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Avoiding plagiarism in academic writing: a guide on what to cite and how

International HIV Dementia Scale: screening for HIV-associated neurocognitive disorders in occupational settings

Work-related stress among diagnostic radiographers

Official Journal of The SA Society of Occupational Health Nursing Practitioners, The SA Society of Occupational Medicine, The Southern African Institute for Occupational Hygiene and The Mine Medical Professionals' Association.

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This journal is on the Department of Higher Education and Training's list of Approved South African Journals, and authors qualify for a subsidy for their affiliated tertiary institutions. It is also listed in African Index Medicus.

From the Editor . . .

Andrew Swanepoel, Editor

We have passed the half way mark of 2015 and, in this issue of OHSA, we feature three papers. As promised in the previous issue, the first paper, by Kevin Behrens, comprehensively addresses all aspects of plagiarism. This paper serves as a reminder to us all about the seriousness of the consequences of plagiarism (a form of scientific fraud) of which we need to be aware before submitting papers to this or any other journal. Charles Van Wijk and Jack Meintjes present a well-articulated case for the use of the International HIV Dementia Scale (IHDS) to screen for milder forms of HIV-associated neurocognitive disorder (HAND) in occupational health settings. Nkululeko Gam and collelagues offer an interesting account of work-related stress from the perspective of diagnostic radiographers.

Asbestosis remains a threat to the global workforce, as well as those exposed through environmental contamination. In a "landmark shift", Health Canada has made significant revisions to its stance on the health risks of asbestos. The modifications include: acceptance of the potency of chrysotile asbestos; a recognition that there is no safe threshold for the quantity of asbestos; and recognising asbestos as a known carcinogen. The shift signals a renewed commitment to addressing the prevention and control of asbestos exposure, a very welcome move. Read the full statement published in *The Globe and Mail* on 1 July 2015, at: http://www.theglobeandmail.com/news/national/ottawa-reverses-stance-on-health-risks-of-asbestos-in-landmark-shift/article25224035/.

The class action brought on behalf of former gold miners who have contracted silicosis as a result of their exposure to silica dust in South African gold mines in the period 1965 to 2015, was due to be filed in court in mid-June 2015. Mr Richard Spoor and his team, whose firm represents 30 000 former gold mine workers who have contracted silicosis, from Lesotho, the Eastern Cape, the Free State and Botswana, have put in an enormous effort into preparing for the hearing. The hearing is scheduled for 12 October 2015. We will endeavour to keep you updated on this matter in future issues of the Journal.

The 31st International Congress on Occupational Health (ICOH 2015) took place from 31 May to 5 June 2015 in Seoul, South Korea. The Congress approved the "Seoul Statement on the Development of Occupational Health Services for All". Several notable remarks include: the reiteration of occupational health and occupational safety as a basic human right; a stark reminder that, in spite of progress in occupational health and safety developments, over three-quarters of workers in developing countries remain at high risk for occupational-related morbidity and mortality; and a need to keep up with evolving developments and technologies. In addition to the commitments made, of utmost importance to this audience is the need for continuous evidence-based research which underpins good practice, training, and education. The full statement can be accessed at: http://www.icoh2015.org/eng/pop/ICOH2015_Seoul_Statement.pdf.

There are reports on ICOH 2015 by both SASOHN and Claudina Nogueira (ICOH board member) in this issue. They provide insights from a personal and professional view, respectively. We encourage those of you who have not attended this Congress in the past (and those who have) to start preparing for ICOH 2018 in Dublin, Ireland.

In its revised format, the SAIOH page is filled with new developments, including the announcement of new organisational members, important notes from the SAIOH PCB, and practical guidelines for potential SAIOH candidates. SASOM hosted a successful congress at the Protea Hotel OR Tambo Airport in Kempton Park on 19 and 20 June 2015. The Congress was addressed by several experts in the field of occupational health. The MMPA held their Regional Academic Symposium, followed by their AGM, at Emperors Palace in Kempton Park on 27 June 2015, and is hard at work preparing for its annual conference in September 2015.

We encourage you to continue to keep the research papers, commentaries and opinion pieces coming. Thanks, as always, for your readership.

Andrew J Swanepoel (PhD)
(Co-editor - OHSA)

Upcoming events

LOCAL MEETINGS

DATE	MEETING	TOPIC	PLACE	MORE INFORMATION
4-5 Sep 2015	MMPA 18th Annual Congress	Health and Occupational Health Priorities in the Mining Industry	Tsogo Sun – Riverside Sun Hotel	E-mail: candiceu@mpas.org.za Website: http://www.mmpasa.org/wp/
10-12 Sep 2015	1st Regional SAHTAS Conference	Health Technology Assessment: Enabling Improved Healthcare Access, Quality & Equity	Southern Sun OR Tambo Airport, Johannesburg	E-mail: caro@soafrica.com Website: www.htm.uct.ac.za
7-9 Oct 2015	PHASA Conference 2015	Health & Sustainable Development – The Future	Southern Sun Elangeni, Durban	E-mail: deon.salomo@mrc.ac.za Website: http://www.phasaconference.org.za/index.html
18-22 Oct 2015	7th International Nanotechnology Occupational & Environmental Health Conference	Nanotechnology Occupational & Environmental Health	Legends Safari Lodge, Waterberg, Limpopo	E-mail: leigh@londocor.co.za Website: http://www.nanoeh2015.co.za
28-30 Oct 2015	SAIOH Annual Conference	Into the Future with Occupational Hygiene: Harnessing Technology to Better Practice	Lagoon Beach Hotel, Cape Town	E-mail: conferencepapers@saioh.co.za Website: http://www.saioh.co.za/Conference2015.aspx
4-6 Nov 2015	SASOHN National Conference & AGM	"Be The Star of the Show"	Lagoon Beach Hotel, Cape Town	E-mail: sasohnoffice@mweb.co.za Website: www.sasohn.co.za/
8-11 Nov 2015	Developmental Origins of Health and Disease (DoHAD)	Combating the Transgenerational Risk of Non-Communicable Disease in Transitional Societies	ICC, Cape Town	E-mail: deidre.raubenheimer@uct.ac.za Website: www.dohad2015.org
20 Nov 2015	SASOM Conference & AGM	Occupational Medicine Practice	Cape Town	E-mail: info@sasom.org Website: www.sasom.org
3-5 Dec 2015	Bioethics Conference	Giving a Voice to African Thought in Medical Research Ethics	Phillip V Tobias Health Sciences Building, University of the Witwatersrand, Johannesburg	E-mail: africanvoice@earthfriendly.co.za Website: https://bioethicsresearchreview.tghn.org/community/blogs/post/988/2015/05/giving-a-voice-to-african-thought-in-medical-r/

