scans.

Objectives: To review the appropriateness of CT and MRI scans done in a 6-year follow-up study at one facility.

Methods: This was a retrospective descriptive study. All CT and MRI scans performed during October 2018 at George Hospital were classified according to American College of Radiology guidelines as: usually appropriate (UA), might be appropriate (MBA), or not appropriate (NA). Stratified analysis allowed simple statistics and some comparison with the previous study.

Results: A total of 515 CT and MRI scans were included, of which 81.4% were UA, 7.4% MBA and 11.2% NA. Most scans were requested by medical officers (n=255), followed by consultants (n=126) and junior doctors (n=70). Medical officers made the majority of inappropriate requests. Second-year interns requested the lowest number of inappropriate scans, with registrars not requesting any inappropriate scans. Most of the inappropriate scans were requested after hours. Thirty-seven of the 123 (30.1%) after-hours scans were inappropriately requested compared with 21 of 392 (5.4%) scans during normal working hours, which were inappropriate.

Conclusions: Although the majority of scans were being ordered appropriately, pre-authorisation by experienced physicians and incorporation of guidelines would make requests more complete and possibly more appropriate, especially after hours.

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Implementing 'universal' access to antiretroviral treatment in South Africa: A scoping review on research priorities.

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Background: 'Universal' access to antiretroviral treatment (ART) has become the global standard for treating people living with HIV and achieving epidemic control; yet, findings from numerous 'test and treat' trials and implementation studies in sub-Saharan Africa suggest that bringing 'universal' access to ART to scale is more complex than anticipated. Using South Africa as a case example, we describe the research priorities and foci in the literature on expanded ART access.

Methods: We adapted Arksey and O'Malley's six-stage scoping review framework to describe the peer-reviewed literature and opinion pieces on expanding access to ART in South Africa between 2000 and 2017. Data collection included systematic searches of two databases and hand-searching of a sub-sample of reference lists. We used an adapted socio-ecological thematic framework to categorize data according to where it located the challenges and opportunities of expanded ART eligibility: individual/client, health worker–client relationship, clinic/ community context, health systems infrastructure and/or policy context.

Results: We included 194 research articles and 23 opinion pieces, of 1512 identified, addressing expanded ART access in South Africa. The peer-reviewed literature focused on the individual and health systems infrastructure; opinion pieces focused on changing roles of individuals, communities and health services implementers. We contextualized our findings through a consultative process with a group of researchers, HIV clinicians and programme managers to consider critical knowledge gaps. Unlike the published literature, the consultative process offered particular insights into the importance of researching and intervening in the relational aspects of HIV service delivery as South Africa's HIV programme expands.

Conclusions: An overwhelming focus on individual and health systems infrastructure factors in the published literature on expanded ART access in South Africa may skew understanding of HIV programme shortfalls away from the relational aspects of HIV services delivery and delay progress with finding ways to leverage non-medical modalities for achieving HIV epidemic control.

