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From the Editor . . .

Journal impact factors

Gill Nelson,
Editor-in-Chief

On 5 May 2022, *The Conversation* published an article on assessing research quality,[1] written by Lyn Horn (University of Cape Town) and Lex Bouter (Vrije Universiteit Amsterdam), both of whom are very involved in the topic of research integrity. Without publications in academic journals, researchers struggle to advance their careers, which includes being funded to conduct further research, being promoted within their organisations, and/or being selected into new positions in research institutes and universities. There are several metrics that are used to assess the quality of research, most of which are related to published manuscripts. The most well-known of these is the journal impact factor, and the authors discuss its validity as a measure of quality in *The Conversation*.

The impact factor relates to the journal in which the manuscript has been published, and not to the manuscript itself. It is a *"measure of the frequency with which the 'average article' in a journal has been cited in a particular year or period"*,[2] so it varies from year to year, but usually not by much. More information about the impact factor itself, and how it is calculated, can be found on the Clarivate Analytics website (previously called The Institute for Scientific Information (ISI)).[2] In a nutshell, the more papers that are published in a journal, the more often that journal will be included in the citations in subsequent papers, resulting in a larger impact factor for the journal.

Journal impact factors vary widely, from extremely high to below 1. Journals with high impact factors include *CA: A Cancer Journal for Clinicians* (508.702), and some that are more familiar to us, such as *The New England Journal of Medicine* (91.253) and *The Lancet* (79.323). Because occupational health is a relatively small field of research, papers may not be cited as often as those about cancer, for example, and this is reflected in the impact factors. Occupational health journals fall under the category 'Public Health, Environmental and Occupational Health'. The journal in this category with the highest impact factor for 2020 is *MMWR Surveillance Summaries* (58.769), while the journal with the lowest impact factor is *Sante Publique* (0.203). The occupational health journal ranked first in this category is *Occupational and Environmental Medicine*, with an impact factor of 4.402, followed by *International Archives of Occupational and Environmental Health* (3.015). The impact factors for these and other journals can be found on the Clarivate website.[3]

Not all journals have impact factors, and this includes *Occupational Health Southern Africa*. While this is our goal – because an impact factor equates to international recognition – the process is arduous, as described by Falkowska (2012).[4] A journal must first be submitted for Clarivate Analytics review. If it is accepted, the journal will receive an impact factor only three years later. Only 10–12% of the 2 000-odd journals that are submitted annually are accepted. If the journal is rejected, it can only be resubmitted after a further 2–3 years.

There are several criteria that must be met before a journal is accepted by Clarivate Analytics. First, publishing standards need to be adhered to, such as publishing each issue on time, and following international editorial conventions. *Occupational Health Southern Africa* has appropriate publishing standards, being on the International Committee of Medical Journal Editors (ICMJE) website list of journals following the Committee's recommendations for the conduct, reporting, editing and publication of scholarly work in medical journals. Other publishing standards include having cited references and being peer reviewed. Second, editorial content needs to *"have unique features and be distinguished from other journals in the field"*. Third, international diversity is important. Authors, editors, and editorial advisory board members should be located around the world. That said, Clarivate Analytics also includes the best regional journals in its database. Last, the Committee checks for citations to the journal itself in other journals, self-citations, and other issues related to citations.

While impact factors and other publishing metrics are considered by many to be useful objective measures of research quality, they have several downfalls. The 'quantity over quality' approach has led to *"questionable research practices"*,[1] such as 'salami slicing' and duplicate publication, as described in our policy on publication misconduct.[5] Horn and Bouter warn about predatory journals and the pressure to *"cut corners"* in research, which can compromise research quality, and affect the very people who should, ideally, benefit from the research.

For the foreseeable future, however, impact factors and other metrics that quantitatively measure research are here to stay.

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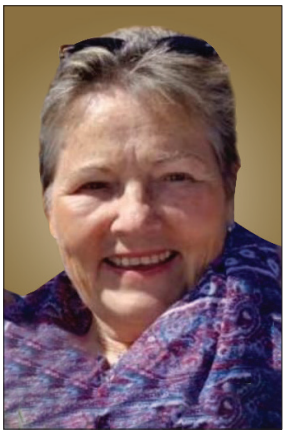
Lee Baker: 30 December 1952–1 May 2022

Mary Ross: Honorary life member of MMPA, SASOM, and SASTM
e-mail: profmaryross@yahoo.com

Our esteemed colleague, friend and mentor, Lee Baker, passed away on Sunday 1 May 2022, after a life of service to the health profession and public, both locally and internationally.

Lee qualified as a pharmacist at the Witwatersrand College for Advanced Technical Education in 1975, and was jointly awarded the Noristan prize for the 'Best pharmaceutics project in South Africa'. She worked as a medicine information pharmacist from the 1980s. I first had the privilege of benefitting from her extensive pharmaceutical knowledge for the public immunisation and malaria services when she worked for the provincial pharmaceutical service. Lee founded the Amayeza Information Services in 2001, shortly after the Travel Medicine course was established at the University of the Witwatersrand, and she soon became very involved with both the course and the South African Society of Travel Medicine (SASTM). Lee and her Amayeza team have been an invaluable 'go to' resource for health professionals in the public and private health sectors for both reactive and proactive pharmaceutical advice. She retired from heading Amayeza at the end of March 2022.



Lee Baker

Lee's achievements are too numerous to do justice to them here. One of the highlights for me was her active involvement in the development of the discipline of travel medicine, including internationally, where she was a co-founder of the Pharmacy Group of the International Society of Travel Medicine (ISTM). At home, Lee was President of SASTM for five years until October 2020, during which time she led the development of formal arrangements with the University of the Witwatersrand for the certificate of competence in Travel Medicine.

Over her entire career, Lee lectured extensively to the medical and pharmaceutical professions, presented papers at both local and international conferences, published scientific manuscripts, and edited a number of books. Her experience and expertise in the field of malaria pharmaceutics were recognised by her appointment to the South African Malaria Elimination Committee (SAMEC) and her involvement in compiling the current malaria guidelines on treatment and prevention. Her invited guest editorial in the *South African Medical Journal* in 2015, 'Vaccination saves lives – dare we allow the anti-vaccine lobbyists to prevent it?', is particularly pertinent in this challenging era of COVID-19, which took Lee from us, despite her being fully vaccinated.

Our condolences go out to her husband, Errol, their four children and nine grandchildren, and all those who knew her and experienced her wealth of knowledge and generosity.

Rest in peace, Lee, we shall all miss you.

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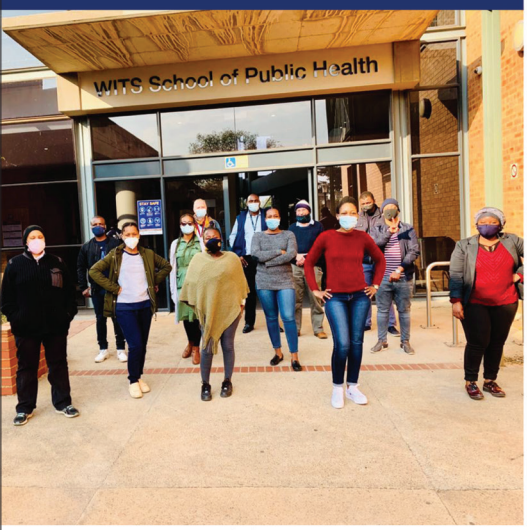

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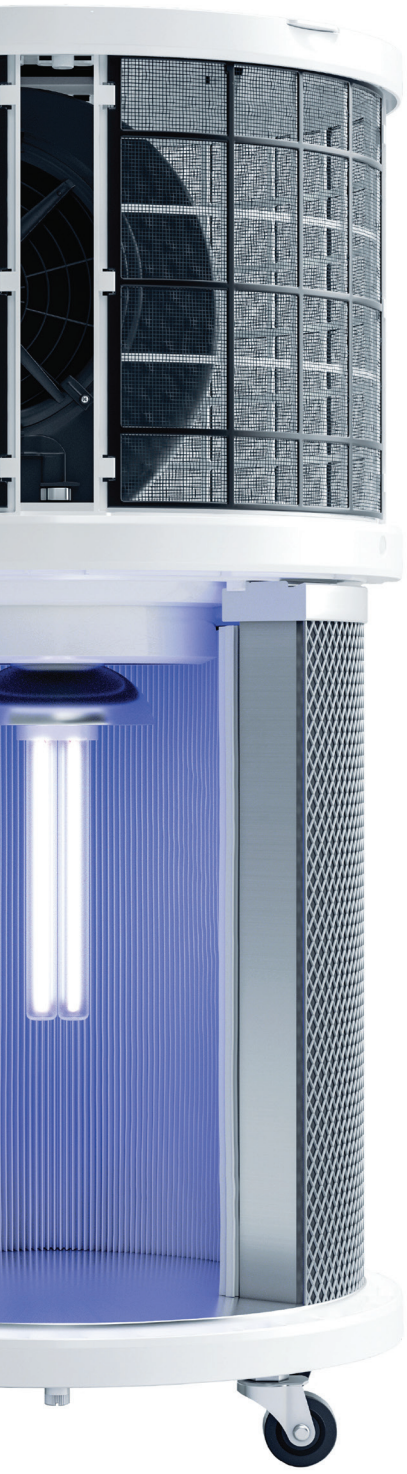

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Views of frontline service providers on the accreditation of occupational health services in South Africa

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ABSTRACT

Background: In South Africa, occupational health services are delivered in a fragmented and complex environment. There is, however, a global emphasis on high-quality, universal occupational health coverage.

Objective: To describe occupational health practitioners' perceptions of the accreditation of occupational health services.

Methods: We used a mixed methods approach, which combined a self-administered web-based survey of 475 occupational health nurses and 11 semi-structured focus group discussions, which included a broad selection of occupational health stakeholders.

Results: The majority of respondents supported the statutory accreditation of healthcare services for workers, provided that a phased approach is used. Challenges that need to be addressed for a successful and sustainable accreditation system include the current lack of national standards for occupational health, human resource shortages, potentially high costs of accreditation, and the suboptimal and fragmented governance of occupational health services.

Conclusion: The majority of respondents were of the opinion that statutory accreditation of occupational health services will improve the quality of service delivery. However, prerequisites for successful and sustainable implementation of accreditation include improved collaboration between Government departments, coalition building with all stakeholders, the development of specific standards against which a service can be assessed, and education and training of occupational health practitioners to meet the established standards.

INTRODUCTION

Responding adequately to globalisation, the changing nature of work and the need to achieve social sustainability requires the development and provision of quality occupational health services (OHSs), aligned with international standards and guidelines to ensure the health and wellbeing of workers.[1-3] Convention No. 161 of the International Labour Organization (ILO) defines OHSs as *"services entrusted with essentially preventive functions and responsible for advising the employer, the workers and their representatives on the requirements for establishing and maintaining a safe and healthy working environment, which will facilitate optimal physical and mental health in relation to work, and the adaptation of work to the capabilities of workers in the light of their state of physical and mental health"*.[4]

Occupational health services play an important role in the prevention and control of occupational injuries and diseases, as well as occupational rehabilitation. However, there is global recognition that access to these services is suboptimal.[5,6] Notwithstanding the importance of access to OHSs, there is global recognition that access to quality services is necessary to meet the United Nations' Sustainable Development Goals (SDGs).[7] A critical component of the SDGs is the provision of high-quality care that achieves improved health outcomes, and that is responsive to the needs of people, especially in low- and middle-income countries (LMICs),[7] through all modes of healthcare delivery.

There are numerous approaches to quality improvement that could be implemented at different levels or in different settings. These include regulatory approaches, health professional education, and quality improvement of service delivery.[8,9] Some scholars have argued that an accreditation programme is an important driver for the provision of high-quality care in LMICs because it facilitates the establishment of systems that determine and apply standards, assessment of provider compliance with these standards, and continuous quality improvement in line with changing contexts of service delivery.[10]

Accreditation refers to a formal process by which a recognised body assesses and confirms that a healthcare organisation or establishment meets pre-determined and published standards that are regarded as optimal and achievable.[11] Certification refers to a process by which an authorised body evaluates and recognises either an individual or an organisation as meeting pre-determined requirements or criteria.[11] Although the two terms are often used interchangeably, certification usually refers to a mandatory process for individuals and organisations, whereas accreditation tends to be voluntary and applied only to an organisation.[12] Nonetheless, there is an increased tendency for governments to move away from voluntary independent accreditation in favour of the use of accreditation as an extension of the statutory licensing of institutions.[13,14]

The value of accreditation has been contested[15-17] and studies in LMICs have found that accreditation improves compliance but does not necessarily improve quality of care.[18,19] The arguments in favour of accreditation in healthcare include improvement in quality, safety and clinical performance; enhancement of organisational functioning; development of teamwork; practice reflection beyond just service delivery; and improved compliance with standards.[19-21] The counter-arguments include the costly and bureaucratic nature of the process;

that standards are often inappropriate with inconsistent interpretation from one survey to the next; and that surveyors or accreditors themselves often lack knowledge and understanding of the process.[8,16,22] Despite differing opinions on the benefits of accreditation, it has been demonstrated that where accreditation is implemented, performance improvement is noted,[23,24] and that the process is important for the evolution of healthcare establishments.[22]

In democratic South Africa, occupational health and safety has been identified as a priority area for transformation.[25] Progress has been made in improving occupational health and safety, but significant challenges still remain in many sectors where there are high risks of exposure, human and financial resource constraints, and the lack of a holistic approach to service delivery.[26] Furthermore, OHSs are delivered within a fragmented and complex legislative framework, governance is suboptimal,[27] and key stakeholders perceive the quality of services to be poor,[28] creating a concern about the ability to deliver quality occupational healthcare.

In 2014, the Office of Health Standards Compliance (OHSC) was established through an Act of Parliament as a healthcare quality regulator to protect and promote the health and safety of health service users, through the effective management of patient complaints and the enforcement of compliance to prescribed norms and standards.[29] The OHSC certification process involves the inspection of healthcare establishments against a set of regulated standards that draw from the national core standards (NCSs).[29] Only certified establishments will be able to participate in the National Health Insurance (NHI) system – the vehicle proposed to achieve universal health coverage in South Africa.[30] The process of inspections and certification of healthcare establishments is in its early stages. Occupational health clinics, which deliver healthcare services to workers, have been excluded from the initial phase of inspections and certification, with their inclusion envisaged in the future.

In South Africa, occupational health practitioners (OHPs) are diverse and include doctors, nurses, hygienists, ergonomists, psychologists and toxicologists, amongst others – all with specialised training to deliver OHSs to workers. Doctors and nurses as occupational healthcare providers were the focus of this study. They are critical to the delivery of OHSs in various industries and will play a key role in the implementation of any new accreditation programme. Policy implementation theorists have argued that a more realistic understanding of implementation can be gained by exploring the policy (in this case, accreditation) from the perspective of the frontline service providers (in this case, the doctors and nurses) or street-level bureaucrats (SLBs) (service providers who interact with citizens in the course of their work, and have substantial discretion in the execution of their work).[31] The actions and decisions of frontline service providers influence the nature and direction of policy implementation, as they may support or sabotage the accreditation programme.[31]

This research drew on Michael Lipsky's policy implementation theory of 'street-level bureaucrats' to explore the perceptions of occupational health practitioners (doctors and nurses) on the accreditation of OHSs in South Africa. These perceptions provide insight into the implementation challenges for the future certification of OHSs.

METHODS

A cross-sectional study was conducted in 2014, using a mixed methods approach. Quantitative data were collected through a web-based survey and qualitative data through focus group discussions (FGDs). The study population comprised direct providers of occupational healthcare in South Africa, specifically doctors and nurses involved in OHS delivery. As there was no reliable database of occupational health practitioners in South Africa[32] the membership lists from the two relevant voluntary professional societies, i.e. the South African Society of Occupational Health Nursing Practitioners (SASOHN) and the South African Society of Occupational Medicine (SASOM), were used to identify potential participants. The societies were approached for a list of all members registered on their databases; these practitioners constituted the sampling frame for the survey. The SASOHN 2014 database of 1 292 members was made available after signing a confidentiality and limitation-of-use agreement. The SASOM was not willing to make its database available based on member confidentiality but offered to send the questionnaire to their 791 members. E-mails were sent by the SASOM office administrator who confirmed that, after failed deliveries, the e-mail was successfully delivered to 719 members. In an effort to improve the doctors' response rate, occupational health nurses were encouraged to invite the doctors with whom they worked to participate in the study.

Web-based survey

The survey was designed as a web-based, self-administered questionnaire using REDCap (Research Electronic Data Capture) a secure, web-based application designed to support data capture for research studies[33] Based on the literature review, questions were developed to include sections on socio-demographic information and practitioners' perceptions of accreditation. Various questioning techniques were used in the survey, including dichotomous, multiple-choice, ranking, and rating questions. Participants were presented with a series of comments relevant to the impact of accreditation on healthcare and asked to rate their agreement or disagreement with the statements on a seven-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'. These statements presented both positive and negative impacts of accreditation on healthcare as identified in the literature review. A code book was developed at the time that the questionnaire was developed to facilitate data analysis. The questionnaire was pre-tested with five occupational health nursing practitioners who met the selection criteria but did not participate in the study.

All SASOHN members were sent an initial short message service (sms) to notify them that the survey had been launched and requesting that they verify their contact details. Participants had the option to complete the survey online, using the public link provided or a personalised code that was sent via sms. Weekly reminders were e-mailed and sent via sms to all potential participants who had not completed the survey. Those who declined to participate were asked to answer 'no' in the consent section; this removed them from the reminder list.