HEALTH AWARENESS DAYS, WEEKS AND MONTHS

SEPTEMBER

2-6	Back Week
16	International Day for the Preservation of the Ozone Layer
21 Sep - 18 Oct	Eye Care Awareness Month
28	World Retina Day
29	World Heart Day

OCTOBER

9	International Day for Natural Disaster Reduction
15	National Foetal Alcohol Syndrome Day
15	Global Hand Wash Day
15-19	National Obesity Week
18-24	International Lead Poisoning Prevention Week
29	World Stroke Day

INTERNATIONAL MEETINGS

DATE	PLACE	MEETING	MORE INFORMATION
11-13 Oct 2015	Doha, Qatar	Employee Health & Wellbeing Conference	E-mail: manohar.bharwani@fleminggulf.com Website: http://www.ehwc-me.com
12-16 Oct 2015	Minneapolis, Minnesota	American Association for Aerosol Research (AAAR) Annual Conference	Email: support@AAARabstracts.com Website: http://conference.aaar.org/
21-23 Oct 2015	Groningen, The Netherlands	USE2015 - Conference on Understanding Small Enterprises	E-mail: info@useconference.com Website: http://www.useconference.com
11-13 Apr 2016	Putrajaya, Malaysia	International Conference on Environmental and Occupational Health	E-mail: register.iceoh2016@gmail.com Website: http://www.iceoh2016.org/
12-17 Jun 2016	Castellaneta Marina, Taranto, Italy	2nd International Conference on Atmospheric Dust	E-mail: dust@scientevents.com Website: http://www.scientevents.com/dust2016/

Avoiding plagiarism in academic writing: a guide on what to cite and how

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ABSTRACT

This article defends the conventional view that plagiarism in academic writing is a form of publication misconduct. I emphasise that what constitutes plagiarism is presenting the intellectual product of another as if it is one's own. Common knowledge does not need to be cited, but verbatim text, data, results, distinctive arguments, organisational structures and ideas, do. What academic authors would like to have protected are their distinctive or novel contributions to their fields of knowledge, whatever form those take. Those who plagiarise act unethically because they seek to obtain credit that is not due to them and they deny credit to those to whom it is due. Self-plagiarism is another form of academic misconduct that entails seeking to obtain credit for the same work more than once. As with plagiarism, it is seen as dishonest and fraudulent. Avoiding accusations of plagiarism can be easily achieved by following a few simple conventions of referencing and punctuation, and academic authors are advised to protect their own reputations by following these conventions.

Keywords: **self-plagiarism, scholarly ethics, publication misconduct, fraudulent writing**

INTRODUCTION

The incidence of discovered plagiarism in published academic work has grown significantly in recent years.[1] Most cases could easily have been avoided if the authors had simply followed some basic conventions. Since the consequences of being identified as a plagiarist can be very serious, it is important that all authors – novices and the more experienced – understand what plagiarism is and how to avoid it. In this article, I give a brief account of what plagiarism is, what sorts of things authors should cite, and how they should do so.

The Committee on Publication Ethics (COPE) is an international association of editors with a membership exceeding 9 000. Its main purpose is to advise publishers and editors on publication ethics and on how to handle cases of misconduct.[2] COPE has produced a set of international standards for authors of research publications. Section 4 of the Standards document deals with originality and includes the following standards:

> *"Relevant previous work and publications, both by other researchers and the authors' own, should be properly acknowledged and referenced. The primary literature should be cited where possible... Data, text, figures or ideas originated by other researchers should be properly acknowledged and should not be presented as if they were the authors' own. Original wording taken directly from publications by other researchers should appear in quotation marks with the appropriate citations."*[3]

This represents the conventional view that authors who present the data, words or ideas of others as if they were their own, are guilty of publication misconduct. This kind of misconduct is usually termed plagiarism. It also reflects the standard view that authors should not improperly re-use their own work unless this is correctly acknowledged and referenced. This kind of misconduct is often referred to as self-plagiarism.

COPE has also produced international ethical standards for editors. In this document they assert that *"Editors should respond to all allegations or suspicions of research or publication misconduct raised by readers, reviewers, or other editors" and that "beyond the specific responsibility for their journal's publications, editors have a collective responsibility for the research record and should act whenever they become aware of potential misconduct if at all possible."* [4] With respect to plagiarism in particular, they recommend that editors screen submissions for possible plagiarism and redundant publication, making use of appropriate software tools and that, where this is detected, the matter should be pursued with authors. In cases of very serious plagiarism they even recommend retraction of articles.[4]

COPE's position reflects the conventional view that plagiarism is a form of academic misconduct and that it is regarded as a serious breach of scholarly ethics. Authors who are found guilty of plagiarism face many possible consequences, including having their misconduct exposed publicly, having to revise their work, and even having their articles retracted. Plagiarism can also negatively affect decisions about hiring, promotion and tenure, and always casts a shadow over the integrity and character of the perpetrator. It is very likely that a great deal of plagiarism goes undetected and that even when it is found, some authors are protected by institutions and editors who prefer not to expose the misconduct. But it is a risk that is not worth taking and authors are advised to follow standard academic conventions and avoid opening themselves to accusations of plagiarism.