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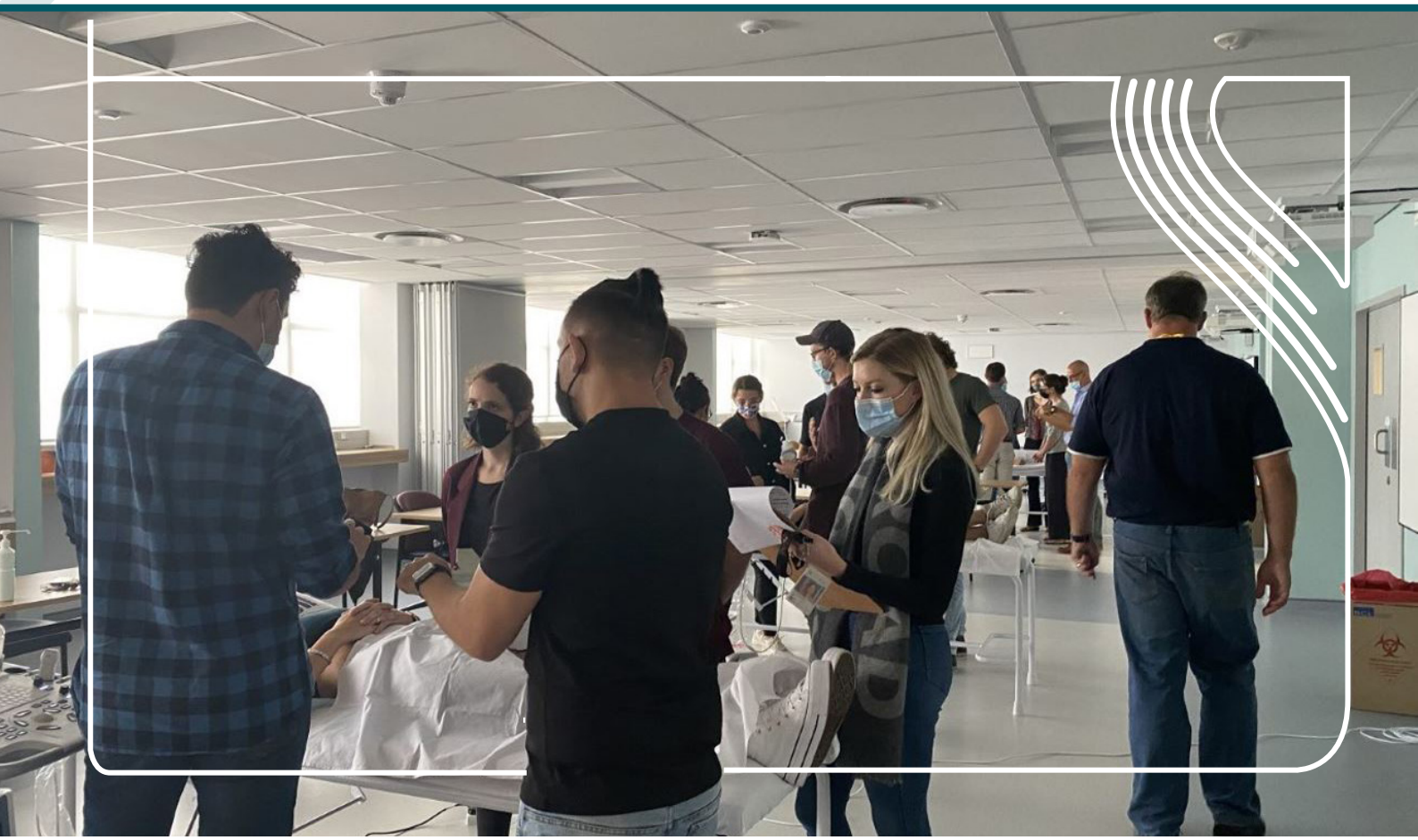

Emergency medicine teaches point of care ultrasound

Associations between psychological distress and facets of mindfulness: Implications for campus-based university wellness services.

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Objectives: To investigate associations between components of psychological distress and five facets of mindfulness (i.e. observing; describing; acting with awareness; non-reactivity; non-judging).

Participants: Students from a university in South Africa (N = 174).

Methods: This cross-sectional study assessed psychological distress and mindfulness using the K10 and Five Facet Mindfulness Questionnaire. Multivariate regression analysis identified associations between psychological distress and facets of mindfulness, controlling for demographics.

Results: Prevalence of psychological distress was 56.9% (95% CI 49.2%–64.4%). Acting with awareness, non-reactivity, and non-judging predicted significantly lower psychological distress, whereas observing and describing did not. Acting with awareness was the only facet of mindfulness that consistently predicted lower levels of negative affect, fatigue, nervousness, and agitation.

Conclusions: Acting with awareness appears to be a key component of psychological wellbeing. To advance theory and practice, future research should consider why and how various facets of mindfulness predict lower psychological distress and its components among university students.

Citation: Burger JW, Bantjes J, Derman W, Whitesman S, Gomez-Ezeiza J. Associations between psychological distress and facets of mindfulness: Implications for campus-based university wellness services. Journal of American college health. 2021 Jun 3:1-0.

When disruption strikes the curriculum: Towards a crisis-curriculum analysis framework.

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Introduction: COVID-19 has severely disrupted health professions training globally. This pandemic has been preceded by several other interferences on a smaller scale, setting the scene for crises in perpetuity. With a reactive stance adopted, these crises may result in rapid shifts to curricula, minimizing the opportunity for thorough planning and critical analyses.