Focus group discussions

The purpose of the FGDs was to gather information from various stakeholders regarding their perceptions of the impact and need for accreditation of OHSs in South Africa. An interview guide was developed to ensure that all topics were explored. The guiding questions focused on perceptions of the need to establish an accreditation system for OHSs in South Africa, the impact that an accreditation system might have on OHS delivery, the challenges posed by such a system, and how accreditation could be implemented.

Based on the concentration of major industries, geographical access, and budgetary constraints, FGDs were conducted in three

Table 1. Characteristics of occupational health nurses (N = 475)

Characteristic	n	%
Sector		
Private	423	89.1
Public	33	6.9
Both	19	4.0
Any OH qualification		
Yes	420	88.4
No	55	11.6
Highest OH qualification		
Certificate	122	25.7
Diploma	141	29.7
Degree	154	32.4
Missing	3	0.6
Not applicable	55	11.6
Model of employment		
Corporate employee	128	26.9
Employed by company	149	31.4
Service provider	136	28.6
Self-employed	61	12.8
Missing	1	0.2
Facility type		
Fixed site	380	80.0
Mobile facility	22	4.6
Fixed and mobile	54	11.4
Missing	19	4.0
No. of sites served		
1	225	47.4
2	68	14.3
≥ 3	139	29.3
Missing	43	9.1
No. of workers covered		
< 300	89	18.7
301–500	81	17.1
501–1 000	92	19.4
1 001–3 000	98	20.6
3 001–5 000	32	6.7
> 5 000	52	11.0
Missing	31	6.5
Highest assessment level		
Accreditation	94	19.8
Award system	156	32.8
Peer review	43	9.1
Customer survey	27	5.7
Self-assessment	2	0.4
No assessment	116	24.4
Missing	37	7.8

South African provinces, viz. Gauteng, KwaZulu-Natal and the Western Cape. The inclusion criterion for participation in the FGDs was occupational health expertise or professional interest in occupational health, which ensured broad representation from professional bodies, trade unions, current occupational health practitioners, and employers from a range of industries. Organisation of focus groups was based on homogenous representation in occupational health, e.g. groups of doctors, nurses, or employers, to allow a deep exploration of each group's perceptions. Potential participants were sent e-mails requesting their participation. If they agreed to participate, a date and time for the FGD were communicated to them. One researcher (KEM) conducted 11 FGDs in the provinces of KwaZulu-Natal (n = 2), Western Cape (n = 2) and Gauteng (n = 7), comprising 69 participants from various stakeholder groups. The duration of each focus group was approximately one hour, but varied depending on the number of, and discussion among, participants.

The University of the Witwatersrand's Human Research Ethics Committee (Medical) provided ethical approval for the study (certificate no. M140442). Standard ethical procedures were adhered to, including full disclosure through information sheets, informed consent to record and participate in the focus groups and to complete the survey, and assurance of confidentiality. Anonymity was not possible for the members of the focus groups, but all participants were requested to keep information confidential.

Data management and analysis

Survey responses were captured directly into REDCap. All survey data were analysed using STATA® 14. Frequency tabulations were performed to describe respondents' socio-demographic characteristics and responses to the questions on perceptions of accreditation. Due to the poor response rate, the Likert scale categories were reduced from seven to three, i.e. 'disagree', 'neutral' and 'agree'. Cronbach Alpha coefficients were used to determine validity and reliability of the Likert scales. Scores of 0.82 and 0.90 were obtained for validity and reliability, respectively, indicating that the scales had high internal consistency. Interviews were digitally recorded, transcribed verbatim, and reviewed for accuracy. The FGD data were analysed using thematic content analysis. The survey data on accreditation were integrated with responses from the FGDs.

RESULTS

Survey responses

The survey response rate was 36.8% (475/1 292) for nurses and 2.7% (21/791) for doctors, with an overall response rate of 23.8% (496/2 083). The low response rate from doctors (n = 21) resulted in their exclusion from the analysis.

The median age of the nurses was 50 years (29 to 70 years). The median duration of occupational health experience for the nurses who responded (n = 472) was 14 years (< 1–40 years). Table 1 shows the demographic profile of the respondents. The majority of nurses (88.4%) reported having a post-basic qualification in occupational health nursing, ranging from a certificate to a doctoral degree. Furthermore, respondents were employed predominantly through OHSs in the private sector (89.1%). Respondents described various models of service delivery, with the majority working in fixed-site facilities (80.0%). More than half the respondents (67.8%) reported experience of some form of OHS assessment, of which 32.8% reported participation in an award system, while 19.8% experienced assessment for accreditation.

As shown in Table 2, the majority of study participants (82.5%) were of the opinion that OHSs should be subjected to accreditation as a statutory requirement (63.0%); that accreditation should be phased in over a two-year period (51.8%); that facilities should be reassessed

every two years (33.1%); and that an achieved accreditation status should be valid for two years (34.5%). Almost half of those who responded were of the opinion that the National Institute for Occupational Health (NIOH), an internationally recognised institute to support OHSs in South (and southern) Africa, should govern the accreditation process (38.1%). Respondents believed that workers would benefit most from accreditation.

The Likert scale results are presented in Table 3. Sixty respondents did not answer this section of the survey. The majority of participating nurses generally agreed with the statements regarding the potential positive impact of OHS accreditation. The majority also agreed that accreditation could improve the quality of OHSs (92.1%), provide a database to identify preferred service providers (90.1%), and demonstrate that service providers comply with recognised standards (93.7%). The responses to negative impact questions in the survey were more evenly distributed between 'agree', 'disagree', and 'neutral' categories. Two-thirds of the participants (67.0%) agreed that the lack of understanding of how to implement and comply with accreditation programmes makes participation difficult.

Themes emerging from focus group discussions

The broad themes that emerged from the thematic content analysis of the FGDs were the perceived value of OHS accreditation, implementation challenges, and the gap between accreditation and implementation.

Perceived value of OHS accreditation

Participants were of the opinion that statutory accreditation would improve the quality of OHSs through the identification of weaknesses in service delivery, the provision of opportunities for continuous improvement, the standardisation of services aligned to minimum standards of performance, the forcing of non-compliant services to improve their quality or cease operating, and by stimulating a proactive approach to quality OHS delivery. Participants indicated that the current suboptimal governance of OHS delivery had led to scant focus on the quality of services, as practitioners were able to practise with no perceived consequences for poor service delivery. As stated by one occupational health nursing practitioner (OHNP):

> *"There is no control* [referring to OHS delivery]. *Everybody does what they want, and it very much depends on the individual who takes the initiative and says this is what we need to have in place* [referring to quality OHSs], *and sometimes it is driven by the company because they are proactive and they want it* [referring to OHS quality] *to fit in with their quality standards, and other times it's just random…"* (FGD 3, OHNP, Cape Town)

Participants who had previously engaged in some form of external assessment supported accreditation, stating they had experienced the positive impact that external inspections could have on service delivery.

> *"I think all these audits we go through at my company every year keep me on my toes and make me see the need to keep myself up to date. I need to do the correct testing, and keep the records of all hazardous chemicals, and do monitoring."* (FGD 3, OHNP, Cape Town)

Table 2. Nurses' perceptions of accreditation and standards awareness (N = 475)

Question/statement	n	%
OHSs should be accredited		
Yes	392	82.5
No	26	5.5
Missing	57	12.0
Should accreditation be statutory or voluntary?		
Statutory	299	63.0
Voluntary	107	22.5
Missing	69	14.5
Who would benefit most from accreditation?		
Workers	232	48.8
Practitioners	91	19.2
Employers	59	12.4
Regulators	25	5.3
Others	11	2.3
Missing	57	12.0
Who would benefit least from accreditation?		
Others	156	32.8
Regulators	111	23.4
Employers	54	11.4
Practitioners	54	11.4
Workers	43	9.1
Missing	57	12,0
Who should implement OHS accreditation?		
National Institute for Occupational Health	181	38.1
Private organisation	54	11.4
Office of Health Standards Compliance	46	9.7
South African Bureau of Standards	45	9.5
Department of Employment and Labour/ Mineral Resources and Energy	42	8.8
Department of Health	27	5.7
Other	15	3.2
Missing	65	13.7
Frequency of accreditation assessments		
Once-off	11	2.3
Annual	130	27.4
Biennial	157	33.1
Triennial	98	20.6
> Triennial	13	2.7
Missing	66	13.9
Validity of accreditation (years)		
1	88	18.5
2	164	34.5
3	132	27.8
No expiry date	24	5.1
Missing	67	14.1
Phasing-in period for accreditation (years)		
2	246	51.8
3	103	21.7
> 3	58	12.2
Missing	68	14.3
Awareness of NCSs		
Yes	309	65.1
No	159	33.5
Missing	7	1.5
NCSs relevant to occupational health		
Yes	206	43.4
No	36	7.6
Unsure	224	47.2
Missing	9	1.9

NCSs: national core standards, OHS: occupational health service

Focus group discussants believed that statutory accreditation with appropriate sanctions is necessary to ensure that all providers are compelled to participate.

Perceived Implementation challenges

Notwithstanding the support for OHS accreditation, participants were of the view that there would be challenges to the implementation and sustainability of the process. As stated by two FGD participants:

> *"The reality is that the International Standards Organization and South African Bureau of Standards audits are very expensive. So, you need someone who has credibility, who has legal standing but at the same time must be cost effective. So that's a challenge as the marginalisation of the small provider is not what we are trying to achieve."* (FGD 2, OHNP, Durban)

> *"I applaud the idea of some sort of regulatory background but it will have to be housed very smartly* [referring to how accreditation should be implemented] *otherwise it is going to be a massive impediment to our country."* (FGD 11, OMP, Johannesburg)

Governance and enforcement of occupational health legislation and regulations were perceived as weak, with no mechanism in place to identify where OHSs had been established. This challenges the ability to identify and audit facilities that are providing OHSs.

> *"What would be the consequence of non-compliance? And how would you regulate non-conformance because if you don't have a system that requires an occupational health clinic is registered somewhere how are you going to know what clinics are actually being established and that would have to be accredited? You need to have some form of regulation before you even start with accrediting services."* (FGD 3, OHNP, Cape Town)

Participants thought that Government departments had a poor track record of intersectoral collaboration and they questioned whether Government had the capacity to manage an accreditation system that requires strong intersectoral collaboration and enforcement.

Resource constraints, especially finance and human resources, were a recurring FGD theme. Participants noted that non-healthcare professionals lack the requisite insight into OHS delivery, but were often used as surveyors by the Department of Employment and Labour. This led to the measurement of legal compliance rather than quality of service, which was unacceptable in their views. The use of specialised occupational health practitioners, experienced and skilled in OHS delivery, to fulfil the auditing function was the preferred method of assessment. Yet, it was acknowledged that removing practitioners from the occupational health clinics would exacerbate a situation predisposed to the use of non-specialised practitioners, due to the paucity of occupational health specialists.

> *"I think the idea of accreditation is fantastic, and the various levels* [referring to a phased-in approach] *would make it work very well. But if we are already short of practitioners to actually run the clinics, where are we going to find competent, skilled, experienced people that are able to do these audits… and that would be a challenge."* (FGD 3, OHNP, Cape Town)

One participant cited an example of company efforts to develop an audit system, which failed due to resource constraints.

> *"It's a big thing to do* [referring to implementing accreditation]… *We spent hours and hours drafting a standard to audit our occupational health clinics and it is not an easy task. We couldn't implement it because we didn't have the resources."* (FGD 8, OMP, Johannesburg)

Occupational health services are viewed by industry as an expense that adds little value, so requiring additional resource outlay may create a situation where services are marginalised.

> *"Some companies already can't survive because the clinic in their eyes doesn't add any monetary value to the company over and above the fact that the people* [referring to workers] *are healthy and they can give an output. But you don't bring in any revenue.*

Table 3. Statements on the impact of accreditation (N = 415)

Statement	Disagree		Neutral		Agree	
	n	%	n	%	n	%
Positive						
Will improve the quality of OHSs	24	5.8	9	2.2	382	92.1
Will provide a database of preferred OHPs with accreditation status	28	6.8	13	3.1	374	90.1
Will decrease risks of injury/illness to workers and practitioners	92	22.2	55	13.3	268	64.6
Will reduce healthcare cost due to improved healthcare delivery	94	22.7	47	11.3	274	66.0
Will improve clinical outcomes for client	33	8.0	23	5.5	359	86.5
Will strengthen workforce confidence in the OHSs	33	8.0	28	6.8	354	85.3
Will acknowledge the OHS performs at a recognised standard	17	4.1	9	2.2	389	93.7
Negative*						
It is too expensive to implement	150	36.4	107	26.0	155	37.6
It is too complicated to follow	202	49.0	92	22.3	118	28.6
Compliance criteria are inappropriate for OHSs	190	46.1	119	28.9	103	25.0
Insufficient resources are made available	139	33.7	91	22.1	182	44.2
Employer sets unrealistic expectations, making participation difficult	164	39.8	111	26.9	137	33.3
Poor understanding makes participation in accreditation programmes difficult	89	21.6	45	10.9	278	67.5

OHP: occupational health practitioner, OHS: occupational health service
* The denominator differs as three participants did not respond

> *…If the requirement is now that you have to pay to be audited that you're compliant, it can have detrimental effect. Because then they* [referring to company owners] *will … give you a nurse for one or two hours* [referring to outsourcing services] *... I definitely do think that it could have a very big detrimental effect on OHS delivery."* (FGD 10, OHNP, Johannesburg)

Participants also indicated that the lack of national standards for OHSs would hamper any accreditation programme, and that there was a need for national occupational health standards that accommodate the complexity of OHS delivery.

Perceived gap between accreditation and implementation

Stakeholders supported the accreditation of OHSs, but indicated that the constraints would need to be overcome to achieve sustainability. Participants agreed that a single Government structure, such as the NIOH, was the appropriate stakeholder to assume this role. However, they noted the current capacity and resource constraints experienced by the NIOH. Many participants were not aware of the OHSC as it was a new body at the time of the study, but the OHSC was considered an option. Nevertheless, some participants thought that the OHSC had insufficient understanding of OHSs and would need to engage experienced occupational health experts to develop sector specific standards and assist with the assessment of facilities.

Study participants proposed a realistic timeframe to align OHS delivery to the national standards and recommended a phased-in approach for accreditation. Such an approach could consist of the development of a register of OHS providers, education and training of OHS practitioners, sufficient opportunity and orientation to comprehend accreditation requirements, opportunities to improve service delivery where necessary, undergo an accreditation assessment, and address any deviations or non-conformances that were identified.

DISCUSSION

Since the advent of democracy, South Africa has undertaken significant healthcare reforms in its move towards improved universal health coverage and quality of care.[34] Occupational health services have lagged behind in these reforms, and years of historical neglect have contributed to underdeveloped and poorly accessible OHSs,[30,35] to the point where the quality of services is deemed suboptimal.[28] South Africa has opted to improve quality of healthcare through the statutory certification of healthcare establishments (HCEs), compliant with recognised NCSs.[36] To date, OHSs have been excluded from this process but their inclusion is envisaged in the future as healthcare establishments other than hospital settings will be included in the certification process. The success of this policy change will be largely determined by the attitudes of OHPs as SLBs. Lipsky describes SLBs as the policy implementers[31] and, within the occupational health context, OHPs are responsible for frontline implementation of OHS policy, and have the ability to embrace or sabotage policy initiatives. The participants in this study, as specialised OHPs with a range of post-basic qualifications and experience in occupational health, expressed overwhelming support of (82.5%), and a positive attitude towards, accreditation of OHSs.

No empirical studies could be found to describe the impact of accreditation on OHSs in LMICs. The limited empirical studies exploring accreditation of OHS delivery in high-income countries have described similar positive impacts on service delivery as explored in this study, although to varying degrees and in limited settings, i.e. improved quality of service.[37,38] In addition, accreditation has seen the removal of non-compliant service providers from service delivery,[39] which could compound an already existing shortage of service providers. It is, however, noted that the accreditation system in the Netherlands was abandoned by Government in 1998 and transferred to a third party due to the lack of ability to enforce inspections, something that South Africa should consider when strengthening governance.

Participants believed that not making accreditation a statutory requirement would undermine the ability to improve the current suboptimal quality and governance of OHSs, and that all services should be assessed for compliance with prescribed standards – not only those that choose to participate in accreditation programmes. This notion is supported by findings that the voluntary uptake of accreditation by OHS providers, globally, has not been realised in the past[40] and may well be perpetuated without statutory enforcement.

The Council for Health Service Accreditation of South Africa (COHSASA) is an independent body for voluntary, fee-for-service accreditation of healthcare services, focusing on hospital and district-level services. A search of their website indicated no accredited occupational health clinics, supporting the notion that voluntary accreditation is not taken up in South Africa.[41] In the United Kingdom, OHS accreditation remains voluntary, with many OHS providers participating in the Safe Effective Quality Occupational Health Service (SEQOHS) accreditation process and using the outcome as a marketing tool to indicate provision of quality services. SEQOHS accreditation has led to increased participation of OHS providers but not all providers participate,[42] supporting the notion that statutory accreditation should be the preferred approach to accreditation.

Further motivation for statutory accreditation stems from the belief that accreditation is essential for achieving the desired reform of OHSs to improve quality and governance. Mate et al. (2014) proposed that quality health coverage will only be realised where mechanisms such as accreditation are successfully implemented, especially in LMICs,[21] supporting the findings of this study. Within the current South African context of low coverage[5] and variable quality of OHSs, the potential positive outcomes of accreditation described above would be viewed as beneficial.

Based on their knowledge and experience in OHS delivery, the participants in this study described challenges that may negatively impact the success of accreditation. The prerequisites for successful implementation of accreditation are the awareness and ability to address these challenges effectively. Examples of successful approaches to accreditation in both high-income countries and LMICs can be drawn from studies of accreditation in non-occupational healthcare environments[21,43,44] where perceived challenges have been effectively managed.