It is a matter of some dispute whether plagiarism is increasing or whether it is simply being detected more frequently than in the past.[4] What is clear, though, is that more and more journals and institutions are deliberately taking steps to avoid publishing plagiarised work, and that the widespread use of plagiarism detection software tools is making it more difficult for authors to get away with plagiarism.

WHAT IS PLAGIARISM?

For authors to successfully avoid plagiarism, it is obviously necessary for them to understand what it is. There are many different definitions for plagiarism and it can be difficult to understand a concept when there are varying ways of defining it. Recognising this problem, Helgesson and Eriksson have researched the notion of plagiarism and analysed its essential nature. They propose the following definition: *"Plagiarism... [is] an instance of using someone else's intellectual product (such a texts, ideas, or results), thereby implying that it is [one's] own".*[5] This definition implies that the essential characteristic of plagiarism is that an author presents the work of another in a way that implies that it is his or her own. In turn, this implies that it is not plagiarism to use the work of another, as long as it is done in such a way as to make it clear to the reader that this work has been authored by someone else.

The other key element in this definition is the use of the phrase "someone else's *intellectual product*"[5] (my emphasis). This is exceptionally important in determining when it is necessary to cite. The phrase suggests that the kind of work of another author that must be correctly acknowledged is work that is the product of that author's independent intellectual labour. What counts is that the author has applied his or her intellectual acumen to some field of knowledge in a way that makes a novel or unique contribution to that field. If all that an author has done is to rehash or describe existing knowledge, there is no need to cite that author. No intellectual labour is expended in merely relaying what is already known or describing what has already been written. Consequently, there is no need to cite what might be said to be "common knowledge" in a particular field. For example, it is now common knowledge that individuals whose work exposes them to asbestos over a prolonged period of time are likely to develop asbestosis. If you are writing an article about asbestosis, and you have read another article that makes this claim, it is not necessary to cite that article. After all, the author of the article you have read has simply made a claim based on existing, common knowledge. On the other hand, if it is known who did the original research that established a causal link between occupational exposure to asbestos with the disease we now routinely call asbestosis, both you and the author of the article you read that made this claim ought to acknowledge the *intellectual product* of those scientists who originally made the association. This is not difficult to do. All you need to do is identify the researchers who made the association by name and reference their relevant publication(s). Thus, the basic principle that needs to be applied is that one needs to cite anything that is distinctive to a particular source.[6] What counts as distinctive is anything novel, any intellectual invention, innovation, original discovery, previously unknown data, unique argumentative strategy, distinctive organisational structure, new analytical approach, or distinctive

> "... the consequences of being identified as a plagiarist can be very serious ..."

expression. All of these things are the results of the intellectual labour of some other person. They are the intellectual products of another and must therefore be properly acknowledged. What is common knowledge does not need to be cited because it is not the intellectual product of any specific person.

Helgesson and Eriksson unpack the notion of intellectual product as consisting of "texts, ideas or results".[5] In what follows, I discuss the need to cite each of these, reversing their order.

CITING RESULTS

The most obvious thing that needs to be cited is distinctive data (in Helgesson's and Eriksson's definition of plagiarism, this is covered by the use of the word "results'). This is the kind of knowledge that can only have been acquired by means of some kind of empirical research. It is obvious that research results are the "intellectual product" of some person. Thus, all newly discovered facts, statistics, evidence-based conclusions, tables and graphs (and conclusions drawn from these) should be accompanied by a reference.[6] Where the data are the product of the author's own research which is being reported in a manuscript, the report should indicate how this information was discovered through the research, and give an account of the evidence upon which it is based. The source of any data that is not the result of the author's own research

must be appropriately acknowledged. One reason for this is that it is plagiarism not to reference the source. But there is another equally important reason: when an author relies on facts or hard data from other sources, citing the source provides secondary "evidence" and lends authority to the information. Readers realise that the proffered data is not based on the author's own research and might like to verify it. A reference enables them to do so.

CITING IDEAS

The necessity to cite distinctive data is relatively uncontroversial. Less so is the need to cite distinctive ideas. There has been much debate about whether it is appropriate to regard ideas as intellectual property.[5] After all, it is quite possible that different people could come up with the same ideas quite independently of one another. Ideas are also not as tangible as data. Yet, new ideas undoubtedly qualify as someone's "intellectual product" and, as such, it is regarded as plagiarism to pass off someone else's ideas as one's own. Clear cases of ideas that should be cited include a new evidence-based theory, a novel treatment protocol, or a new scientific method. It is easy to identify these ideas distinctive of a particular source. But there are other kinds of ideas that are equally the intellectual product of another, even though they are not as easy to identify as such. For instance, an author might have come up with a distinctive intellectual organisational strategy, such as a novel approach to the classification of occupational diseases. Another example is the Nuffield Council on Bioethics' Public Health "Interventions Ladder" that assists in the classification of various kinds of public health interventions based on the extent to which these interventions limit the freedom of citizens.[7]

> ". . . authors should not improperly re-use their own work unless this is correctly acknowledged and referenced."