Guidance from literature: Recognizing the limited frameworks available to provide structure to such curricular crises responses, we drew on the literature to develop a crisis-curriculum analysis framework. The work of the SPICES model by Harden et al., the four-dimensional framework by Steketee et al., and Deverell's crisis-induced learning, was used to develop the framework.

Crisis-curriculum analysis framework: The framework provides a structured approach to curriculum analysis in the face of disruption. It is designed to meet the needs of the global health professions education community, currently in the midst of a crisis. Accompanied by a step-wise guideline, this framework is suitable for educators requiring a practically-orientated approach to curriculum analysis.

Conclusion: Recognizing that curriculum analysis is but one part of crisis-management, we argue that this crisis-curriculum analysis framework may align well with strengthening institutional readiness as educators seek to refine and entrench curricular practices adopted during COVID-19.

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An electronic survey of preferred podcast format and content requirements among trainee emergency medicine specialists in four Southern African universities.

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Introduction: Global usage of educational Emergency Medicine (EM) podcasts is popular and ever-increasing. This study aims to explore the desired content, format and delivery characteristics of a potential educational, context specific Southern African EM podcast, by investigating current podcast usages, trends and preferences among Southern African EM registrars of varying seniority.

Methods: We developed an electronic survey - using a combination of existing literature, context-specific specialist-training guidance, and input from local experts – exploring preferred podcast characteristics among EM registrars from four Southern African universities.

Results: The study's response rate was 75%, with 24 of the 39 respondents being junior registrars. Ninety-four percent (94%) of respondents used EM podcasts as an educational medium: 64% predominantly using podcasts to supplement a personal EM study program. The primary mode of accessing podcasts was via personal mobile devices (84%). Additionally, respondents preferred a shorter podcast duration (5–15 min), favoured multimedia podcasts (56%) and showed an apparent aversion toward recorded faculty lectures (5%). Eighty-two percent (82%) of respondents preferred context-specific podcast content, with popular topics including toxicology (95%), cardiovascular emergencies (79%) and medico-legal matters (74%). Just-in-Time learning proved an unpopular learning strategy in our study population, despite its substantial educational value.

Conclusion: Podcast-usage proved to be near-ubiquitous among the studied Southern African EM registrars. Quintessentially, future context-specific podcast design should cater for mobile device-use, shorter duration podcasts, more video content, context-specific topics, and content optimised for both Just-in-Time learning.

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A quantitative study on the perception of international medical students and doctors on an emergency medicine elective in Cape Town.

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Background: International health electives are a popular component of medical students and doctors training, as it has unique learning opportunities both professionally and personally. Emergency medicine has become a growing global speciality, amid opportunities to complete an international health elective either during registrar training or as a medical student/doctor.

Objective: To determine international medical students and doctors' perceptions of an Emergency Medicine elective in two South African hospitals within the Cape Town Metropolitan region. Methods: An anonymous online questionnaire was sent to participants that completed the Emergency medicine elective from 2016 to 2019 at Tygerberg- and Khayelitsha Hospital. Responses were scored on a 5 point Likert scale (strongly disagree to strongly agree) for both perceived personal and professional development, 5 point rating scale for mentorship and a 10 point rating scale for the overall perception of the elective. Results are presented as percentages or median (25th – 75th percentile).

Results: Of all participants, 104 responded to the survey (18.8%). Participants were mainly from high-income countries of which the U.K. (20.4%), U.S.A.(17.5%), and Canada(17.5%) formed the larger part. The median (25th-75th percentile) age of participants was 28 (25-31) years; 50 (48.5%) were undergraduate students and 43 (41.7%) postgraduate students. Agreement for perceived personal development was 4.0 (3.67-4.38) at Tygerberg hospital and 4.75 (4.13-5.00) at Khayelitsha hospital. Agreement for perceived professional development was 3.69 (3.23-4.05) and 4.27(3.87-4.68), respectively. Overall, participants rated the elective highly and would recommend the elective to future participants.

Conclusion: An international emergency medicine elective in South Africa were deemed valuable and resulted in personal and professional development.

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