The lack of occupational health-specific standards was a dominant concern for both survey participants and focus group discussants, who believed that measuring OHSs against general rather than sector-specific standards would be counterproductive. These are valid sentiments, as research has shown that specific standards are critical to the success of an accreditation programme,[43] and that those developed through consultation with relevant stakeholders are better accepted by service providers.[44] The NCSs in South Africa are not specific to the evaluation of OHSs, but the promulgation of draft norms and standards applicable to other categories of HCEs[45] present an opportunity for the professional organisations (SASOHN and SASOM), as representatives of the SLBs, to collaborate with the OHSC and develop standards specific to the occupational health sector.

Resource constraints (financial and human) pose a significant challenge to the success of accreditation. Currently, OHSs are provided at the discretion of the employer due to the lack of national standards for OHS delivery.[2] Study participants believed that employers often determine the scope of OHSs based on cost, as has been shown in other studies,[46,47] raising the concern that employers may downsize service delivery if additional costs are to be incurred, thereby further reducing the coverage of OHSs. This could be avoided through the cost-effective implementation of a phased approach to accreditation, where service providers are given the opportunity to evolve their services and understanding of accreditation requirements, which lends support to the notion of adapting the NCSs through the OHSC to promote cost-effective accreditation. This perception was motivated by participants' concerns that terminating available services (despite a poor level of quality) for non-compliance to accreditation standards, too hastily, could further marginalise healthcare coverage for vulnerable workers. This perceived marginalisation could be especially true for small- and medium enterprises, which tend to invest little in OHSs.[47] A phased-in approach will allow structures and processes to be established, which will promote improvement in outcomes and quality.[48]

The length of time taken to develop and implement an accreditation programme is typically estimated at 3–5 years.[49] The phased approach allows OHPs to 'ease into' the process, thereby improving the possibility of successful accreditation inspections. Facilities could register and be licensed as OHSs in order to continue offering services while working towards full accreditation status, with a target date for achievement of compliance. Despite the paucity of examples of successful accreditation systems in the occupational health sector,[23,42] the SEQOHS system in the United Kingdom is based on a phased approach where occupational health-specific standards were developed prior to the launching of the programme, surveyors trained, and the system piloted to identify weaknesses.[50] This level of preparation could be a reason that the voluntary uptake of accreditation of OHSs in the United Kingdom is considered a success.

The successful implementation of OHS accreditation is viewed as necessary, and is dependent on the ability of policymakers and stakeholders to collaborate on the introduction of new legislation, changing current enforcement strategies and the rollout of awareness campaigns.[2,15] Intersectoral collaboration, which is deemed inadequate in South Africa,[27] will need to be strengthened in order to enhance success of the accreditation process. The Departments of Employment and Labour, Health, and Mineral Resources and Energy in South Africa are responsible for policy and legislation changes affecting the occupational health and safety sector, but these changes should be effected through collaborative relationships with skilled and experienced stakeholders, i.e. SASOHN and SASOM, whose members' expertise lies in OHS delivery, for effective implementation of change.

Participants were of the opinion that accreditation must be associated with significant consequences for non-compliance, in order to improve quality and ensure participation of all service providers. The deterrent needs to be specific and substantive to be effective[15] and, in the case of OHS providers, the specific deterrence could be an economic incentive through non-sanction of OHSs where certification standards are not achieved.

The NIOH was perceived as being well positioned to assume the lead responsibility for OHS accreditation. However, key informants from the NIOH stated that the Institute lacks the required financial resources necessary to assume this role. Policy initiatives have suggested that the NIOH will receive increased focus as a national occupational health resource in South Africa[51] but it is unclear, at this point, what resources will be allocated to the NIOH to fulfil this function. A practical and cost-effective solution to OHS accreditation is the inclusion of occupational healthcare services into the South African health reforms framework requiring certification, through the OHSC. The following considerations support this notion: all occupational healthcare clinics have been designated as healthcare establishments and should be subjected to the same control as other healthcare establishments; the OHSC is regulated and thus has the necessary legal authority to ensure participation; the required resources to establish the organisation have been made available through the public health sector, i.e. Government, which would reduce the financial impact on the employer; and the assessment system is based on a statutory, phased approach, which would allow OHSs to evolve and meet certification requirements. The professional organisations, through collaboration with the OHSC, could assist with the amendment of existing norms and standards, as discussed, and provide their expertise for the inspection and assessment of OHSs.

Limitations

The study had a number of limitations. Notwithstanding the low response rate to the web-based survey, the findings provide insight into OHPs' attitudes to accreditation of OHSs in South Africa, which are important for the successful implementation of accreditation programmes. The weaknesses in the quantitative methods were strengthened by the qualitative data collected from the FGDs, which provided insight and explanation for the survey responses; and the diverse representation of stakeholders included in the FGDs, which offered a broader understanding of the perceived challenges to the implementation of accreditation.

Although this study focused on a narrow sector of stakeholders in occupational health, the participating doctors, nurses and other stakeholders provide specialised functions in occupational health and safety. The abilities of doctors and nurses to identify early deviations in health are reliant on quality OHSs. The insights gained from this study can be used to work towards the improved quality of OHS delivery and better access of workers to OHSs in South Africa and globally.

CONCLUSION

Occupational health as a basic human right should be accessible to all workers through quality OHSs, ensuring that universal occupational health coverage of all workers is achieved. The statutory accreditation of OHSs, phased in over time, and based on occupational health-specific standards for service evaluation, affordable costing structures, and policy and process awareness training for all OHPs, is deemed necessary to ensure the successful implementation of the accreditation of OHSs. These initiatives are supported by OHPs as policy implementers, and bodes well for the future strengthening of OHSs in South Africa.

KEY MESSAGES

1. Occupational health practitioners support the statutory accreditation of occupational health services because of its potential to improve the quality of service delivery.
2. Adapting South Africa's national core quality standards for occupational health services would be a cost-effective and legally enforced method of achieving quality occupational health services.
3. Improved governance of occupational health service delivery is essential for the delivery of quality occupational health services.

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DECLARATION

The authors declare that this is their own work; all the sources used in this paper have been duly acknowledged and there are no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conception and design of the study: KEM, LCR
Data acquisition: KEM
Data analysis: KEM
Interpretation of the data: KEM, LCR
Drafting of the paper: KEM, LCR
Critical revision of the paper: KEM, LCR

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Work-related psychological distress among teachers in southwest Nigeria: a rural and urban comparison

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ABSTRACT

Background: The jobs of teachers involve high demand and low control, which predisposes them to psychological distress. Differences in the basic infrastructure in rural and urban areas may influence the psychological health status of teachers.

Objectives: We assessed the prevalence of psychological distress and associated work-related factors among secondary school teachers in rural and urban areas of southwest Nigeria.

Methods: A cross-sectional analytical study design was utilised. Teachers from rural (n = 578) and urban (n = 596) areas were selected using multistage sampling. Sociodemographic and occupational characteristics were recorded, and the 12-item General Health Questionnaire (GHQ-12) was used to assess psychological distress, using a cut-off score of ≥ 3 to indicate distress. Data were analysed using SPSS version 23. Chi-square analysis was used to test for differences between categorical variables and Student's t-test was used to check for differences in means. Logistic regression analysis was conducted to determine predictors of psychological distress. Statistical significance was set at 5%.

Results: Rural-based teachers were significantly younger than those in urban locations (p = 0.013), had fewer mean years of work experience (p = 0.043), taught larger class sizes (p < 0.000), had more financial dependants (p = 0.001), and spent less time at work each day (p < 0.000). More rural- than urban-based teachers had other jobs in addition to teaching (p = 0.023). Overall, 38.1% of the teachers were psychologically distressed: 42.7% in rural and 33.6% in urban schools (p = 0.001). Factors associated with psychological distress were being married (p = 0.007), teaching in a public school (p = 0.007), and teaching > 5 subjects (p < 0.001). The adjusted odds of psychological distress were higher in teachers in rural schools (AOR 1.30, 95% CI 1.02–1.67), and in public schools (AOR 1.58, 95% CI 1.19–2.11). The adjusted odds increased by 19% for every additional subject taught, and by 2% for every hour spent teaching.

Conclusion: Teachers in rural schools had more psychological distress than those in urban ones. Distress was associated with both individual and work-related characteristics. Teachers' work conditions in rural schools need to be improved to provide an incentive for them to work and remain in remote areas.

INTRODUCTION

Work has been defined as an activity in which one exerts sustained mental or physical efforts to perform and overcome obstacles to achieve objectives or results.[1] The interaction between work and mental health is embodied in the World Health Organization (WHO) definition of mental health, as a state of wellbeing in which every individual realises his or her potential and can cope with the normal stresses of life while working productively, and can contribute to his or her community.[2,3] Work in itself can positively influence wellbeing, can be beneficial to health and fitness, or negatively confer risk for mental health problems such as psychological distress.[1] Mental health includes psychological wellbeing, which relates to people's emotions, thoughts and behaviours.[1–4] Mental health is characterised by emotional wellness, relative freedom from psychological distress, and the ability to engage in constructive activities of daily living, cope with life demands, and balance social responsibility with personal relationships.[2,3,5]

Teaching can be a stressful job and teachers have been reported to show high levels of fatigue and pessimism, which are the core dimensions of psychological distress.[4,6] Teaching has been consistently described as a highly demanding career, with teachers reporting correlates of psychological distress such as the burden of their academic workload, low job satisfaction, and marital relationship issues.[4,6,7] Teaching is considered to be a high-demand and low-control occupation, requiring interactions with students, parents and colleagues, and the need to work within a fixed schedule, all of which may produce some level of psychological distress.[4,6,7] Psychological distress related to work has been noted among teachers in other regions of the world.[4,6,7] Despite this, teachers are expected to impact their students positively.

Psychological health can be measured with the 12-item General Health Questionnaire (GHQ-12), which measures stress, and indicates the likelihood that an individual is experiencing levels of tension, anxiety and depression that might adversely affect mental wellbeing.[8–10] GHQ-12 scores have been used in several studies as a measure of teachers' levels of psychological distress.[8–10]

Teaching in secondary school is a prominent profession in rural and urban areas of Nigeria.[11,12] The poor state of welfare and social services in many low- and middle-income countries,[13] like Nigeria, provides few or no avenues for alleviating work-related challenges, with the attendant risk of mental health problems among workers. Such challenges may be more common in rural than urban areas, considering the differences in infrastructures and amenities. Work-related psychological distress among teachers in sub-Saharan Africa in general, and in Nigeria in particular, is not a frequently researched area, even though teaching is an age-old occupation.

This study was conducted to estimate the prevalence of psychological distress and associated work-related factors among secondary school teachers in rural and urban areas of southwest Nigeria.

METHODS

This was an analytical cross-sectional study, conducted in Oyo state, one of the six states in southwest Nigeria. Oyo state has a variety of professionals represented in the civil service workforce, of which teachers are a prominent group. Oyo state is divided into 33 local government areas (LGAs) for administrative purposes. The state's Ministry of Education has a total of 604 registered public secondary schools and an estimated 300 private secondary schools distributed within the rural and urban LGAs.[14]

The sample size for the study was calculated using a formula for comparing two proportions. The minimum sample size required was 490 in each group. However, to allow for a non-response rate of 10%, the sample size of each group was increased to 544. The calculated sample size had a power of 88.6% to detect a 9% difference in psychological distress between rural and urban school teachers.

Multi-stage sampling with stratification was used to select potential study participants. In the first stage, simple random sampling was used to select three urban and four rural LGAs from the 33 LGAs, based on rural-urban density and estimates of the numbers of teachers in the LGAs. In the second stage, schools in each LGA were randomly selected by type (public and private). A total of 49 schools – 24 in rural LGAs and 25 in urban LGAs – were selected. The data collection was conducted for six weeks in May and June 2018.

All teachers who were on full-time contracts and had been teaching at the schools for at least one year before the study began, were invited to participate. All consenting teachers who were present at the time of the visit to the schools were interviewed, using a structured questionnaire.

The questionnaire comprised sections on sociodemographic characteristics, occupational data, family life, and questions from the GHQ-12.[8–10] The GHQ-12 is a 12-item questionnaire that assesses psychological distress. It has been used in several studies in Nigeria[15,16] and has good reliability: Cronbach's alpha of 0.85 for the whole scale, and a range of 0.73–0.82 for each dimension.[8–10] A participant's response to a symptom of mental distress is scored on a 2-point scale such that 'less than usual' = 0 , 'no more than usual' = 0, 'rather more than usual' = 1, and 'much more than usual' = 1.[8–10] The GHQ-12 scores were dichotomised to indicate the absence or presence of psychological distress, using the categorised scores of (0 < 3) and (3–12), respectively.[8–10]

Table 1. Sociodemographic characteristics of participants, by rural and urban location (N = 1 174)

Variable	Location of school						p value
	Rural (n = 578)		Urban (n = 596)		All		
	n	%	n	%	n	%	
Sex							
Male	219	37.9	234	39.3	453	38.6	0.230
Female	359	62.1	362	60.7	721	61.4	
Age (years)							
< 40	296	51.2	266	44.6	562	47.9	0.013
≥ 40	282	48.8	330	55.4	612	52.1	
Marital status							
Single	100	17.3	97	16.3	197	16.8	0.640
Ever married	478	82.7	499	83.7	977	83.2	
Ethnicity							
Yoruba	538	93.1	552	92.6	1 090	92.8	0.821
Other	40	6.9	44	7.4	84	7.2	
Highest education							
Secondary school	12	2.1	7	1.2	19	1.6	0.158
Graduate	566	97.9	589	98.8	1 155	98.4	
No. of biological children							
0–4	526	91.0	563	94.5	1 089	92.3	0.024
5–10	52	9.0	33	5.5	85	7.2	
No. of financial dependants							
≤ 5	484	83.7	548	91.9	1 032	87.9	0.001
> 5	94	16.3	48	8.1	142	12.1	
Type of school							
Public	432	74.7	405	68.0	837	71.3	0.012
Private	146	25.3	191	32.0	337	28.7	

Ethical approval was obtained from the Oyo State Ministry of Health Ethical Review Committee (ethics approval number AD13/479/437). Permission to conduct the study was obtained from the school authorities and informed consent was obtained from all participants.

Data analysis

Data were analysed using SPSS version 23 to generate frequencies and percentages for descriptive variables. The association between categorical variables was tested using chi-square analysis, and Student's t-test was used to check for differences in means. A stepwise logistic regression model was used to identify predictors of psychological distress among teachers. Statistical significance was set at 5%.

RESULTS

A total of 1 174 teachers were interviewed, comprising 578 teachers from rural areas and 596 from urban areas. Table 1 shows that the majority of the teachers were female (n = 721, 61.4%): 62.1% and 60.7% in the rural and urban schools, respectively. Approximately half of the teachers working in rural schools were younger than 40 years (n = 296, 51.2%), compared to 44.6% (n = 266) in urban schools (p = 0.013). The mean age of the rural-based teachers was 39.6 ± 8.2 years, while that of the urban-based teachers was 40.8 ± 8.5 years (p = 0.016). Rural-based teachers had more biological children and financial dependants than urban-based teachers (p = 0.024 and p = 0.001, respectively). A higher proportion of teachers in urban areas worked in private schools (n = 191, 32.0%) than did teachers in rural areas (n = 146, 25.3%) (p = 0.012).

As shown in Table 2, the teachers in urban schools had worked as secondary school teachers for a longer mean duration than those in rural schools (11.0 ± 7.7 years and 10.0 ± 7.6 years, respectively, p = 0.043). Urban-based teachers spent more hours at work each day (8.0 ± 1.2 hours) than rural-based teachers (7.6 ± 1.2 hours) (p < 0.000), while the mean number of students per class was greater in rural than urban schools (55.6 ± 43.9 and 38.6 ± 20.1, respectively) (p < 0.000).

As shown in Table 3, 5.4% (n = 32) of teachers in urban schools spent > 40 hours per week teaching, compared to 3.5% (n = 20) in rural schools (p = 0.025). More teachers in rural locations had other jobs in addition to teaching (n = 119, 20.6%), compared to urban-based teachers (n = 92, 15.4%) (p = 0.023).