A novel, robustly-defended argument can also be a distinctive idea. Helgesson and Eriksson argue against the conventional view that what makes plagiarism wrong is that it entails stealing the work of another.[5] They point out that when something is stolen, the original owner is deprived of that thing. If I steal your copy of a book, I now have it and you do not. This is not the case when I present your intellectual product as my own. I do not deprive you of that product; but I deprive you of the acknowledgement that it was your intellectual labour that resulted in the product. They go on to argue that what is essentially wrong with plagiarism is that it is a form of dishonesty. On presenting someone else's work as one's own, one is misleading others and taking undue credit.[5] Hegelsson and Erikson's argument that plagiarism is not really theft is a distinctive argument, the result of the authors' intellectual labour, and should therefore be cited.

Ideas do not necessarily have to represent a quantum leap in knowledge, or a groundbreaking new discovery, to be distinctive. In fact, most often, new ideas represent no more than a small, incremental shift from, or refinement of, existing knowledge. For example, an author might argue for the need for another rung to be added to the Nuffield Council's ladder. This would represent litttle more than minor refinement of an existing framework, but it would still be the consequence of the author's intellectual labour and, as such, should be cited by others who might wish to use the idea.

CITING TEXT

The need to cite the words of others is generally much more contentious, particularly in the scientific disciplines. Researchers in the sciences often question the need to cite the words of others at all. They claim that they would have no objection to other authors using their words, as long as they acknowledged and cited their data and findings. I grant that, in some disciplines, the intellectual product that researchers most want to protect is their findings. After all, in these fields, the novel contribution made to existing knowledge is primarily the new data that are obtained from empirical research. In contrast, in other disciplines, such as the humanities, it is sometimes precisely their words that authors want protected. In these fields, Chrousos et al. point out that "the wording is the essence of the novelty".[8] It seems fair enough to hold the view that, to some extent at least, the importance of citing the words of others is contextually dependent on the academic field. However, even in the sciences, the careful construction of lucid, unambiguous text often takes hard work, and scientific researchers should be as anxious to protect this intellectual product as any other authors. Be that as it may, the standard conventions of academic writing dictate that, if you use the words of another, verbatim, you should enclose those words in quotation marks (a simple convention, relying on nothing more than some punctuation), and you should cite the source. Doing this does no harm but does a great deal in protecting you from accusations of plagiarism.

My own view is that it matters little whether you agree with the standard conventions of academic writing. Most academic publishers these days routinely screen submissions by means of software that checks for similarities in text. Where authors use the words of others, verbatim, without using quotation marks and providing references, they open themselves to accusations of plagiarism. Given that the consequences of this can cause embarrassment and result in a stain on their academic integrity, for purely pragmatic reasons, authors should avoid this.

I should also point out that it is not only the use of word-for-word passages of text without proper attribution that is problematic. Sometimes authors try to get around this by using a sentence or two from another source, retaining exactly the same sentence structure and simply replacing a few of the words with synonyms. This is known as word substitution or thin paraphrasing, and is also regarded as a form of plagiarism, especially when the source is not cited. It is best to avoid this practice. If you paraphrase someone

else's text, it should be substantially re-written in your own words. You should still cite the source if there is anything distinctive in the ideas of the original author.

SELF-PLAGIARISM

Many have pointed out that self-plagiarism is something of a misnomer.[9] If plagiarism is presenting the work of another as your own, then self-plagiarism seems impossible. However, even if the term is questionable, the basic idea that there are conventions that apply to the re-use of one's own work is not. Since academic status is measured in terms of the number and quality of published works, authors who publish substantially the same work on multiple platforms may be regarded as dishonestly trying to get more credit than is due to them. Re-use of already published work should be kept to a minimum and you should be transparent about the fact that this is re-use. If you use verbatim passages from your own work, quote and cite yourself as you would any other author.

Another ethical concern with self-plagiarism arises in contexts (such as South Africa) where subsidies are paid to institutions for articles published in accredited journals. In such situations, an author who publishes the same work in more than one journal is not only unfairly seeking to get credit for the same work more than once, he or she is also guilty of a form of financial fraud, in that more than one amount of subsidy is claimed. Furthermore, academic journals are essentially in the business of publishing original research. Consequently, they typically require authors to attest to the fact that their submission has not been published before and is not under consideration by any other journal. Thus, authors who do publish substantially the same work more than once are also guilty of having made a false declaration to at least one of the journals to which they submitted their work.[9] Even more concerning is that journals typically rely on the good will and collegiality of reviewers who review submissions without remuneration. They do this in order to contribute to the advancement of knowledge in their fields. An author who submits the same work to more than one journal is surely abusing the generosity of colleagues who are prepared to give freely of their time and expertise only because they think they are contributing to the advancement of scholarship. Self-plagiarism that involves duplicate publication of the same work or re-using very large sections of text verbatim also constitutes the infringement of copyright which is not only unethical but also unlawful.

CONCLUSION

Earlier I referred to Helgesson and Eriksson's argument that what is wrong with plagiarism is that it entails academic dishonesty,[5] misleading others so as to obtain undeserved credit. I think this is correct. What is also wrong with it is that it deprives other authors of credit that is due to them. Academic authors are measured in terms of their intellectual product. As a matter of collegial respect it is important that we acknowledge one another's distinctive contributions. There are a number of simple conventions of punctuation and referencing that need to be followed to avoid plagiarism. My advice to authors is just to do it right.

DECLARATION

There are no conflicts of interest to declare.

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Mobile hearing testing – the challenge to stay SABS compliant:

Part 2 of a 3-part series

Dr Dirk Koekemoer, Director: eMoyo

How to ensure that your mobile audiometer is always calibrated according to SABS standards

INTRODUCTION

This article might save you thousands, if not ten thousands, of rands every month, so it's worth a careful read.

There are many incorrect perceptions around calibration standards, some of which your colleagues may be practicing, thereby incurring unnecessary costs. Nowhere in a standard, Act or circular instruction is there a requirement to calibrate your audiometer every time you move it. The calibration standard in South Africa for occupational health screening is SANS 10154-1 (Calibration of pure-tone audiometers, Part 1: Air conduction).

Dirk Koekemoer, Director: eMoyo

ELECTRO-ACOUSTIC CALIBRATIONS – SANS 10154-1

SANS 10154-1 requires that a stationary audiometer is calibrated once a year and a mobile audiometer, every three months. The moment an audiometer leaves the original site of calibration, it is classified as a mobile audiometer. A mobile audiometer must be returned to the original site of calibration where a calibration check must be done before the technician can continue to officially do an electro-acoustic calibration on the audiometer. If the calibration check indicates that the audiometer is out of calibration, then the audiometrist must be informed, and all tests since the last calibration must be deemed invalid. It is therefore critical that the audiometer returns to the original site of calibration and that a calibration check is done before calibration starts.

It is not advisable to move audiometer calibration equipment as it is very sensitive and high precision equipment; when moved onto, say, aeroplanes or vehicles, the equipment's accuracy could fail. The best practice is to keep calibration equipment at the venue source and to calibrate your mobile audiometer at this venue.

BIOLOGICAL CALIBRATION CHECK

A mobile audiometer must be transported on an anti-vibration platform or, even better, inside an anti-vibration case similar to the type used to transport the calibration equipment. After the audiometer has been moved and set up, a biological calibration check must be performed. In my experience, the best biological calibration check is two automatic hearing tests on yourself. Before starting with the second automatic hearing test, swap the audiometer so that the left speaker is on the right ear and the right speaker is on the left ear. The thresholds of each frequency of the first test can be compared with each frequency of the opposite ear, of the second test. According to standards, these results may not differ by more than 10 dB from each other, but I recommend that they must not differ by more than 5 dB. If the two sides differ by more than 5 dB, it is critical to recalibrate your audiometer. The real benefit of this method is that a biological calibration check can still be done even if a person is ill with an upper respiratory tract infection. I suggest too, after the biological calibration check is done, to print both reports, staple them together and write on the top printout "Biological calibration check passed using the headset swap around method", date it, sign it and file it. This is proof of the complied standard.

CUSTOM ELECTRO-ACOUSTIC CALIBRATION APPARATUS CHECK

It is always good practice to do a custom electro-acoustic calibration check in the field with a specially-made electronic apparatus for your headset to ensure electro-acoustically if your audiometer is still calibrated. A good example is the Oscar or KUDUdock used to calibrate the KUDUwave audiometer. In this instance, it does not matter who did the biological calibration, there is peace of mind that a proper biological calibration was carried out in the field. These highly accurate devices do not replace the biological calibration check as the standard requires, but they provide additional evidence that the audiometer is still calibrated. In my opinion, it is the best way to check the calibration and ensure that the audiometer stays calibrated after it is moved.

AVERAGE COMPARISON CALIBRATION CHECK

Although not prescribed in the standards, a method of ensuring an extreme level of peace of mind is to record the averages of each employee's hearing frequencies tested at a site. The average of the left ear for each frequency must not differ by more than 5 dB from the average of each frequency of the right ear. If it differs by more than 5 dB, the audiometer may be out of calibration. The calibration of the audiometer needs to be checked electro-acoustically.

In the next issue I will discuss the standards with which audiometers need to comply, and also provide a checklist with which the audiometer needs to comply before it can be used according to SANS 10083.

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Proposed Amendments to the Occupational Health and Safety Act

(Cape Town, 1 June 2015) The Minister of Labour, Mildred Oliphant gave a speech on the occasion of the 2015/16 Budget Vote of the Department of Labour tabled in the National Assembly on 7 May 2015. What was said in her speech with regards to the Occupational Health and Safety Amendment Bill will have a direct affect on all employers, employees and trade unions, not just industry related businesses.

In Oliphant's speech she made it abundantly clear that one of their key priority areas going forward will include, The Occupational Health and Safety Amendment Bill. Oliphant explains that "The Occupational Health and Safety Amendment Bill which is currently being consulted on, with the social partners in Nedlac, will be introduced in parliament during this period. The purpose of the proposed Amendments is to align the Act with other labour legislation and to introduce provisions to regulate triangular relationships."

These proposed amendments, when implemented will take effect this year and have a serious impact on all employers, employees and trade unions. It is advised that all parties familiarise themselves with the Occupational Health and Safety Amendment Bill, especially Section 8.

Ken Annandale, the founder and CEO of INTRA-SAFE, a publisher of occupational health and safety training kits, has been briefing organisations on the Occupational Health and Safety Act and its proposed amendment for the past 3 months. "It is important for organisations to note the emphasis on elements such as the establishment of an integrated health and safety management system based on comprehensive hazard identification and risk assessments (HIRA) leading to the re-training of all employees in order to comply. Human Resource departments will need to take note as they will become increasingly more responsible for this function," explains Annandale.

The proposed amendment to section 8 (d), if implemented, will carry serious consequences for all employers. The existing HIRA requirement states in "Section 8 (d) [General duties of employers to their employees] that every employer shall establish, as far as is reasonably practicable: what hazards to the health and safety of persons are attached to any work and what precautionary measures should be taken."

The proposed HIRA Amendment to Section 8 states that "Every employer shall (a) conduct a workplace specific risk assessment [HIRA] and thereafter develop and implement a risk management plan in writing, in respect of every risk identified; (b) ensuring that the workplace specific risk assessment is conducted, by a person or persons who are competent to pronounce on all the risks associated with that workplace; (c) ensure that the workplace specific risk management plan is in place and is available at the workplace when requested by an inspector; (d) ensure that no work is undertaken unless the control measures contained in the risk management plan are complied with; (e) provide information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of employees."