More than a third of the study participants were categorised as being psychologically distressed (n = 447, 38.1%). The prevalence was higher in rural- than urban-based teachers, viz. 42.7% (n = 247) and 33.6% (n = 200), respectively (p = 0.001). In comparison to the teachers

Table 2. Occupational characteristics and teaching demands by rural and urban location (N = 1 174)

Variable	Location of school				p value
	Rural		Urban		
	mean	SD	mean	SD	
No. of years teaching at secondary school level	10.0	7.6	11.0	7.7	0.043
No. of hours at work daily	7.6	1.2	8.0	1.2	< 0.000
No. of classes taught	4.8	3.6	4.5	2.6	0.115
No. of students per class	55.6	43.9	38.6	20.1	< 0.000
No. of subjects taught	2.5	1.9	2.5	2.1	0.570

Table 3. Work conditions of study participants (N = 1 174)

Work conditions	Location of school				p value
	Rural (n = 578)		Urban (n = 596)		
	n	%	n	%	
No. of hours teaching per week					
≤ 10	195	33.7	233	39.1	0.025
11–40	363	62.8	331	55.5	
> 40	20	3.5	32	5.4	
No. of hours standing per day					
≤ 4	391	67.6	396	66.4	0.664
> 4	187	32.4	200	33.6	
Job in addition to teaching					
Yes	119	20.6	92	15.4	0.023
No	459	79.4	504	84.6	
Most stressful aspect of job					
Marking assessments/recording marks	299	51.7	301	50.5	0.909
Writing lesson notes and plans	197	34.1	207	34.7	
No stress/other	82	14.2	88	14.8	
Job satisfaction					
Satisfied	514	88.9	528	88.6	0.926
Dissatisfied	64	11.1	68	11.4	

Table 4. Characteristics of participants by psychological distress status (N = 1 174)

Characteristic	Psychologically distressed				p value
	Yes (n = 447)		No (n = 727)		
	n	%	n	%	
Sex					
Male	187	41.2	267	58.8	0.087
Female	260	36.2	460	63.8	
Age (years)					
< 40	221	37.9	335	62.1	0.956
≥ 40	226	37.8	392	62.2	
Marital status					
Single	64	32.5	133	67.5	0.007
Ever married	383	39.2	594	60.8	
Location of school					
Rural	247	42.7	331	57.3	0.001
Urban	200	33.6	396	66.4	
Type of school					
Public	339	40.5	498	59.5	0.007
Private	108	32.0	229	68.0	
Highest education					
Secondary	8	44.4	10	55.6	0.574
Graduate	439	38.0	717	62.0	
No. of subjects taught					
≤ 5	356	35.0	662	65.0	< 0.000
> 5	91	58.3	65	41.7	
No. of classes taught					
≤ 5	296	36.3	520	63.7	0.055
> 5	151	42.2	207	57.8	
No. of students per class					
< 50	300	36.3	470	63.7	0.408
≥ 50	147	42.2	257	57.8	
Hours spent standing per day					
≤ 4	291	36.9	496	63.1	0.264
> 4	156	40.3	231	59.7	
Time spent at work daily (hours)					
< 8	168	40.5	247	59.5	0.209
≥ 8	279	36.8	480	63.2	
Take work home					
Yes	298	37.2	504	62.8	0.342
No	149	40.1	223	59.9	
Most stressful aspect of job					
Marking assessments/recording marks	230	51.5	352	48.4	0.853
Writing lesson notes and plans	153	34.2	261	35.9	
No stress/other	64	14.3	114	15.7	
Years teaching at secondary school level					
< 10	261	58.4	380	59.3	0.210
10–20	132	29.5	297	69.2	
> 20	54	12.1	50	48.1	
Job satisfaction					
Satisfied	397	38.1	644	61.9	1.000
Dissatisfied	50	37.6	83	62.4	

Table 5. Predictors of psychological distress

Characteristic	Unadjusted			Adjusted		
	OR	95% CI	p value	AOR	95% CI	p value
Location of school						
Urban	1.00			1.00		
Rural	1.48	1.17–1.87	< 0.001	1.30	1.02–1.67	0.037
Type of school						
Private	1.00			1.00		
Public	1.44	1.11–1.89	0.008	1.58	1.19–2.11	0.002
No. of subjects taught	1.14	1.07–1.21	< 0.001	1.19	1.12–1.27	< 0.001
No. of hours teaching per week	1.01	1.00–1.02	0.013	1.02	1.01–1.03	< 0.001

who were not distressed, a significantly higher proportion of those who were distressed were ever married (n = 383), worked in rural schools (n = 247), worked in public schools (n = 339) and taught more than five subjects (n = 91) (see Table 4).

A stepwise logistic regression model was fitted to identify factors associated with psychological distress. Sociodemographic variables that were associated ($p < 0.05$) with psychological distress in the bivariate analysis or significantly different between rural and urban groups (age, marital status, number of children, number of financial dependants and having a second job) were included in the model. Statistically significant ($p < 0.05$) work-related variables (school type, number of hours taught per week, school location, number of students per class and number of subjects taught) were also included.

The odds of being psychologically distressed were higher for teachers in rural schools than for those in urban schools (AOR 1.30, 95% CI 1.02–1.67), and for public school teachers (AOR 1.58, 95% CI 1.19–2.11). There was a 19% increase in the adjusted odds of psychological distress for every increase in the number of subjects taught, and an increase of 2% for every additional hour of teaching reported (see Table 5).

DISCUSSION

Most of the secondary school teachers in our study were females, which supports findings from other studies in Nigeria.[12,13,17] More than half of the urban participants were 40 years or older, and almost all were graduates, as was shown in a report on teachers' education in Nigeria, published in 2008.[18] In Nigeria, teaching positions are competitive, and there is a better chance of securing employment with a graduate degree.[11,19] Rural-based school teachers had more children than urban-based teachers. This may be due to better access to family planning services and the high cost of raising children in urban locations,[20] and may not be related to occupation.

A higher proportion of urban- than rural-based teachers worked in private schools. Teachers in Nigeria usually prefer to work in urban and private schools because salaries are higher.[12,17] Urban-based teachers spent more hours at work per week, possibly because they were engaged in paid extracurricular student activities – something that has been cited in other Nigerian studies.[5,12,14,17] Rural-based teachers taught class sizes of > 50. This relates to the poor infrastructures of rural schools in Nigeria, where lack of sufficient classrooms results in cramming of pupils into the few that are available.[19,21]

The prevalence of psychological distress among the teachers, using the GHQ-12, was 38.1%. This is similar to the prevalences reported for teachers in Western Australia in 1987 and in Basrah, Iraq in 2015.[4,6,8] Various studies have reported that the prevalence of psychological distress in teachers is more than double that in the general population, and up to four times that in other professions.[7,8] A study on the relationship between job stressors and mental health indicated a prevalence of psychological distress in teachers of 33%, which was much higher than the 10% prevalence in physicians and 24% prevalence in the clergy.[4]

A study among Maltese teachers estimated a 34% prevalence of psychological distress,[22] much higher than the 10–40% reported in studies conducted in western and eastern European countries.[4,10] However, figures higher than the 38.1% reported in our study have been reported in Australia (45%)[8] and Asia (50-70%).[6,21,23] A study in the USA, published in 2009, reported a similar prevalence of psychological distress among teachers to that calculated in our study; the relatively high prevalence of 34% was suggested to be related to incidents that involved insolent students, or criminal acts committed by students towards teachers.[9]

Psychological distress was significantly associated with working in rural schools in our study. This may be because urban-based teachers are better paid than rural-based teachers in Nigeria. Some studies have shown that higher remuneration can lower the risk of psychological distress.[7,11,12,17] Studies have also reported that better commuting facilities and a better lifestyle for urban-based teachers and their families, compared to rural-based teachers, may mitigate psychological distress.[24,25] High levels of psychological distress among rural-based teachers has been ascribed to limited staffing, low wages, inconvenient transportation, and an impoverished school environment.[25,26] Some of these factors can also explain the higher prevalence of psychological distress observed among teachers working in public Nigerian schools, as previously published.[17–19] Likewise, psychological distress in public school teachers in Nigeria may be related to the shortage of teaching staff and subsequent work overload, as previously reported.[12,17]

We found that a higher proportion of married than single teachers were psychologically distressed. There is conflicting evidence in the literature about the effect of marital status on mental health.[6,27,28] It is plausible that the married teachers in our study had additional life issues that contributed to psychological distress.[6,22,27–29] The pursuit of a healthy work-life balance may be a challenge for married people who juggle heavy workloads, relationships, and family responsibilities.[30]

Although some studies have reported that younger teachers and those with fewer years of teaching experience have a significantly higher rate of psychological distress,[5,6,9,27] we did not find this to be the case in our study. Likewise, neither the size of the classes nor the duration of a working day were associated with psychological distress, although studies have reported that classroom sizes in the range of 100 students is associated with psychological distress.[6,9]

There was a significant association between teaching more than five subjects and psychological distress, supporting reports that work-overload can predispose to the condition.[6,8,9] Writing lesson notes and plans can be tedious for teachers; many teach more than one subject and several grades in secondary schools in Nigeria, which can be burdensome, especially when preparing lesson notes outside their core expertise.[12,17,19,21] This may be the situation for those who are responsible for teaching more than five subjects, considering that most teachers have expertise in one particular subject.[8,22]

Working in a rural location, teaching in public schools, teaching extra subjects, and long hours spent teaching per week were significant predictors of psychological stress.

A possible limitation of this study is that the presence of potential confounders of psychological distress, such as personality traits, family and social problems, was not explored among the study participants.

CONCLUSION

The prevalence of work-related psychological distress, which was 38.1% overall, was statistically significantly higher among teachers in rural than in urban areas. Other predictors of psychological distress were working in a public versus a private school, and work overload (number of subjects taught and number of hours worked per week). The associations between work-related experiences among teachers and psychological distress have been understudied, despite the large amount of research on stress and burnout in other professions.

Factors associated with teachers' mental health should continue to be explored in the field of occupational medicine, particularly in low-income countries. Work conditions of rural-based teachers need to be improved to encourage them to remain in these areas.

KEY MESSAGES

1. Secondary school teachers in rural areas are at a higher risk of psychological stress than those in urban areas.
2. Poor infrastructure, limited staffing, low wages and an impoverished school environment may contribute to stress among teachers in rural schools.
3. Work conditions of rural-based teachers need to be improved to encourage them to remain in these areas.

DECLARATION

The authors declare that this is their work; all the sources used in this paper have been duly acknowledged and there are no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conception and design of the study: AMO, MOB, JA, EO, OP, BA, FO
Data acquisition: AMO, MOB, JA, EO, OP, BA, FO
Data analysis: AMO, MOB, OP, FO
Interpretation of the data: AMO, MOB, OP, FO
Drafting of the paper: AMO, MOB, JA, EO, FO
Critical revision of the paper: AMO, MOB, OP, FO

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Q fever – an underappreciated occupational disease in South Africa

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Q fever is an infectious illness of zoonotic origin and protean clinical features. Q (for 'query') fever was first described in 1935 during an outbreak of febrile illness in abattoir workers in Brisbane, Australia.[1] The agent, originally thought to be a type of rickettsia, was later isolated in Australia and the United States, and named *Coxiella burnetii* in 1948. It is an unusual aerobic Gram-negative obligate intracellular bacterium. *C. burnetii* is a pathogen or coloniser of a wide variety of animals, wild and domestic; the traditional reservoirs of human disease are farmed livestock, namely cattle, sheep, and goats. Birthing domestic cats and dogs have also been sources of outbreaks.[2] Organisms localise to placenta and mammary glands and, while infections in animals are usually clinically silent, they can cause outbreaks of abortion. Organisms are excreted via birth products, milk, faeces, and urine. *C. burnetii* differs in several ways from rickettsiae in being highly environmentally resistant, because of a spore-like stage; it shows antigenic phase variation; it produces granulomatous, rather than vasculitic pathology; and it can cause chronic infection.[3] Most importantly, humans acquire it predominantly by the airborne route, especially when exposed to animal birth products or slaughtered animals; also by inhalation of dust residue contaminated by infected birth fluids, blood, faeces, or urine. Windborne spread can disperse contaminated dust over long distances. The organism is highly infectious, but person-to-person spread is uncommon. Transmission via unpasteurised milk or by crushing ticks has been described rarely; tick bites are not important for human infections, but accidental inhalation of tick faeces is a likely mode of infection.[3]

Clinically, up to 60% of *C. burnetii* infections are asymptomatic. The most common acute presentations are a self-limiting influenza-like febrile illness, pneumonia, or hepatitis; Q fever is an acknowledged cause of community-acquired 'atypical' pneumonia that has a variable clinical presentation. Cough is often absent; the illness is usually mild to moderately severe, but sometimes progresses rapidly to acute respiratory distress syndrome and respiratory failure. Rarely, Q fever may present as multi-organ failure and resemble bacterial septicaemia. Other clinical manifestations include neurological involvement, and foetal loss in pregnancy. The recognised acute clinical spectrum has widely expanded to include, amongst other conditions, acalculous cholecystitis and pancreatitis. Chronic Q fever classically manifests as endocarditis, typically infecting previously damaged valves; rarely, aneurysms or vascular grafts may be infected. Untreated, Q fever endocarditis is usually fatal. Other groups at risk are the immunocompromised and the pregnant. An emerging third category of infection is long-term sequelae after acute disease, particularly chronic fatigue syndrome and cardiovascular complications. About 10–15% of acutely-ill British and Australian patients develop fatigue of more than six months' duration.[4]

Certainly, many symptomatic cases are missed and misdiagnosed; asking about animal contact is important in making a clinical assessment. Ordinary bacteriological methods will not culture *C. burnetii*. Laboratory diagnosis, if available, depends on serological tests (preferably the indirect micro-immunofluorescence assay) to show rising titres. Antibodies (IgM and IgG) to phase II antigens dominate in acute infections; high levels of IgG and IgA phase I antibodies, equaling or exceeding phase II IgG antibody titres, indicate chronic disease. Polymerase chain reaction (PCR), only available in specialised laboratories, applied to serum is insensitive, in contrast to heart valve tissue, where it works well. The treatment of choice for acute Q fever is doxycycline (100 mg twice daily for 14 days). Early treatment seems to reduce the duration of the disease. Alternative agents are quinolones and chloramphenicol; erythromycin is less effective, but the newer macrolides may be useful. Cotrimoxazole is recommended for children < 12 years and pregnant women. Prolonged antimicrobial treatment for Q fever endocarditis is required; doxycycline, in combination with ciprofloxacin or rifampicin, for at least two years, is suggested. The combination of doxycycline and hydroxychloroquine for 18 months effectively improves the outcome.[5]

Epidemiology

Distribution of Q fever is worldwide (excluding Antarctica and, possibly, New Zealand). The disease has long been known to be present in South Africa,[6] but seroprevalence is not known, although it is likely to be lower than in the past because of rapid urbanisation. It is difficult to assess the extent of transmission to humans in southern Africa from the very few recent studies. Q fever is not a notifiable medical condition in South Africa and is likely to be under-recognised both clinically and diagnostically, as laboratory testing is not generally available. Q fever is predominantly an occupational disease in people working with animals or animal products, directly or indirectly (Australian guidelines list 14 broad categories of at-risk occupations);[4] incidental non-occupational exposure to *Coxiella*-contaminated environments (for example, farm residents and visitors, people living close to high-risk livestock industries),[4] may result in a wider population at risk. A striking example of this was the prolonged urban outbreak in the

Netherlands (2007–2010), which produced about 4 000 human cases, acquired from infected dairy goat farms in densely populated areas.[7] In 2014, about 30% of game rangers in the Kruger National Park were seropositive (unpublished NICD data); likewise, 61% of rural cattle herders in Bushbuckridge, Mpumalanga province.[8] In the same community, 27% of febrile acutely ill patients were seropositive, and those who attended cattle inspection and dipping facilities were 9.4 times more likely to be exposed.[9] A recently published study of abattoir workers in the Free State and Northern Cape provinces indicated an overall IgG seroprevalence, reflecting previous exposure, of 33%; at facility level, seroprevalence ranged from 8% to 62%.[10] The risk factors for seropositivity were prolonged contact with carcasses or meat products, and previous abattoir or butchery employment. Local experience, although limited, closely reflects the situation in abattoir workers globally.

It is clear that in South Africa, as in most parts of the world, Q fever is an occupational hazard in a large proportion of agricultural workers, but one that is substantially underappreciated. If one accepts the estimate that 60% of infections are subclinical, then at least 12% of the abattoir workers in De Boni et al.'s study would have had some clinical illness, of variable severity.[10] South Africa's high rate of HIV infection potentially produces a larger proportion of severe cases than elsewhere. Q fever is not a prescribed occupational disease and therefore there is no specifically recognised compensation for work-acquired illness. Other facts that impact the public health aspects locally are that Q fever is not a notifiable medical condition, clinical awareness is low, availability of laboratory diagnosis is very limited, and Q fever vaccination is not available. It is instructive to look at the Australian experience of dealing with Q fever as an occupational health problem.[4] The notification rate in the 1990s was 2.5–5.0 per 100 000 population. Between 2001 and 2006, a national Q fever management programme was implemented, providing subsidised vaccination for at-risk groups. This led to a marked decrease in notifications, to 1.4 per 100 000 population in 2009. After the subsidised vaccination programme ceased, notification rates gradually increased, reaching 2.3 per 100 000 in 2016.

While South Africa has many other public health priorities, should the country ignore an important occupational disease? Vaccination against Q fever would be a key intervention, but its availability and cost are major barriers, and pre-vaccination screening for prior exposure is necessary because of the risk of allergic reactions.[4] Instead, the first actions locally are to improve knowledge of this disease amongst employers and occupational healthcare providers, and encourage basic preventive measures for at-risk workers. Occupational exposure may be difficult to avoid, because of airborne transmission. Air handling engineering to minimise dust and aerosol production in high-risk areas of abattoirs should be considered. Aborting or birthing animals and the birth products should not be handled without adequate personal protective equipment, e.g. gloves, efficient mask, and plastic apron, along with their proper disposal.[4] Serological testing in the public sector should be routinely available, at least initially at a reference laboratory. Ultimately, designating Q fever a notifiable medical condition and establishing a surveillance programme would allow identification of outbreaks and estimation of the impact of this neglected occupational disease.

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The relationship between Greek mythology and occupational hygiene

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INTRODUCTION

Had Shakespeare known of the modern rose cultivars, most of which have no fragrance, he would not have written the famous line *"What is in a name, a rose by any other name would smell as sweet!"*,[1] thereby doing the world of literature a great injustice. He penned his play *Romeo and Juliet* in the period 1594-1596.[2] However, ignoring the context in which the phrase was written, it does prompt the question about the value and impact of names. Flowing from this, the name of our discipline, 'occupational hygiene', comes to mind, given the recent questioning of whether it encompasses the expertise in our profession. In this short opinion piece, an attempt is made to provide insight into the origins and current use of the term, 'occupational hygiene'.