If implemented, it will be imperative that all employers comply with section 8. If not complied with, one could face serious consequences such as hefty fines up to R5 million (per offence) or jail time up to five years. "It is imperative to take note of these numerous detailed proposed amendments and budget accordingly," advises Annandale. He urges all relevant parties to prepare for these proposed changes and educate themselves on The Occupational Health and Safety Act. INTRA-SAFE, offers various training kits, one of which being a customiseable HIRA kit, in order to help organisations train and educate their employees.

For a copy of these proposed changes please contact Ken Annandale on ken@safetyhealthtraining.com or 082 920 8912. For more information about INTRA-SAFE please visit www.safetyhealthtraining.com.

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International HIV Dementia Scale: screening for HIV-associated neurocognitive disorders in occupational settings

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ABSTRACT

This study investigated whether the International HIV Dementia Scale (IHDS) can be used to screen for milder forms of HIV-associated neurocognitive disorder (HAND) in occupational health settings. It explored first, the effect of demographic variables on IHDS performance in a sample of HIV-negative employees and second, the extent to which the IHDS can differentiate between milder forms of HAND in HIV-infected employees. Data from 476 HIV-negative and 90 HIV-positive individuals indicated that, although clinicians need to be sensitive to the effect of education and test-language proficiency, separate norms based on socio-demographic variables are not required in this context; and that the IHDS shows promise for identifying milder forms of HAND in this HIV-positive sample, with ≤10 the recommended cut-off for further referral. In conclusion, there is support for the IHDS to screen for HAND where this may impact on safety-critical tasks in the workplace.

Keywords: **IHDS, HIV dementia, HAND screening**

INTRODUCTION

Employers are legally required to reasonably ensure safety in the workplace. They engage the services of occupational health personnel to perform fitness-for-work evaluations, where the screening for cognitive impairment as a result of HIV infection is an important but challenging concern in certain safety-critical tasks. The use of a screening tool to guide further referral for formal neuropsychological testing would be of much value to occupational health practitioners who evaluate employees engaged in such safety-critical tasks.

HIV-associated neurocognitive disorder (HAND) is highly prevalent, with a reported estimate of 50% in people living with HIV and AIDS (PLWHA), depending on disease stage and the use of anti-retroviral treatment (ART).[1-2] The "Frascati criteria" is a research classification of HAND that requires neuropsychological scores to be compared to normative data using standard deviations (SD) as indicators of impairment.[3] This model provides for three progressive conditions of neurocognitive decline, namely asymptomatic neurocognitive impairment (ANI), HIV-associated mild neurocognitive disorder (MND), and HIV-associated dementia (HAD).

Despite the increased availability of ART, HAND remains common in both the developed and developing world. In North American cohorts, the one-year incidence of HAD was reported at 25%, irrespective of the use of ART,[4] while 21% of asymptomatic HIV-positive (HIV+) individuals fulfilled the criteria for ANI.[5]

There are few detailed studies of HAND, globally, but similar figures have been reported in India and China.[6,7] The combined burden of neurocognitive impairment among pre-ART and on-ART patients in sub-Saharan Africa was recently calculated at 8.1 million.[8] Samples from Cameroon, Zambia and Botswana suggest that 21% – 38% of HIV+ patients may suffer some form of HAND.[9-11] South African figures suggest that 17% – 23.5% of HIV+ patients may display cognitive impairment,[12,13] with the figures being stable across gender groups.[14]

Formal neuropsychological testing remains the gold standard for the diagnosis of HAND.[15] However, it is a resource-intensive process, thus stimulating interest in screening tools to stream patients that require neuropsychological testing towards the appropriate resources.

The International HIV Dementia Scale (IHDS) is widely used in cross-cultural screening studies. It consists of three subtests that contribute equally to the total score of 12, and assesses motor speed (MS) (timed non-dominant finger tapping test), psychomotor speed (PMS) (non-dominant Luria alternating hand sequence test), and memory recall (MEM) (four-word verbal recall). Originally, screening scores ≤10 required referral for further investigation.[16]

The IHDS has been validated in Uganda[16,17], Ethiopia[18], and India[6,19], after original validation on American and Ugandan samples suggested that it was a useful screening test for HAND in both the industrialised and developing worlds.[16] Its major advantages are its high sensitivity; that it requires no special instrumentation; and that it is useful for

HIV+ individuals with and without a complete high school education. However, effects of education have been observed in Botswana and South Arica.[10,20]

Recent meta-analyses reported pooled sensitivity of 64% and specificity of 59% (using a cut-off = 10) for HAND, with severe HAND associated with a higher pooled sensitivity than moderate HAND, with comparable specificity.[21,22] It was concluded that the IHDS has promise for use in detecting HAD in resource-limited settings, but may be less useful to detect milder forms of HAND.[21] Given potential socio-demographic influences[10,20], South African studies consistently recommend considering different cut-offs for different samples[20,23] (e.g. based on education, culture, etc.).

The original validation took place in a region where HIV Clade D is dominant[16,24], and a South African validation study investigated possible influences from a region where Clade C dominates.[20] Using a cut-off of ≤10, the IHDS was found to have a sensitivity of 45% and a specificity of 79%, but, when using a cut-off of ≤11, sensitivity improved to 72% (with specificity of 46%).[20]

The IHDS thus appears to hold promise for screening for HAND[5,16,17,19-21,25,26], and is arguably the most-used screening test for HAND in sub-Saharan Africa.[8]

A major critique of current screening tools is their lesser sensitivity in detecting the milder forms of HAND, i.e. ANI and MND, which are more prevalent in the HIV population.[21,25,27,28] While IHDS studies in the South African context were done in primary healthcare settings, neurocognitive decline would be of equal concern in occupational health settings, as the milder forms of HAND are more likely to be encountered in the workplace (rather than HAD).[29] The increasing availability of ART in South Africa has allowed more PLWHA to remain in the workplace.[30] At the same time, greater awareness of the neurocognitive symptoms associated with HIV has raised new concerns around safety-critical tasks requiring optimal cognitive functioning. For example, HIV+ neurocognitively-impaired individuals are at increased risk for on-road driving impairments[31], and even with only mild impairments, are five times more likely to report diminished work ability.[29] Workplace safety concerns become particularly pertinent in cases where neurocognitive decline precedes physical symptoms.