ORIGIN OF THE WORD 'HYGIENE'

The 'occupational' part of the term is easy to grasp as it merely describes the field to which the 'hygiene' part pertains, i.e. having relevance to any work that is being done. The latter word, 'hygiene', originated in Greek mythology – the name of the Greek goddess responsible for good health and the prevention of disease was Hygieia.[3] She was the daughter of Asclepius, the 'god of medicine', whose symbol of the staff and serpent is used until this day.[4] Starting with Hygieia, the ancient Greeks developed a word for health and welfare that was taken up by the Romans and adopted by the French, eventually finding its way into the English language.[4]

INTERNATIONAL PREVALENCE

Having originated in approximately 400 BC,[4] the word 'hygiene' still has relevance today. It is universally accepted and interwoven into our everyday lives. It can be found in various health-related documents in South Africa and across the world, such as Acts and Regulations, as well as publications by the World Health Organization and the International Labour Organization.

In the occupational or industrial context, the word has a specific meaning, as defined by the various organisations, international bodies, and legislation. Several definitions of the discipline exist, locally and internationally, such as those provided by the International Occupational Hygiene Association (IOHA), the American Industrial Hygiene Association (AIHA), and in South African legislation. In South Africa, the definition is captured in the Occupational Health and Safety Act (OHSA) No. 85 of 1993, the Mine Health and Safety Act (MHSA) No. 29 of 1996, and the Occupational Health and Safety Bill of 2021. These documents reflect the same essential stages for the application of occupational hygiene as do the IOHA and AIHA, viz. anticipation, recognition, evaluation and control.

Numerous courses in occupational/industrial hygiene are available worldwide. They range from short modules to formal academic courses from pre- to post-graduate levels. In South Africa, the academic courses that include occupational hygiene are approved by the Department of Higher Education and Training, and are registered with the South African Qualifications Authority (SAQA).

RELEVANCE

Hygiene as a concept was forged through the ages and carries with it a wealth of tradition, culture and understanding. The name, 'occupational hygiene', thus represents the development of the term through the ages, cultures and languages. It is entrenched in legislation and curricula that are nationally and internationally recognised.

Let's return to the epic question of, "*What is in a name?*" A person may ponder the question of whether, after all these years, a name change should be considered? One way of approaching this question would be to evaluate the feasibility and consequences of such a name change. Answers to questions, as asked below, would need to be found:

- How or why does one change an international concept that was forged through the ages?
- How does one obtain international consensus on a new name and the definition thereof?
- If feasible, how long would it take to change the name in Acts, standards, and curricula across the world?
- Are we throwing the proverbial baby (of tradition) out with the bathwater?

The question has been raised as to whether we are occupational hygienists, exposure scientists or exposure specialists. Being proud to be part of a long and rich tradition, and the fact that the word 'hygienist' encompasses all the aspects of our profession, my vote would go to 'occupational hygienist'. One cannot but wonder whether a focused thrust at developing the profession would not be more productive than putting efforts into name changes.

CONCLUSION

The word 'hygiene' has an age-old and culturally rich origin, has worldwide understanding in different languages, and is entrenched in international literature, legislation, curricula and documents. The international community instantly recognises this term, thereby obviating clarification by way of definitions.

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Regional Centre of Excellence on Occupational Health and Safety – induction of the Regional Expert Advisory Panel (REAP)

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INTRODUCTION

The Regional Centre of Excellence in Occupational Health and Safety (CoE-OHS) is a regional collaborative initiative to provide quality and sustainable occupational health, safety, environmental, and research services for workers and members of the community in Africa. It is currently located at the Occupational Health and Safety Institute (OHSI) complex in Zambia. The Mine Safety Department (MSD), under the Ministry of Mines and Mineral Development, the Occupational Safety and Health Services Department (OSHSD), and the Workers' Compensation Fund Control Board (WCFCB) from the Ministry of Labour and Social Security, are also housed in this complex. The location of the Centre provides several synergies in terms of skills, infrastructure, equipment, and levels of intervention. The vision of the CoE-OHS is to ensure that integrated occupational health and safety (OHS) services are well coordinated, with regard to primary, secondary and tertiary interventions, to holistically address the scourge of occupational injuries and diseases in the region and on the continent. The concept of the CoE-OHS started with one centre in southern Africa due to the heavy presence of mining, agricultural and informal mining activities. The plan is to have a second centre in a west African regional economic community that is predominantly French speaking, and which has many mining and artisanal mining activities or similar industrial activities, with a high number of accidents and cases of tuberculosis and occupational lung disease.

The CoE-OHS, with initial funding from the World Bank, collaborates with the governments of Lesotho, Malawi, Mozambique and Zambia. Under the leadership of the Ministry of Labour and Social Security in Zambia, it reports to the Permanent Secretary of the Zambian Ministry of Labour. The Centre will also utilise other regional projects' skills and resources, such as the Global Fund, the African Union Development Agency (AUDA-NEPAD) health programme, and other in-country projects. The Centre has collaborated with national, regional, and international academic and research institutions, including other OHS and public health developmental organisations. It has developed a comprehensive regional implementation strategy and a monitoring framework.

The Regional Expert Advisory Panel (REAP) inauguration and induction meeting, held on 17 and 18 March 2022, included experts from renowned institutions, selected to provide opinions and advice on core interventions, programmes and activities to enhance OHS service delivery. The meeting was held at the Garden Court Hotel in Kitwe, Zambia. The objectives of the meeting were to 1) introduce, induct and orient REAP members, 2) review the draft 2021–2025 CoE-OHS strategic plan, and 3) assess the CoE-OHS and make recommendations for improvement.

METHODOLOGY

This was a hybrid meeting, with the majority of the members attending the meeting in person. The data for this report were collected from the meeting concept note, meeting agenda, presentations, observations, dialogues and site visits. On the first day, the delegates visited the Institute hosting the CoE-OHS. Plenary sessions were held at the end of both days, where the CoE-OHS secretariat presented the REAP terms of reference, strategy, and the sustainability plan for members' comments and approval. The closing session was held on the afternoon of 18 March.

MEETING OUTCOMES

The meeting was attended by 13 REAP members from Lesotho, Malawi, Mozambique, South Africa, Zambia and Zimbabwe, AUDA-NEPAD, the International Labour Organization (ILO), the Zambian Tropical Diseases Research Centre (TDRC), and the Zambian Chamber of Mines, amongst others (Table 1). Four members, including the African Union Commissioner, were unable to attend and sent their apologies.

1. Opening and site visits

The induction meeting was officially opened by the Chairperson, Chimwemwe Chamdimba, principal policy specialist from AUDA-NEPAD and member of the REAP, following a tour of the MSD/OHSI/WCFCB premises. Chamdimba thanked all the REAP members for touring the CoE-OHS, the various partners that funded it, the Zambian Government for equipping the Centre with modern equipment, and the move to bring together four key OHS departments that are critical to the OHS agenda. The Zambian Government's responsibility is to ensure the provision of quality OHS services. Therefore, there was a need to strategise on how to sustain the CoE-OHS and ensure the provision of sustained quality services. The key deliverable of the REAP members is the sustainability of the CoE-OHS. Therefore, resource mobilisation will be a critical activity of the Panel.

The team visited several parts of the CoE-OHS, such as the state-of-the-art B-reader training facility, digital X-rays rooms, occupational hygiene laboratory, microbiology laboratory, occupational health clinic, occupational health service centre, mine safety department, and the offices of the Workers' Compensation Fund Control Board.

Key issues and recommendations

- The application of primary, secondary and tertiary interventions is a unique approach that should be used to advance the link between occupational hygiene surveys, medical surveillance, and compensation.
- The REAP members noted a massive investment in OHS equipment, which needs a comprehensive maintenance plan and agreement with manufacturers for quality services and sustainability.
- The REAP members recommended the introduction of an impairment evaluation assessment module, or training course to harmonise the approach to compensation across the region.

2. Terms of reference of the Regional Expert Advisory Panel

The primary purpose of the REAP is to provide expert opinions and advice to ensure the quality provision of occupational health, safety, environmental, and research services for the benefit of workers and members of the communities on the continent. The responsibilities of the REAP are to provide technical expertise to the CoE-OHS with regard to the adoption and implementation of a risk-based approach to medical surveillance; to provide technical advice about the setting up of occupational hygiene monitoring and laboratory analysis capacity at the CoE; to recommend technologies and approaches for mine dust control, based on research findings and international best practices; to support the development and delivering of priority training programmes at the CoE; to provide technical expertise with regard to identifying areas of research and to support the implementation thereof; to review research reports and publications produced by the CoE; and to support the CoE in the development and rollout of its sustainability plan.

Key issues and recommendations

- The REAP should establish sub-committees to assist with some of the responsibilities, such as research and innovations, which the TDRC should lead.
- The AUDA-NEPAD duration of support to the CoE-OHS should be extended from one to two years. This will allow the sustainability plan to commence, and resources to be mobilised.
- REAP members noticed the absence of tripartite arrangements on the Advisory Panel and recommended that employer and employee regional organisations be invited. It was also noted that this is a technical expert forum where experts are invited, based on their expertise rather than their constituencies.

Front row (L-R): Malfred Moolela, Dr Vania Farouk, Dr Dingani Moyo, Norman Khoza, Peneyambeko Munkawa, and Dr Gershom Chongwe; back row (L-R): Dr Daniel Masekameni, Dr Yotam Moyo, Prof. Phenny Mwaanga, Chibesa Ndawa, Andrew Lunda, Chilubi Mafwenko, and Chimwemwe Chamdimba

Photograph: courtesy of Norman Khoza

3. Regional CoE-OHS strategy

After the presentation and deliberations, the REAP members revised the CoE-OHS strategy to act as a regional body rather than as a national entity. The goals should be aligned with international standards (the UN's Sustainable Development Goals (SDGs), and global tuberculosis standards) rather than national standards. The members also agreed to include innovation as part of the Centre's philosophy. For the CoE to be excellent in OHS service delivery, the following key elements were proposed as additions: risk profiles, code of practice for occupational diseases, research, and capacity building, which entails the development of short courses such as spirometry and audiometry in collaboration with regional academic and research institutions.

Specific strategic objectives were revised. The first objective in the CoE-OHS strategic plan (viz. to reduce occupational incidents by 50% and diseases (tuberculosis and pneumoconiosis) by 5%) was split into two to address incidents and diseases separately. The revised objectives were aligned to international best practices, and not limited to national statutes.

4. Terms of reference for the engagement of a consultant to develop a sustainable plan

The CoE-OHS developed the terms of reference to engage a consultant to develop a sustainability plan, which is required to guide activities of the CoE and other African member states to advance OHS and provide a clear approach to resource mobilisation, private sector engagement, research to inform policy, training on occupational health and safety, etc.

As a result, AUDA-NEPAD advertised a request for expression of interest, for a consultant to:

- Assess the currently available infrastructure, capacities, services, and revenue-generating models of the CoE-OHS
- Conduct local, regional, and continental needs analyses for OHS services, training, research, and consulting services that the CoE can leverage for resource mobilisation
- Identify and collect contact details of strategic partners with which the CoE can collaborate, and develop a sustainable collaborative model linking the Centre with key local, regional and international institutions and organisations, such as the African Union Commission (AUC), AUDA-NEPAD, ILO, World Health Organization (WHO), East, Central and Southern Africa Health Community (ECSA-HC), TDRC, National Institute for Occupational Health (NIOH), and universities, etc.
- Develop a regional sustainability plan and implementation roadmap for the CoE-OHS with a clear implementation structure
- Develop sustainable quality management systems that will support the sustainability plan

Key issue and recommendations:

- The REAP members noted the required qualifications and experience of the consultant, and requested the secretariat to consider applicants with extensive experience in OHS.

Left (front): Dr Kingsley Ngosa, Penny Munkawa, Norman Khoza; left (back): Dr Yotam Moyo, Chimwemwe Chamdimba and Dr Dingani Moyo; right: Dr Vania Farouk, Dr Daniel Masekameni, Andrew Lungu, Chilubi Mafwenko and Prof. Phenny Mwaanga *Photograph: courtesy of Norman Khoza*

Table 1. REAP members' names and expertise

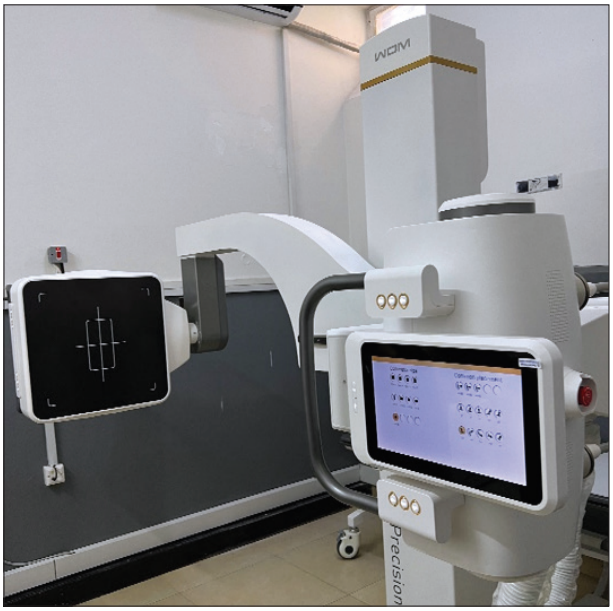
No.	Name	Organisation	Location	Position	Qualifications and expertise
1	Dr Dingani Moyo	Baines Occupational Health Services (BOHS)	Zimbabwe	Occupational medicine specialist	Two Master's degrees in OHS and Applied Management with > 25 years of experience; ICOH and OSHAfrica Board member
2	Chimwemwe Chamdimba	AUDA-NEPAD	Regional	Principal Policy Specialist	Master's degree in Health Economics and Policy; extensive experience in OHS, TB and occupational lung disease on the continent; strategist with a distinguished resource mobilisation track record
3	George Kashinka	Ministry of Labour and Social Security (MLSS)	Zambia	Director	Director of the OHS Services Department of the MLSS; expert in inspection, enforcement and policy in Zambia
4	Chansa Kapema	Workers' Compensation Fund Control Board (WCFCB)	Zambia	Manager	Master's degree in OHS; Rehabilitation, Occupational Health & Safety Manager at the Zambian Compensation Board
5	Dr Fwasa Singogo	MOH Southern Africa Tuberculosis and Health Systems Support Project (SATBHSS)	Zambia	Project Co-ordinator	Medical doctor with a keen interest in developmental projects and resource mobilisation; SATBHSS project co-ordinator in Zambia
6	Malfred Moolela	Ministry of Mines and Mineral Development	Zambia	Chief Inspector	Chief Inspector of machinery with a master's in OHS laws in Zambia; knowledgeable OHS resource from the mine safety department in Zambia
7	Penny Munkawa	ILO	Regional	OHS specialist	Senior OHS specialist with extensive national, regional, and international OHS policy experience
8	Dr Daniel Masekameni	University of the Witwatersrand	South Africa	Exposure scientist	PhD in Air Quality and Energy; lecturer, researcher, and consultant on occupational and environmental health, safety and hygiene at the Wits School of Public Health
9	Prof. Phenny Mwaanga	Chamber of Mines	Zambia	Researcher	PhD in Environmental Toxicology; researcher and lecturer at Copperbelt University; provides technical assistance to the private sector in Zambia
10	Dr Vania Faruk	Ministry of Health, Mozambique (MISAU-MOZ)	Mozambique	Occupational medicine specialist	Master's degree in Occupational Medicine; Head of the National Occupational Health Programme in the Ministry of Health
11	Dr Yotam Moyo	Ministry of Health: Occupational Health Services, Malawi	Malawi	Occupational health specialist	Occupational medicine practitioner, and impairment and disability evaluation consultant; in charge of the Malawi occupational health services programme
12	Dr Kingsley Ngosa	Occupational Health and Safety Institute (OHSI)	Zambia	Deputy Director	Medical doctor with 19 years of experience; working as an occupational health practitioner; deputy director of the OHSI in Zambia, the Institute collaborating with the CoE-HS
13	Dr Gershom Chongwe	Tropical Diseases Research Centre (TDRC)	Zambia	Director	PhD in Epidemiology; health researcher and lecturer in healthcare and academia for > 15 years; skilled in epidemiology, programme evaluation, good clinical practice, and proposal writing
14	Sabelo Mbokazi	African Union Commission (AUC)	Regional	Head of department	Head of Labour, Employment and Migration Social Affairs Department, with solid advocacy and understanding of the AU member states
15	Bulelwa Huna	Department of Employment and Labour, South Africa	South Africa	Occupational health and hygiene specialist	Master's degree in Occupational Hygiene and a PhD candidate; experience in policy development, policy advocacy, monitoring and evaluation of the implementation of progressive policies, and collaboration with stakeholders
16	Patrick Hayumbu	Copperbelt University (CBU)	Zambia	Researcher and lecturer	Two Master's degrees in Nuclear Analytical Chemistry and Public Health; researcher and lecturer at Copperbelt University's Chemistry Department
17	Dr Sophia Kisting	University of Cape Town (UCT)	South Africa	OHS governance and research specialist	Occupational medicine specialist with a strong record of OHS advocacy and experience working in international organisations across the globe; strong advocate of primary prevention in the world of work

CONCLUSION

The CoE-OHS is a unique and innovative African project that will accelerate the provision of quality occupational health services in Zambia, the region, and across the continent. The Centre's setup encourages a multi-disciplinary and multi-sectoral approach. Interventions – primary, secondary and tertiary – are housed in the same premises, and involve inspection, diagnosis of occupational diseases, and compensation rendered by the ministries responsible for mines, labour, and health. The Centre has signed collaborative agreements with local and international academic institutions. It is technically supported by the African Union Development Agency-NEPAD, collaborating with distinguished OHS institutes such as the OHSI from Zambia, and the NIOH from South Africa. The Centre has also acquired the participation of the OSHAfrica OHS continental network, and the Southern African Institute for Occupational Hygiene (SAIOH) – a regional occupational hygiene professional body.