Within South Africa, the IHDS has been used in studies to determine clinical correlates of HAND, and to assess its utility as a screening tool for HAD, all with patients attending HIV clinics or in in-patient wards.[14,23,32] With the validity in South African primary healthcare settings established, it remains unclear whether the IHDS can screen with equal validity in South African occupational healthcare settings, and particularly for mild to moderate HAND. Further, confounding effects of other demographic variables (e.g. age, education, language, etc.) have been reported.[10,20] Before considering the use of the IHDS for potentially relatively healthy employees in occupational healthcare settings, the role of demographic variables in a healthy population needs to be established.

> ". . . low IHDS scores . . . are not necessarily an indication of work disability, . . there is a need for these individuals to be referred for a proper assessment . . "

The present study thus had two aims: first, to explore the effects of demographic variables on IHDS performance in a healthy (HIV-) population and second, to explore the extent to which the IHDS can identify milder forms of HAND in HIV+ employees.

METHODS

Aim 1

Participants

All participants were recruited, and their data recorded, during employer-sponsored multi-disciplinary occupational health screening initiatives. Individuals were excluded from the study if they had a confirmed history of significant neurological or psychiatric disorders, were HIV+, or were not adequately proficient in English to understand the IHDS instructions.

Demographic indicators recorded for the 476 participants included age, gender, home language, and number of years of formal education.

Table 1. Composition of HIV- sample (N=476)

	Women n = 190		Men n = 286		Total	
	n	%	n	%	n	%
Age						
20-29	71	37.4	71	24.8	142	29.8
30-39	72	37.9	72	25.2	144	30.3
40-49	36	18.9	71	24.8	107	22.5
50-59	11	5.8	72	25.2	83	17.4
Education						
<12 years	9	4.7	49	17.1	58	12.2
12 years	139	73.2	189	66.1	328	68.9
>12 years	42	22.1	48	16.8	90	18.9

Measures

The IHDS was used in its standard administration[16], in English. Data were collected during 2014 and 2015.

Data analysis

All data were analysed using statistical software (SPSS 22). The effects of individual demographic variables on IHDS performance were examined using comparative statistics (independent sample t-tests, ANOVA) and correlational statistics (Pearson's r). The relative contributions of variables to variance in performance scores were examined using regression analysis.

Aim 2

Participants

A total of 90 known PLWHA on Highly Active ART (HAART) were also recruited via employer-supported ART initiatives. This HIV+ sample was matched to 90 individuals from the HIV- sample in terms of age, gender, education and language.

Measures

Apart from the standard IHDS, the 90 PLWHA also completed a short neurocognitive battery comparable to that used by Sacktor et al.[16] in the initial IHDS validation study, to determine HAND categories. It consisted of the WHO-UCLA Auditory Verbal Learning Test, Trailmaking Test, Grooved Pegboard, Digit Symbol Modalities Test, Timed Gait Test, and Digit Span Test. All participants had enough English proficiency to complete the tests in English, which were administered by clinical psychologists. Proforma reports form work supervisors were also available. HAND categories were defined according to the Frascati criteria[3] and allocated after consensus between at least two psychologists.

Data analysis

Based on the Frascati criteria, four groups were identified for further analysis, namely healthy HIV-, healthy HIV+ (ASX), ANI, and MND; and their data were subjected to a Kruskal-Wallis test. A ROC analysis was also conducted, and sensitivity and specificity were calculated.

Ethics

Ethics oversight was provided by the Stellenbosch University Health Research Ethics Committee (# N14/07/77).

Table 3. Effect of age and education on IHDS scores

Correlations between IHDS scores and age and years of education				
Scale	**Age**		**Years of education**	
	r	**p value**	**r**	**p value**
MS	0.03	0.51	-0.03	0.45
PMS	-0.22	<0.001	0.19	<0.001
MEM	-0.13	<0.01	0.21	<0.001
Total	-0.14	<0.01	0.18	<0.001
Comparisons of IHDS scores across age and education categories, using ANOVA				
	F	**df**	**p value**	**η_p^2**
Age				
MS	0.38	3;472	0.78	
PMS	10.82	3;472	<0.001	0.07
MEM	3.70	3;472	<0.05	0.02
Total	5.40	3;472	<0.01	0.03
Education				
MS	2.99	2;473	0.06	
PMS	5.47	2;473	<0.01	0.02
MEM	7.43	2;473	<0.01	0.03
Total	7.99	2;473	<0.001	0.03

MS = motor speed; PMS = psychomotor speed; MEM = memory recall

Table 2. Comparisons of IHDS scores across gender and language categories, using t-tests for independent samples

Scale	Mean	SD	Mean	SD	t	p value	Cohen's d
	Women n=190		Men n=286				
MS	3.7	0.5	3.6	0.7	-2.75	<0.01	0.16
PMS	3.8	0.4	3.7	0.5	-2.19	<0.05	0.22
MEM	3.6	0.7	3.6	0.6	-1.28	0.19	
Total	11.2	1.0	10.9	1.2	-3.373	<0.01	0.27
	English 1st language n=114		Other 1st language n=362				
MS	3.6	0.7	3.7	0.6	-0.50	0.60	
PMS	3.8	0.4	3.8	0.5	0.95	0.34	
Mem	3.7	0.5	3.5	0.7	2.81	<0.01	0.33
Total	11.1	1.1	11.1	1.1	1.69	0.09	