ACKNOWLEDGEMENTS

The World Bank funds the SATBHSS project: P155658 and P173228. For more information, visit www.satbhss.org and www.nepad.org. AUDA-NEPAD acknowledges the members of the REAP for their contributions.



New digital X-ray machine in a newly renovated X-ray room *Photograph: Norman Khoza*

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13th IOHA International Scientific Conference

Dublin, Ireland
June 2024

The Occupational Hygiene Society of Ireland (OHSI) and the British Occupational Hygiene Society (BOHS) are privileged to jointly host this conference and to contribute to its successful outcome.

The conference theme has been confirmed as - 'Protecting workers from health hazards: Advancing in this changing world'.

The conference aims to promote occupational hygiene and worker health protection by the minimisation of worker exposure to hazardous agents globally through plenary sessions, keynote lectures, parallel talks, workshops, poster presentations and professional development as well as networking opportunities and social functions.

A strong Global media campaign will publicise the main causes of occupational disease throughout the conference.

More information including venue, dates and abstract submission arrangements will be announced very soon. Please mark your diaries for June 2024 in Dublin, Ireland!

Edited by **Dr Thomas P Fuller:** IOHA Past President
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American Conference of Governmental Industrial Hygienists (ACGIH) organisational update (March 2022)

Phillip Rauscher
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It's hard to believe that I am coming up to my third anniversary at ACGIH – time flies when you're having fun. When first hired into my current position, there was a leadership change within the organisation and the Executive Director, Frank Mortl III, emphasised particular themes moving forward, which included transparency and a customer focus. I am proud to say that those ideas sincerely ring true in accomplishments from the Board of Directors, volunteer leaders, and staff over the last three years. As an example, to engage with our stakeholders at much higher levels, ACGIH has invested in a complete overhaul of all electronic systems and digital platforms that were in place when I began leading the organisation's science, education, and publication divisions.

As we all know, understanding of chemicals in the workplace is vital to making robust decisions. Whether building a qualitative risk assessment for your industrial hygiene (IH) programme or looking at adjustment of a threshold limit value (TLV) for hours worked, the information within TLV documentation is vital to the occupational and environmental health and safety (OEHS) professional. To allow for greater access to TLV and biological exposure index (BEI) scientific documentation, a crown jewel of our rebuilt website will be the ACGIH Data Hub. Located in the members' centre of the ACGIH website, access to all current documentation will be available anytime and anywhere in any quantity, as long as the user has access to the internet. The documentation will be scalable to phones and can be opened in any browser.

Complimentary access to the world-renowned *Journal of Occupational and Environmental Hygiene* has always been a member benefit of ACGIH. However, with our new learning technology, we are excited to make The Action Level a complimentary member benefit as well. The Action Level utilises short knowledge assessments to enable members to stay up to date with the latest journal articles. Our organisation has, with the Board of Certified Safety Professionals (BCSP) and the Board for Global EHS Credentialing (BGC), agreed that certification holders who are ACGIH members can receive no-cost credits (up to 3.6 BCSP re-certification points, and 12 contact hours per year for BGC).

ACGIH's virtual education has led to the development of our Learning Pass, a new offering of bi-weekly webinars on various industrial hygiene topics, at very affordable rates. Another recent feature is a Basics of Industrial Ventilation professional development course (PDC) – a total asynchronous on-demand course covering the tenets of industrial ventilation to aid in ventilation system decision making. Throughout 2022, in-depth courses on noise programmes, hazard mitigation, and computational fluid dynamics in relation to ventilation systems will be offered, as well as a suite on multiple physical agents – serving as an introduction to an area often overlooked in many industrial hygiene programmes.

Additionally, ACGIH recently published the *Air Sampling Technologies* manual. Organisational leadership is working diligently on many other new resources to help keep industrial hygiene in the forefront of OEHS success. Later this year, we plan to release an updated version of the *Bioaerosols Assessment and Control* book that has been a pillar of the IH community for decades. Upcoming ACGIH publications include a *Guide for the Control of Laser Hazards*, the 31st Edition of our *Industrial Ventilation - A Manual of Recommended Practice for Design*, an updated *Modern Industrial Hygiene Series*, an *Atlas of Fungal Spores*, and an educational narrative called "Don't Forget the Workers" – chronicling the stories behind interesting National Institute of Safety and Health (NIOSH) health hazard assessments, spanning decades.

Looking back on three years of professional achievements with ACGIH, I am thankful for a forward-thinking Board of Directors with true passion to drive OEHS excellence globally, along with volunteers who are extremely giving of their time, knowledge and effort to push the leading edge of science. However, without members and supporters from around the world, we are playing to an empty house. Big thanks go to the global OEHS community for years of support and dedication – we look forward to continued support of your careers and the field as a whole. ACGIH sincerely appreciates any feedback or collaboration opportunities that can further support our mission and the daily work of those in the OEHS field.

As a courtesy to those who are engaged internationally, we want to take the opportunity to thank you for your continued support, and give you an update about changes in the TLVs and BEIs that occurred this past year. We sincerely appreciate serving and engaging with supporters. All of the newest scientific documentation for 2022 is available for purchase/download on www.acgih.org and as a complimentary online member benefit through the ACGIH Data Hub. We look forward to feedback on our organisation's Notice of Intended Changes throughout the current comment period, which ends on 31 May 2022.

Newly adopted TLVs for chemical substances

Antimony hydride
Benzoic acid and alkali benzoates
Clothianidin
Cyclopentane
Cyromazine
Dipropylene glycol methyl ether
Ethyl benzene
Imazosulfuron
Iodoform
Isoflurane
2-Methyl-2-butene
Phosgene
Prometon
Prometryn
Titanium dioxide
Trimethyl benzene, isomers
Xylene

Chemicals for which there are notices of intended changes

2-Ethylhexanol
Acetamiprid
Benzene
Benzoquinone
Di(2-ethylhexyl) phthalate
Divinylbenzene-ethyl styrene mixture
Ethylene glycol dinitrate
Glycidyl methacrylate
Glyphosate
Iodine and iodides
Methylnaphthalene, all isomers
Nitric acid
n-Propyl nitrate
Phenothiazine
Propylene glycol dinitrate
Silicon carbide
Tetrachlorvinphos
Trimetacresyl phosphate
Triparacresyl phosphate
Vinyltoluene, all isomers

Newly adopted BEIs

Cyclohexane

Proposed notice of intended changes for BEIs

2-Ethoxyethanol and 2-ethoxyethyl styrene
Acetate
Acrylamide
Furfural

Adopted updates to the TLVs for physical agents

Ultraviolet radiation
Upper limb localised fatigue

Proposed notice of intended changes to the physical agents section

Heat stress and strain

ACGIH professional development course: Fundamentals in Industrial Ventilation – organised by the Belgian Society of Occupational Hygiene (BSOH)

Michel Vangeel
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A very successful Fundamentals of Industrial Ventilation professional development course (PDC), developed by the American Conference of Governmental Industrial Hygiene (ACGIH), took place for the first time in Europe on 11–15 October 2021, in Ghent, Belgium. The training was organised by the Belgian Society for Occupational Hygiene (BSOH), with the support of Mensura and the Belgian Center for Occupational Hygiene (BeCOH). Nederman partly sponsored the ventilation system used for the practical training.

The idea to launch a more in-depth training course related to ventilation was raised about three years ago at a BSOH Board meeting. In Belgium, occupational hygienists often identify poorly designed ventilation systems that are not properly used and maintained. This initiated the idea to organise a professional training course on ventilation in workplaces. Several training programmes in the European Union were evaluated, and it was clear that no current training could meet all our expectations. It was Steven Verpaele, a BSOH Board member who, after attending the Fundamentals in Industrial Ventilation course in the United States, made us excited about bringing this ACGIH course to Belgium.

In January 2021, we connected for the first time with Frank Mortl, Chief Executive Officer (CEO) of ACGIH, and provided him with a formal letter for the ACGIH Board of Directors with a request to schedule this course in Belgium. Frank immediately responded and considered this as a dynamic opportunity. In February 2021, the ACGIH Board of Directors enthusiastically responded and supported this request. Frank brought us into contact with Philip Rauscher, ACGIH Senior Director of Science & Education, and we began to organise frequent meetings. We were thrilled to see that Gregg Grubb and Jonathan Hale were selected and available as instructors supporting the PDC.

They did a first-class job, knowing how to teach, having a high level of expertise and making it a fun experience. We received very positive responses from all attendees after completing the course.

We thank ACGIH for their significant commitment, spreading industrial hygiene knowledge across the globe. We were also impressed to see Frank and Philip supporting this PDC in Belgium, in person. This showed their level of engagement, and provided us with confidence for future collaborations with BSOH and other European occupational hygiene societies.

The BSOH Board has already received confirmation from the ACGIH to organise the course again in Belgium in November 2022, and plans are to provide it in 2023 as well. All course attendee evaluation forms will be reviewed and comments will be noted for future course deliveries.

The BeCOH stores all the equipment in its warehouse, before and after each training session. Having a ventilation system available will make it easier to organise more of these PDCs in Europe. When other European occupational hygiene associations show interest in organising this PDC, BSOH will provide its support. Steven Verpaele has been approved as an official member candidate to the ACGIH Industrial Ventilation Committee. As agreed with ACGIH, Steven will be the liaison and contact person between European occupational hygiene societies interested in organising this PDC with the ACGIH in the future.

Participants at the Fundamentals of Industrial Ventilation professional development course *Photograph: Michel Vangeel*

IOHA Board meeting and SOFHYT Conference on Ergonomics in Paris

Nathalie Argentin
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The French Society of Occupational Hygienists (SOFHYT) is proud to have hosted the spring IOHA Board meeting on 3 April 2022. Given the increase in the number of COVID-19 cases and new restrictions, only a few members were able to join in person. Nevertheless, it was a success. This was a hybrid meeting, so those who were not able to travel participated via MS Teams.

On 4 and 5 April, the 2022 edition of the SOFHYT Conference took place in Paris with the theme, *The place of ergonomics in occupational hygiene*. Despite the small assembly, the outcome was very positive. In addition to the exchanges around the theme, the Conference provided the first opportunity for a fruitful collaboration with the SELF (French-speaking Ergonomics Society). This enabled us to envisage real possibilities for collaboration between the two organisations, e.g. joint actions in schools around workplace hygiene. The Conference also benefited from the presence of members of the IOHA who gave two presentations: one on their activities and another on disability. Finally, there were discussions about the contribution of exoskeletons, and their relevance and effectiveness in the fight against musculoskeletal disorders (MSDs). Most importantly, the Conference provided an opportunity to increase our network, to meet other occupational hygienists, to share ideas and opinions, and to eat together. After more than two years without any opportunities to meet, this was highly appreciated by all.

L–R: Pascal Kerneis, Andres Winkes, Steven Verpaele, Samantha Connell, Thomas Fuller, Hugo Perez, Ruth Jimenez, Maharshi Mehta, and Nathalie Argentin *Photograph: courtesy of Nathalie Argentin*

New hazardous biological agents regulations further regulate employers' responsibilities for managing COVID-19 exposure in the workplace in South Africa

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (COVID-19) is now listed as a Group 3 hazardous biological agent (HBA) in the Hazardous Biological Agents Regulations, 2022 (Regulations).

The Regulations were published by the Minister of Employment and Labour on 16 March 2022 in terms of section 43 of the Occupational Health and Safety Act (OHSA), 1993. The Regulations categorise HBAs into four risk groups according to their hazard and categories of contaminant, and require employers to control the exposure to HBAs in the workplace via various reasonably practicable measures.

COVID-19 is recognised as a Group 3 HBA that *'may cause severe human disease, which presents a serious hazard to exposed persons and which may present a risk of spreading to the community, but for which effective prophylaxis and treatment is available'.*

In particular, in categorising COVID-19, the Regulations specify that a registered vaccine is available for use in South Africa and can, in terms of regulation 10(4)(g), be made available to control exposure to the HBA in the workplace, where reasonably practicable.

This is a welcome amendment to the Regulations, as it will assist employers who have implemented vaccination requirements in the workplace (or who intend to do so) to justify their requirements of vaccination as a control measure.

It can further be relied upon as a means of demonstrating what would be considered 'reasonably practicable' for purposes of complying with an employer's legal duty, in terms of section 8 of the OHSA, to provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of its employees.

The Regulations are applicable to every employer or self-employed person at a workplace where inter alia exposure to an HBA (i.e. COVID-19) may occur. Overall, the Regulations place a number of legal duties on the employer, which include, amongst other things, the duty to:

- provide information, training and instruction to its employees on the risks of the HBA and the precautions to be taken;
- ensure that a risk assessment is conducted and documented by a competent person;
- develop an action plan for the implementation of the recommendations identified in the risk assessment and to inform all employees, the relevant health and safety representative, and health and safety committee of the results of the risk assessment, and invite comments on such results;
- establish and maintain an exposure monitoring programme;
- establish and maintain a documented system of medical surveillance that is overseen by an occupational health practitioner;
- keep records, including the retention of a risk assessment for a minimum period of 40 years; and
- prevent and control the exposure to the HBA in the workplace, which includes, where reasonably practicable, making available effective vaccines for those employees who are not immune to the biological agent to which they are exposed or could be exposed.

Any person who contravenes or fails to comply with these obligations, will be guilty of an offence and liable on conviction to a fine or to imprisonment for a period not exceeding 12 months.

The Regulations are to be read alongside the recently published Code of Practice: Managing Exposure to SARS-CoV-2 in the Workplace (Code). To see our newsflash on the Code click here.

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News from the global health arena

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World Day for Safety and Health at Work 2022 global webinar

The World Day for Safety and Health at Work 2022 global webinar explored the theme of *Act together to build a positive safety and health culture*, and focused on participation and social dialogue to turn the theme into reality. Organised by the International Labour Organization (ILO), this virtual event, held on 28 April, brought together global leaders and experts to discuss the theme and share experiences from around the world. The webinar also served to present the global report on enhancing social dialogue for improved occupational safety and health (www.ilo.org/safeday). The following speakers delivered presentations at the webinar; the recording can be accessed at https://www.youtube.com/watch?v=FhzfMq98gjs:

- Malek Ezzahi – Minister of Social Affairs, Tunisia
- Jeannette Alejandra Jara Román – Minister of Labour and Social Protection, Chile
- Saravanan Murugan – Minister of Human Resources, Malaysia
- Ana Mendes Godinho – Minister of Labour, Solidarity and Social Security, Portugal
- Hanna Sarkkinen – Minister of Social Affairs and Health, Finland
- Roberto Suarez Santos – Secretary-General, International Organisation of Employers (IOE)
- Sharan Burrow – International Trade Union Confederation
- Jukka Takala – Executive Director emeritus, International Commission on Occupational Health (ICOH)
- Ruth Wilkinson – Head of Health and Safety, Institution of Occupational Safety and Health (IOSH), UK
- Yogindra Samant – Chief Medical Officer, Norwegian Labour Authority
- Alke Boessiger – Deputy General Secretary of UNI Global Union (formerly Union Network International)
- Kris de Meester – First Advisor, Federation of Enterprises, Belgium

World Health Organization

The Quadripartite memorandum of understanding (MoU) was signed for a new era of 'One Health' collaboration. On 17 March 2022, four international agencies, viz. the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE), the United Nations Environment Programme (UNEP), and the World Health Organization (WHO) signed a groundbreaking agreement to strengthen cooperation to sustainably balance and optimise the health of humans, animals, plants and the environment. The MoU provides a legal and formal framework for the four organisations to tackle the challenges at the human, animal, plant and ecosystem interface, using an integrated and coordinated approach. This framework will also reinforce national and regional health systems and services (www.fao.org/3/cb9403en/cb9403en.pdf).

On World Health Day, 7 April 2022, themed *Our planet, our health*, the WHO provided global attention on urgent actions needed to keep humans and the planet healthy and foster a movement to create societies focused on wellbeing. The WHO estimates that more than 13 million deaths around the world each year are due to avoidable environmental causes. This includes the climate crisis, which is the single biggest health threat facing humanity. Hence, the climate crisis is also a health crisis (https://www.who.int/campaigns/world-health-day/2022).

A new WHO report, titled 'Scope and impact of digital marketing strategies for promoting breast-milk substitutes', outlines the digital marketing techniques designed to influence the decisions that new families make about feeding their babies. Formula milk companies post content on their social media accounts around 90 times per day, reaching 229 million users, representing three times as many people as are reached by informational posts about breast-feeding from non-commercial accounts. This persistent marketing is increasing purchases of breast-milk substitutes and dissuading mothers from breast-feeding exclusively as recommended by the WHO (https://www.who.int/publications/i/item/9789240046085).

The United Nations Children's Fund (UNICEF) and WHO warn of a 'perfect storm of conditions for measles outbreaks, affecting children'. An increase in measles cases in January and February of 2022 (up 79% from the same period in 2021) is a worrying sign of an increased risk for the spread of vaccine-preventable diseases, and could trigger larger outbreaks, particularly of measles, affecting millions of children during 2022. Pandemic-related disruptions, increasing inequalities in access to vaccines, and the diversion of resources from routine immunisation are leaving many children vulnerable, without protection against measles and other vaccine-preventable diseases.

(https://www.who.int/news/item/27-04-2022-unicef-and-who-warn-of--perfect-storm--of-conditions-for-measles-outbreaks--affecting-children)

Highlights from the April 2022 *Bulletin of the World Health Organization* include the Ukraine crisis, genomic surveillance for pathogens with pandemic potential, building resilient health systems, the environmental impact of COVID-19 medical waste, and nursing during the pandemic.

(https://www.who.int/publications/journals/bulletin)

The Mozambican Conference on Health and Safety at Work was held in Maputo on 28 April 2022, to coincide with the World Day for Safety and Health at Work *Graphic credit: Mo Equilibrium Ltd*

Global action on tuberculosis

The Treatment Action Group (TAG) and the Coalition of Women Living with HIV and AIDS (COWLHA) have announced the release of their latest publication, *Community-led Monitoring for Access to Tuberculosis Screening and Diagnostic Testing*. This resource equips communities to use community-led monitoring (CLM) to better understand the tuberculosis screening and diagnostic services they receive; to identify gaps in the availability of tools, services, and care delivered; and to translate findings into evidence-based advocacy.

(https://www.treatmentactiongroup.org/publication/community-led-monitoring-for-access-to-tuberculosis-screening-and-diagnostic-testing/?eType=EmailBlastContent&eId=7f3f5028-af2d-4664-879a-a122870f9c8b)

The Centers for Disease Control and Prevention (CDC US) 'TB Elimination Champions Project' provides an opportunity to recognise accomplishments and learn best practices from individuals who are making significant contributions to eliminating tuberculosis in the United States. As part of World TB Day (held annually on 24 March) observance activities, the CDC recognised eight US 'TB Elimination Champions', who adapted tuberculosis prevention and control activities to the changing healthcare landscape and ensured equitable access to tuberculosis services.

(https://www.cdc.gov/tb/worldtbday/2022/tbchampions.htm?ACSTrackingID=USCDCNPIN_8-DM79042&ACSTrackingLabel=Find%20TB%20Resources%20Newsletter%20April%202022&deliveryName=USCDCNPIN_8-DM79042)

The CDC is on the frontlines in more than 25 high-burden countries, working with partner governments to find, cure and prevent tuberculosis and help sustain country efforts, e.g. in Tanzania, Vietnam, and Eswatini:

'A health providers' commitment to ending tuberculosis in Tanzania'
'Leveraging new tools for TB testing in Vietnam'
'From crisis to comeback: Turning the tide on TB in Eswatini'
(https://www.cdc.gov/globalhivtb/index.html)

The ICOH membership renewal campaign is open

ICOH has launched its membership renewal campaign for the 2022–2024 triennium. ICOH members will receive individual communications from the ICOH secretariat with instructions and forms for the payment of their membership fees. The membership renewal campaign, previously planned to start in 2021, was adjourned, following the one-year postponement of the ICOH2021 Congress to 2022. Should you want to apply for ICOH membership for the first time, please access the application form online at: http://www.icohweb.org/site/members-how-to-apply.asp. For further information, please contact the ICOH secretariat at icoh@inail.it.

SASOM national office

The Western Cape Chapter of the South African Society of Occupational Medicine (SASOM) organised and presented its second continuing professional development (CPD)-accredited online academic meeting of 2022 to SASOM members, using the Zoom platform of the SASOM national office. The virtual event was held on Tuesday evening, 15 March. The virtual event was titled 'An evening of toxicology training by Dr Haidee Williams (occupational medicine specialist)', and included three sessions:

- Toxicology refresher for occupational health professionals
- Question and answer session
- Risk management in pharmaceutical manufacturing: taking toxicology from theory to practice

The SASOM Western Cape Chapter's annual general meeting and provincial elections (only for SASOM Western Cape Chapter members in good standing) were held on the same evening.

The SASOM academic programme for the month of April included a virtual journal club session held on 12 April 2022, chaired by Prof. Daan Kocks (SASOM Chair) and co-hosted by the Department of Public Health Medicine of the University of Pretoria, Sefako Makgatho University, and the University of Limpopo, in collaboration with the Gauteng Department of Health and SASOM. The scientific paper presented and discussed was titled 'Workload, burnout, emotional states, and job performance of government employees: an exploratory investigation from the third wave of COVID-19', by ND Mohd Mahudin and NIA Zaabar from the Department of Psychology, International Islamic University Malaysia, Kuala Lumpur, Malaysia.[1]

Prof. Daan Kocks was invited to talk at the stakeholder session of the 100th COVID-19 Centenary Webinar of the National Institute for Occupational Health (NIOH), convened on Thursday 21 April 2022. As an established NIOH stakeholder, SASOM continues to support and contribute to the NIOH's efforts in advancing and strengthening occupational health resilience for national emergency epidemic responses for South African workplaces. This virtual event presented an opportunity to reflect on the South African (and global) emergency response to epidemic outbreaks and to explore ways to strengthen the resilience of the occupational health systems for future epidemic outbreaks. Other presentations at this virtual event included:

- 'SARS-CoV-2/COVID-19 – an epidemiological and a global perspective': Prof. Salim Abdool Karim (CAPRISA director; CAPRISA

professor of Global Health, Columbia University; Vice President for Outreach and Engagement of the International Science Council)
- 'COVID-19 prevention and workplace preparedness – NIOH's response and lessons learnt': Dr Tanusha Singh (NHLS-NIOH COVID-19 Occupational Health Outbreak Response Team (OHORT))
- 'Recommendations for future epidemics and strengthening occupational health system resilience: what can be done?': Prof. Mohamed Jeebhay (Head: Division of Occupational Medicine, School of Public Health Medicine, University of Cape Town), and Prof. Rajen Naidoo (Head: Discipline of Occupational and Environmental Health, School of Nursing and Public Health, University of KwaZulu-Natal)

Claudina Nogueira (SASOM ExCo member and ICOH Vice President) represented Workplace Health Without Borders (WHWB) at the Mozambican Conference on Health and Safety at Work, held in Maputo on 28 April 2022 to coincide with the World Day for Safety and Health at Work. The hybrid conference was hosted by Mo Equilibrium Ltd at the Gloria Hotel in Maputo, and co-organised by three Mozambican entities, viz. the Mozambican Association of Occupational Health and Safety at Work Professionals (AMOSSETRA), the Mozambican Public Health Association (AMOSAPU), and the Mozambican Psychology Association (APM). The programme was coordinated by Dr Ana Beatriz Morais from AMOSAPU. Claudina's virtual presentation, in Portuguese, was titled *'O investimento em Saúde e Segurança no Trabalho: Para melhorar o desempenho e a produtividade de empresas e da sociedade'* ('Investment in Occupational Health and Safety: to improve the performance and productivity of companies and society'), and included an overview of WHWB and ICOH as global occupational health organisations and the benefits of membership, particularly for individual and corporate members from developing countries.

REFERENCE

1. Mohd Mahudin ND, Zaabar NIA. Workload, burnout, emotional states, and job performance of government employees: an exploratory investigation from the third wave of COVID-19. Human Factors and Ergonomics Journal (HFEJ). 2021; 6(2):34-48.

SASOHN Academic Day 12 May 2022

Hosted by: SASOHN Pretoria Region

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NURSES
A VOICE TO LEAD
INVEST IN NURSING AND RESPECT RIGHTS TO SECURE GLOBAL HEALTH

INTRODUCTION

On 12 May every year, International Nurses Day – coinciding with Florence Nightingale's birthday – is celebrated around the world. The theme for 2022, as announced by the International Council of Nurses (ICN), was *Nurses: a voice to lead – Invest in nursing and respect rights to secure global health*. This put the focus on the need to protect, support and invest in the nursing profession to strengthen health systems around the world.

The South African Society of Occupational Health Nursing Practitioners (SASOHN) Pretoria Region hosted the 16th SASOHN Academic Day as a hybrid event at the Radisson Hotel in Kempton Park. The presentations were aligned to meet the SASOHN goals and the International Nurses Day theme. We hosted 46 attendees in person, and nine virtually.

PRESENTATIONS

The venue was COVID-compliant, and we had powerful and inspiring speakers with vast knowledge in nursing and academia. The event was opened by Khanyoh Zuma, the SASOHN National Educational Representative, who led us with a recitation of the Nurses Pledge. The SASOHN President, Michelle Bester, welcomed everyone and wished them a wonderful International Nurses Day.

The first session was chaired by Pretoria Chairperson, Bella Sepalamelo. She introduced the first speaker, Prof. Tendani Ramukumba of Tshwane University of Technology (TUT), who discussed 'A voice to lead – invest in nursing and respect nurses' rights'. She spoke about potential leadership growth and explained the importance of leadership, especially in turbulent times. The COVID-19 pandemic changed the way that nurses do business. Prof. Ramukumba also touched on the fundamental gaps between older and younger nurses, which is characterised by insubordination, unrest, and arrogance but, most importantly, she emphasised that occupational health nurses should conduct research in their spheres of work.

The second speaker was the ever-inspiring Dr Sharon Vasuthevan – a nurse leader and education specialist who has a focus on quality in healthcare. She is a research associate at Nelson Mandela University and supervises master's and doctoral students. She spoke about 'Accelerating

The SASOHN President and the Academic Day organising committee *Photograph: courtesy of SASOHN*

nursing and transforming healthcare workers', and emphasised the importance of nurses being part of research and developments in nursing. She expressed her interest in driving the professional branding of nurses, a niche area that she has pursued since 2012 through workshops, coaching, individual sessions, and involvement in professional societies.

The third speaker was Dr Spo Kgalamono, an occupational medicine specialist and executive director of the National Institute for Occupational Health (NIOH). She spoke about the importance of occupational health for health workers. Dr Kgalamono always acknowledges the fact that nurses are the backbone of our health sector. She saluted the frontline warriors for their dedication and service, and observed a moment of silence for those colleagues that we have lost due to the Pandemic. Her main message was to encourage nurses to be part of decision-making bodies, especially at the national level. If we, as occupational health practitioners, don't make our voices heard, nobody will do it for us.

The second session of the day was led by Alta Kruger, SASOHN Pretoria's Educational Representative. The first speaker was Dr Sipho Ncongwane, who addressed us, virtually, on 'Mental health challenges faced by healthcare workers (HCWs) during the COVID crisis'. Dr Ncongwane obtained his Master of Business Administration (MBA) degree in the Netherlands, and his Doctorate in Literature and Philosophy at UNISA, and is currently working at the South African Revenue Service (SARS). He reminded us that we are not yet out of the woods with regard to the COVID-19 pandemic, and that we should know that mental ill health of HCWs negatively influences patient care. It was alarming to hear that mental health was recently rated second to cancer in ill-health diagnoses, and that nurses have worse outcomes than doctors, regarding mental health. The other factor highlighted was the financial concerns with which nurses may struggle. There is considerable under-investment in mental health for HCWs. As a profession, occupational health nurses should set an example; we should look after ourselves and our colleagues so that we are able to continue with our work.

Dr Nelisiwe Msibi was the second speaker. She is an occupational health practitioner with more than 20 years of experience. She previously worked for different mining companies and is currently working in the public sector. Unfortunately, Dr Msibi had network challenges when she tried to address us on the issue of 'Nurse burnout and compassion fatigue'. She has, however, agreed that we can share her presentation with the Academic Day attendees.

What does the future hold and how do we and our practices adapt in this fast-paced, evolving electronic era? Tshidi Morabi, who has 10 years' experience in medical healthcare software and is the owner of Ginini Consulting, gave us insights into 'Robotics in nursing – the present and the future'. Will robots take over our jobs? Definitely not, but they provide us with tools and solutions to make our jobs easier. Robots can perform menial and repetitive tasks such as monitoring blood pressure, taking pulses, and testing blood. Artificial intelligence (AI) will reduce misdiagnosis, assist with disease detection, and improve surgery.

COVID-19 brought many changes. Telehealth is surely not new, but its importance and the ways in which we can implement it in occupational health were highlighted by Dr Neil van Tonder, the director since 2019 and co-founder of eHealth Africa, who spoke about the 'Role of telehealth in occupational health nursing'.

Last, we were delighted and inspired by the motivational speaker, Zella Young, whose passions are teaching and sharing knowledge. She is the chief operating officer of LifeSense Disease Management and, in this capacity, encouraged everyone to keep going and to continue their passion for healthcare and for making others' lives better.

SASOHN Academic Day presenters *Photograph: courtesy of SASOHN*

Exhibitor stands *Photograph: courtesy of SASOHN*

Exhibitors

A big thank you goes to the exhibitors who regularly support SASOHN.

- Hearing Coach – the hearing health programme is a preventive hearing healthcare programme
- Homemed – offers a wide range of rapid diagnostic tests and medical devices, e.g. urine analysis and tests for drug abuse, glucose, HbA1c, cholesterol, cardiac markers, HIV, malaria, prostate-specific antigen (PSA), and pregnancy
- OSOH X-rays – provides a service to all occupational practitioners by providing the necessary X-rays for medical examinations, as legislated
- Hear X – provides digital clinical screening and self-test solutions for easier, and more efficient and cost-effective hearing care
- Amtronix – has been offering screening/diagnostic audiology, vision screening and lung function testing equipment and support since 1977
- Koena Consulting – specialises in occupational health and safety (OHS) consulting, training, and provision of occupational health services
- SSEM Mthembu Medical – the leading distributor of electro-medical devices and medical consumables throughout southern Africa
- Education for Health Africa – offers several training courses

AKNOWLEDGEMENTS

The Pretoria Executive Committee members extend their sincere thanks to all members, exhibitors and sponsors for their support in making the day a success, to the organising team, and to the SASOHN EXCO for their continued support.

SAIOH newsletter

SAIOH PRESIDENT'S ADDRESS

Hennie van der Westhuizen: SAIOH President
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As part of our service to members, we provide feedback on the latest developments within the Southern African Institute for Occupational Hygiene (SAIOH) in this newsletter. SAIOH exists because of its members, and for them, and relies on them to continue to ethically serve the noble occupational hygiene profession. Therefore, we invite your inputs and feedback on any matters communicated below. A big thank you goes out to the National Council, Management Board, and the SAIOH Administration and PCC teams for maintaining momentum in the strategic areas and day-to-day activities.

NATIONAL COUNCIL FEEDBACK

Hennie van der Westhuizen: SAIOH President
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1. Strategic plan

The current SAIOH strategy (five-year plan) is steered by Jaco Pieterse. The strategy is discussed, and progress thereof evaluated, at each monthly SAIOH Management Board meeting, and at the quarterly Council meetings. Several objectives/targets have already been met. The next five-year strategy plan will be finalised at a special Management Board meeting in July 2022.

2. Ethics

As previously mentioned, SAIOH entered into an agreement with a well-known legal advisor, a non-governmental organisation (NGO – Law), to represent the Institute when required. The first task was to develop a memorandum of incorporation (MoI) to replace our current constitution. SAIOH has received the first draft of this important document. Our legal advisor's next task will be to review the SAIOH ethics policy and procedure(s), thus enabling the Ethics Committee, under Oscar Rikhotso, to start its work in earnest.

Reminder

From January 2023, all SAIOH-certified members will be required to provide proof that they have completed an acceptable occupational hygiene ethics training course. There will be a one-year phase-in period during 2022. During session seven of our 2021 conference, there was a one-hour presentation facilitated by Terry McDonald from the British Occupational Hygiene Society (BOHS), UK (a world-renowned expert in this field). SAIOH will shortly post the online test on the SAIOH website, in a protected field, and e-mail the necessary passcodes to the members who attended the webinar or purchased the recording. On passing the multiple-choice test with a minimum mark of 70%, members will receive a certificate that is valid for three years (with effect from 1 January 2023). During 2022, there will be further ethics training sessions organised in conjunction with the SAIOH branches, and again at the 2022 conference.

3. SAIOH branch activities

The Zululand branch, Jakes Jacobs (Sedulitas), and the SAIOH Administration team undertook a successful roadshow at major centres in southern Africa. During 7–15 March 2022, Dr Joost van Rooij (Chemrade, Netherlands) presented four two-day, face-to-face training courses on hazardous chemical agent (HCA) risk assessments. These paid-for training sessions by an international specialist were a tremendous success. They not only improved the 55 occupational hygiene practitioners' (OHPs') competencies, but also benefitted SAIOH.

These masterclass training sessions took place in:

- Cape Town, Western Cape – unfortunately, only four OHPs attended
- Durban, KwaZulu-Natal – 24 attendees
- Midrand, Gauteng – 12 attendees
- Swakopmund, Namibia – 15 attendees

The Western Cape branch hosted an in-person meeting on Friday 11 March 2022, with a presentation on electromagnetic field (EMF) radiation by Sam Tshabalala from Eskom; 42 OHPs attended. The Gauteng branches held a successful MS Teams meeting on Friday 25 March 2022. Jaco Pieterse gave an excellent presentation on the new SANS 10083-2021 Standard; 128 OHPs attended. The KwaZulu-Natal branch held their meeting via Zoom, on 30 March 2022. Dr Dennis Amoah from the Durban University of Technology gave an excellent presentation on Legionella; 35 OHPs attended.

Moses Mokone organised two virtual events – a SAIOH branch development workshop (28 March 2022) and a branch chair meeting (21 April 2022). Virtual meetings and workshops present numerous opportunities to SAIOH members. All SAIOH members are automatically invited to attend any SAIOH branch meeting (or event), regardless of their branch affiliations. We encourage all our members to support their branches, and to participate in branch activities and earn continuing professional development (CPD) points. Members can submit topics for discussion to the various branch chairs for consideration for future webinars, meetings and/or workshops.

> SAIOH would like to revive stagnant branches, starting with the Mpumalanga and Namibian ones. Members who would like to assist with, or contribute ideas towards, this initiative should contact Moses Mokone (SAIOH Branch co-ordinator) at Mokonemoses2@gmail.com.

4. IOHA and OHTA feedback

The Occupational Hygiene Training Association (OHTA) recently published its May 2022 *Global Link* newsletter. SAIOH e-mailed the link to all its members and posted it on the SAIOH website: www.saioh.co.za. The focus of the latest OHTA newsletter is on Singapore.

Peter-John Jacobs, the SAIOH representative on the OHTA Board, evaluated a new OHTA approved training provider (ATP) in line with the memorandum of understanding (MoU) that SAIOH has with OHTA. We welcome our newest SAIOH OHTA ATP, NEXAM (in Durban). Note that OHTA has a new website: www.ohtatraining.org.

Closer to home, our SAIOH representative on the International Occupational Hygiene Association (IOHA) Board and its National Accreditation Recognition Committee (NARC), Garth Hunter, continues to give the PCC valuable feedback from the IOHA and IOHA NARC meetings. The issue of ISO 17024 accreditation, as a requirement for any national occupational hygiene association to become a member of IOHA, was also discussed in detail at the IOHA and NARC meetings. The overwhelming majority of the IOHA and NARC national associations voted to align their management and QMS systems to the ISO 17024 system.

5. SAIOH Technical Committee feedback

The SAIOH Technical Committee is still busy with research on welding fumes, i.e. the measurement and analyses thereof. We anticipate completing this procedure and finalising a SAIOH technical and position paper in the near future. The next position paper will be on heat stress equations.

6. Annual SAIOH Scientific Conference

Watch this space!

The 2022 Annual SAIOH Scientific Conference is scheduled for 24–28 October 2022, in Gauteng. The Conference will be a hybrid event, i.e. face-to-face and via live streaming, and will be hosted by the Gauteng branch(es). The Conference Organising Committee had several discussions with their members at the Gauteng branch meetings. The volunteers, under the able leadership of Lene Hugo (Gauteng Branch Chair), held their first official meeting on 17 March 2022 to get the ball rolling, with a follow-up meeting held on 10 May 2022. The theme will be centred around control, and the Gauteng branches have already designed a conference banner.

7. Administrative matters

The SAIOH Administration team held its first official staff meetings in 2022. The aim of these meetings is to meet Strategic Objective 6, and to ensure cross-pollination and open communication lines between the two administration teams and SAIOH management.

SAIOH engaged website developers to completely overhaul the current website – especially to allow integration with our current member management system (MySAIOH). The guidance document was developed by our administration teams, circulated for final feedback to the Council members, and sent to the website developers for development. The administration teams are progressing well with the implementation and population of the new SAIOH website.

Kate Smart, our Chief Administrative Officer (CAO), has started the process to implement an online credit card payment system on a well-known international platform, like PayU, to make electronic payments easier for members. As soon as this is finalised, SAIOH will notify all members with a guideline on how to use it. Special thanks go to Kate.

8. Communications

SAIOH publishes its newsletter and Presidents' page in two electronic mediums, namely *Occupational Health Southern Africa* (OHSA, a peer-reviewed journal) and the *African OS&H* magazine (A-OS&H). These publications are issued every two months; the links are sent to all members via a Mailchimp and posted on our website.

SAIOH communicates daily with its stakeholders (i.e. the Department of Employment and Labour, Mine Health and Safety Council (MHSC), Mine Ventilation Society of South Africa (MVS SA), Ergonomics Society of South Africa (ESSA), South African Society of Occupational Medicine (SASOM), South African Society of Occupational Health Nursing Practitioners (SASOHN), Workplace Health Without Borders (WHWB), Occupational Hygiene Approved Inspection Authority Association (OH AIA Ass), South African Institute of Occupational Safety and Health (Saiosh), South African National Accreditation System (SANAS), National Institute for Occupational Health (NIOH), National Institute of Occupational Safety and Health (NIOSH, USA), International Occupational Hygiene Association (IOHA) and IOHA's National Accreditation Recognition Committee (IOHA NARC), Occupational Hygiene Training Organisation (OHTA), Australian Institute of Occupational Hygiene (AIOH), British Occupational Hygiene Society (BOHS), American Industrial Hygiene Association (AIHA), American Conference of Governmental Hygienists (ACGIH), etc.) via e-mails, phone calls and virtual meetings, regarding important news, technical information, legislation changes, new standards, webinars, etc.

Several online events and webinars were hosted by our stakeholders recently:

- WHWB webinar on Respiratory Protection for COVID-19 (31 January 2022)
- International Commission on Occupational Health virtual ICOH 2022 Congress (6-10 February 2022)
- SANAS 2022 Assessor Conclave (17 February 2022)
- Occupational Health Southern Africa editorial board meeting (18 February 2022)
- SAIOH, DoEL and OH AIA Ass. liaison meeting (16 March 2022)
- The NIOH Centenary Webinar on COVID-19 (21 April 2022), where Prof. Cas Badenhorst represented SAIOH and gave a presentation on SAIOH and its work during the COVID-19 pandemic
- NIOH webinar on Ergonomics and COVID-19 – lessons learnt (24 March 2022)
- WHWB webinar on Global Workplace Silica Exposures and Health Risks (27 April 2022)

A special virtual induction session was presented to the new Council members on 29 March 2022. The history of SAIOH and its structures, and the quality management system (QMS), were addressed. The aim was to enable new Council members to get up to speed and have an introduction to SAIOH's corporate memory.

FROM THE PROFESSIONAL CERTIFICATION COMMITTEE (PCC)

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1. Certification assessments

The special PCC technical team is hard at work revising the PCC oral assessment format, in line with the occupational hygiene self-assessment tool, ensuring not only that the growing field of occupational hygiene is covered, but also that all the current difficulties and issues experienced are addressed.

A summary of results from the first written assessments for 2022 (on 25 March 2022), is provided in Table 1. The first quarter's oral assessments started on 22 April and are currently in progress.

Table 1. Results for written assessment (25 March 2022)

Certification category	Assessed n	Passed n	Failed n	Pass rate %
OH assistant	49	43	6	87.8
OH technologist	22	14	8	63.6
Occupational hygienist	17	6	11	35.3
Total	**88**	**63**	**25**	**71.6**

2. PCC communications

Two special virtual induction sessions were presented to the new PCC Chair and Vice Chair on 7 March 2022, and an additional induction session was held for new PCC members on 29 March 2022, to address the history of SAIOH, and their responsibilities:

- for the PCC management, in their new capacities in the SAIOH Council, Management Board, and PCC Executive Committee;
- for the PCC members – how to conduct oral assessments, the SAIOH and, specifically, the PCC structures and procedures/ QMS, and PCC tasks were addressed in these sessions.

The aim was to enable all new PCC members to get up to speed and receive an introduction to SAIOH's corporate memory and the PCC quality culture.

3. Occupational Hygiene Skills Forum (OHSF)

The SAIOH Occupational Hygiene Skills Forum (OHSF) was initiated to coordinate all aspects related to the recognition of occupational hygiene training materials (e.g. the AIHA Basic Industrial Hygiene Course at the registered occupational hygiene assistant (ROHA) level, training providers and institutions, and the development and management of assessment and examination systems, where required.

Another function of the OHSF is to evaluate applications from tertiary institutions for recognition of their occupational hygiene-related qualifications. The OHSF is progressing well with these accreditations. A recently developed matrix is used to evaluate the occupational hygiene (OH) qualifications content (in line with the 50% OH subject requirement).

The OHSF had its first official meeting for 2022 on MS Teams on 4 March 2022.

Congratulations to North-West University and the Tshwane University of Technology, whose four-year bachelor's degrees were recognised by the OHSF as meeting the qualification criteria at the registered occupational hygienist (ROH) level. The OHSF is currently hard at work, evaluating the University of the Witwatersrand's and Cape Peninsula University of Technology's programmes.

All tertiary institutions that offer OH qualifications are encouraged to contact the PCC Administrator for information regarding application for recognition (lee@saioh.co.za). Details of recognised training providers and recognised qualifications will soon be available on the SAIOH website (www.saioh.co.za). This will make it easier for students and certification candidates to select suitable occupational hygiene training programmes that meet SAIOH and international requirements.

2022 World TB Day commemoration in the South African mining industry

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INTRODUCTION

The Mine Health and Safety Council (MHSC), as an adviser to the Minister of the Department of Mineral Resources and Energy (DMRE) on issues pertaining to health and safety, hosted the 2022 World TB Day Commemoration in the South African mining industry (SAMI) at Cullinan Diamond mine, on 31 March 2022. The MHSC hosted this day in collaboration with the Minerals Council of South Africa, the South African Business Coalition on HIV/AIDS (SABCOHA), and the Gauteng Ukhozi Regional Tripartite forum. The date, 24 March, marks the day in 1882 that Robert Koch discovered the bacillus and named it *Mycobacterium tuberculosis*. Decades later, we are still battling to end tuberculosis (TB). The theme for the 2022 World TB Day Commemoration in the SAMI was *Invest in action to End TB (HIV and COVID-19) in the mining sector NOW! SAVE LIVES.*

BACKGROUND

The MHSC and the Minerals Council have made great strides in assisting and supporting occupational medical practitioners in the SAMI with the monitoring and management of occupational diseases, e.g. TB, HIV/AIDS, COVID-19, silicosis, and other non-communicable diseases such as diabetes, hypertension, asthma, etc. This has been in the form of providing guidelines and codes of practice (COPs), and in data monitoring of TB and HIV/AIDS, which is done using the DMR164 form. Data monitoring by the DMRE assists both the MHSC and the Minerals Council to assess disease trends and severity in the SAMI and to provide guidance to the mining companies.

There are two fundamental targets pertaining to TB, which the SAMI needs to uphold. The first target was set as a 2014 milestone by the MHSC tripartite forum: to reduce TB incidence in the SAMI to the South African national incidence rate, or below. The second target is part of the United Nations' Sustainable Development Goal (SGD) 3.3, which includes ending the TB epidemic; the goal is to reduce the number of TB deaths by 90% and the incidence rate of TB by 80% by 2030, compared to the 2015 figures.[1] In order to achieve these targets, the MHSC, through the Mining Industry TB and HIV Advisory Committee (MITHAC), has developed guidelines on combating TB associated with HIV/AIDS and silicosis by ensuring an integrated approach to disease management. In the management of HIV/AIDS and TB co-infection, the SAMI has adopted the UNAIDS Strategy to ensure adequate HIV/AIDS disease management, viz. 90% of people living with HIV will know their status, 90% of people who know their HIV status will have accessed treatment, and 90% of people on treatment will be virologically suppressed.

PROCEEDINGS OF THE DAY

Presenters who attended the commemoration, virtually or in person, focused on the initiatives taken to eradicate TB in the mines, and the challenges of data collection – especially in the small mines – and innovative modalities to *'END TB'* in the SAMI.

Dr Lindiwe Mvusi from the Department of Health touched on the national state of TB and HIV, highlighting the progress and challenges faced by South Africa, especially during the COVID-19 pandemic. These challenges were related to case finding and loss to follow up due to lockdown regulations and the channelling of health resources to COVID-19. Dr Mvusi emphasised the TB 90-90-90 strategy, intensifying of TB screening and testing by focusing on hot spots, screening of household contacts (including the use of mobile chest X-ray screening), using a digital TB health check platform for self-screening on WhatsApp and SMS platforms, testing high risk cases, and new innovative modalities of diagnosis of TB. Dr Mvusi also touched on decentralising multi-drug resistant tuberculosis (MDRTB) treatment in TB preventive strategies.

Ipeleng Mogorosi, an occupational medicine inspector from the Gauteng regional office of the DMRE, emphasised the importance of data collection in the mining industry, focusing on the regional data submitted on the DMRE 164 reporting form. She spoke about the challenges related to the reporting of HIV/AIDS and TB, as well as late reporting, use of outdated forms, and incomplete reporting – especially in the small mines. The chief executive officer of SABCOHA, Siyabonga Jikwana, discussed the integration of data pertaining to TB and HIV/AIDS, between the private and public sectors.

Dr Dipalesa Mokoboto (medical inspector at the DMRE) presented 2020 data gathered from the SAMI. The presentation focused on TB and HIV data submitted by the mining companies, as follows:

- Compliance by mines: 92% of mines had integrated policies on TB and HIV in 2020. The main concern is that only 46% had a budget for HIV/AIDS and TB running costs. Funds must be set aside for TB and HIV programmes, which include diagnostic tests and treatment.
- Trends in TB data with emphasis on screening, diagnosis, and treatment: the TB screening in the mining industry was at 93.3% in 2020, a decrease from 97% reported in the preceding year. This was mainly due to resources being channelled to COVID-19.
- Of all the employees who underwent screening, 0.4% were diagnosed with TB. Despite the COVID-19 pandemic, 97.1% of those diagnosed were placed on TB treatment.
- The HIV/AIDS and TB co-infection rate was 40.5% in 2020.
- The SAMI's TB screening rate is currently at 93%, which is surpassing the UNAIDS 90% target.
- The 2020 SAMI TB incidence rate was 312/100 000, which is well below the SA national rate of 615/100 000. The SAMI has managed to achieve the target set by the WHO in the '*END TB*' strategy, by a 20% decrease in the incidence rate in 2020 from the baseline of 884/100 000 in 2015.
- HIV counselling increased from 54% in 2013 to 73.5% in 2020; the proportion that tested for HIV in 2020 was 59.1%; the HIV-positive rate decreased from 10% to 5.1% from 2014 to 2020.

Dr Thuthala Balfour (Head of Health: Minerals Council of SA) indicated that mining companies would do well to adopt the learnings from the intensified screening, contact tracing and diagnosis of cases of COVID-19 during the Pandemic and re-direct them to TB case finding and diagnosis. Lethisha van der Berg (Chairperson of the Ukhozi regional tripartite forum) gave a presentation on the TB campaigns in Gauteng, focusing on intensifying screening, prevention, diagnosis, and treatment in small-scale mines. However, there were challenges with funding and channelling of resources to TB, including integration of HIV/AIDS and TB treatment during the COVID-19 pandemic.

KEYNOTE ADDRESS

The keynote address was delivered by David Msiza (Chief Inspector of Mines from the DMRE). He focused on innovative ways to combat TB, e.g. placing an emphasis on the development of TB vaccines, and channelling of resources and funding towards TB research, including adopting learnings from COVID-19 contact tracing – a topic discussed at the 5th Occupational Health Dialogue (organised by the MHSC). The TB, HIV and AIDS Advisory Committee (MITHAC) of the MHSC continues to provide sound advice on: 1) policy related to the prevention and management of TB, HIV and AIDS; 2) health research that has been conducted through the Safety in Mines Research Advisory Committee (SIMRAC); 3) the collection, processing and distribution of health data collected from the SAMI via the DMRE 164 form; and 4) implementing TB, and HIV and AIDS initiatives from the Mine Health and Safety Tripartite Summits.

The Masoyise Health programmes play an important role in TB contact tracing of employees at the mines, as well as in the communities in which they reside.

CONCLUSION

The SAMI has achieved great strides in TB screening, prevention, diagnosis and treatment. In the past 10 years, new diagnostic modalities, e.g. Gene Xpert, lipo-immuno assay (LAM), and TB spot tests (interferon gamma release assay [IGRA]) have been introduced. These tests have increased our potential to diagnose TB and to re-direct treatment appropriately.

More innovative ways must be adopted for prevention, diagnostics and treatment modalities, e.g. TB vaccine creation, point-of-care diagnostic tests and new TB drugs. The Department of Health has adopted newer MDR/RR-TB drug treatments such as bedaquilline and other drugs used to treat MDR/RR-TB, which has decreased the duration of treatment from 18 to nine months.

Implementation of preventive TB prophylaxis such as 3HP, which is used to treat latent TB (once-weekly doses of a combination of rifapentine and isoniazid for three months), will significantly reduce the burden of infectious TB cases. This will, in turn, reduce the TB incidence rate. According to the WHO, 5–10% of latent TB cases progress to infectious disease. The reason for the high incidence rate is the large pool of individuals not diagnosed and the extended time to initiate treatment, primarily due to the relatively long period between infection and development of disease, which can range from weeks to decades.

Channelling of resources, e.g. funding towards TB, adopting learnings from initiatives implemented during the COVID-19 pandemic, and data collection with collaborative efforts between mines, public and private sectors, will enhance our ability to *'END TB'.*

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1. World Health Organization. Tuberculosis. Geneva: WHO; 2014. Available from: https://www.who.int/news-room/fact-sheets/detail/tuberculosis (accessed 24 May 2022).

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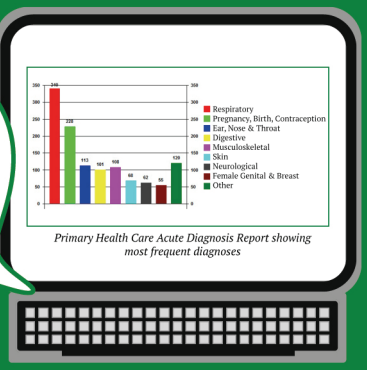

Primary Health Care Acute Diagnosis Report showing most frequent diagnoses

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COMPUTATIONAL EXPOSURE ASSESSMENT

The short course aims to introduce participants to basic principles of exposure modeling. Participants will be acquainted with health impact models, and a variety of workplace and consumer exposure models, prior to demonstration and hands-on practical sessions.

The strengths and limitations of different exposure models will be explored with practical exercises, as well as their application in evaluating different exposure scenarios.

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | WITS School of Public Health

THE COURSE COVERS THE FOLLOWING TOPICS:

- Atmospheric dispersion models
- Indoor models (CONTAM)
- Workplace models (mathematical), e.g. IH-mod one/ two box models
- Workplace models (mechanistic-deterministic): Stoffenmanager and Bayesian upgrades (ART) Consumer and residential exposure models: Consexpo
- Practicum models and tools

CERTIFICATE TYPE: COMPETENCE OR ATTENDANCE

APPLICATION DEADLINE: 6 JUNE 2022

Competence:
External applicants R6 500
Wits staff/student R3 250

Attendance:
External applicants R6 000
Wits staff/student R3 000

TO APPLY, CONTACT:

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OCCUPATIONALhealth
SOUTHERN AFRICA

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