MS = motor speed; PMS = psychomotor speed; MEM = memory recall

Table 4. Comparisons of IHDS scores across disease classifications

Means and standard deviations of IHDS scores across disease classifications								
	HIV- n=90		ASX n=61		ANI n=24		MND n=5	
Scale	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
MS	3.82	0.4	3.82	0.4	2.92	1.1	2.60	1.1
PMS	3.87	0.3	3.71	0.6	3.46	0.7	2.40	0.5
MEM	3.70	0.5	3.46	0.7	3.06	0.9	2.90	1.4
Total	11.40	0.8	11.00	1.1	9.44	1.7	7.90	1.1

Comparing IHDS scores across disease classifications, using Kruskal-Wallis test				
Scale	**χ^2**	**df**	**p value**	**η^2**
MS	38.47	3	<0.001	0.27
PMS	30.93	3	<0.001	0.23
MEM	14.87	3	<0.01	0.11
Total	44.02	3	<0.001	0.38

MS = motor speed; PMS = psychomotor speed; MEM = memory recall
ASX = asymptomatic HIV+; ANI = asymptomatic neurocognitive impairment; MND = mild neuropsychological disorder

RESULTS

Aim 1

The demographic composition of the sample is presented in Table 1. About 24% reported speaking English at home, with the remaining 76% speaking the full range of the other 10 South African official languages. The group consisted of 190 women and 286 men, with a mean age of 36.9 (±10.7) and 12.1 (±1.3) years of education.

Women scored significantly better than men on MS, PMS and in their total scores, but with small effect sizes (Table 2). English-speaking participants scored significantly better than the other South African language speakers on the memory test, with a small effect size (Table 2).

Years of age showed significant but small negative correlations with PMS, MEM, and total scores (Table 3). The relationship was further elucidated with an ANOVA test which revealed a distinct difference between the performance of 20-39 year olds and 40-59 year olds on PMS ($p<0.001$) and the total score ($p<0.01$), and between the performance of 20-39 year olds and 50-59 year olds on MEM ($p<0.05$) (Table 3), but with very small effect sizes.

Years of education showed significant but small negative correlation with PMS, MEM, and total scores (Table 3). The relationship was further elucidated with an ANOVA test which revealed a distinct difference between the performance of participants with fewer than 12 years of education and those with 12 years or more on PMS, MEM, and total scores ($p<0.05$ for each) (Table 3), but with very small effect sizes.

The variables age, gender, education and language were entered into a multiple regression analysis. Although a significant model emerged, the regression was a very poor fit (R^2_{adj}=5.2%, $F_{4,471}$=7.45, p<.01). All four regressors made significant but very small (β<0.12 for each) contributions to the prediction of total IHDS performance.

Aim 2

The HIV+ group consisted of 27 women and 63 men, with a mean age of 34.0 (±7.9) and 12.1 (±1.1) years of education.

Differentiation across categories

A Kruskal-Wallis test was conducted to compare IHDS performance across the different disease categories (Table 4). The test was significant across all three subscales and total score (Table 4), with moderate effect sizes. Post hoc pairwise comparisons indicated that the HIV-/ASX groups scored significantly better than the ANI/MND groups ($p<0.001$) on MS; that the HIV-/ASX/ANI groups scored significantly better than the MND group ($p<0.001$) on PMS; and that the HIV- group scored significantly better than the ANI/MND groups ($p<0.05$)

Table 5. Comparison of study sample to regional samples, using t-tests for single samples

Scale	This study	South African group[13]			Original Ugandan sample[16]			Zambian sample[9**]		
	Mean	Mean	p value	MD*	Mean	p value	MD*	Mean	p value	MD*
HIV+										
MS	3.51	3.52	0.92	0.01	3.5	0.90	0.01	3.4	0.22	0.11
PMS	3.57	3.22	0.001	0.35	3.1	0.001	0.47	3.3	0.001	0.27
MEM	3.32	3.35	0.75	0.03	3.3	0.80	0.02	3.4	0.37	0.08
Total score	10.41	10.29	0.47	0.12	9.9	0.01	0.51	10.1	0.06	0.31
HIV-										
MS	3.82	3.88	0.19	0.06	3.8	0.61	0.02	3.5	0.001	0.32
PSM	3.87	3.21	0.001	0.66	3.5	0.001	0.37	3.1	0.001	0.77
MEM	3.70	3.78	0.15	0.08	3.6	0.07	0.10	3.4	0.001	0.30
Total score	11.40	10.89	0.001	0.51	11	0.001	0.40	10.1	0.001	1.30

*MD = mean difference; ** HIV+ sample was on HAART
MS = motor speed; PMS = psychomotor speed; MEM = memory recall

Table 6. Area under the Curve for IHDS (N=90)

Item	AuC
Motor speed	0.769
Psychomotor speed	0.649
Memory	0.612
Total score	0.807

AuC = Area under the Curve

Table 7. Cut-off points of IHDS against HAND classification (N=90)

Cut-point	Sensitivity %	Specificity %
≤ 11	89.7	42.6
≤ 10.5	75.9	73.8
≤ 10	75.9	75.4
≤ 9	58.6	88.5
≤ 8	31.0	95.1

on MEM. Using the total score, the HIV-/ASX groups scored significantly better than the ANI/MND groups ($p<0.001$), while the ANI also scored better than the MND group ($p<0.05$).

Comparisons with other samples

Table 5 presents the comparison of the current study sample with other regional samples (from South Africa, Uganda, and Zambia). In the HIV+ group, the total scores are similar to the southern African samples, but higher than the original Ugandan sample. In the HIV- group, the total scores are higher than the three regional samples, and could possibly be attributed to the general good healthcare available within the occupational health setting of this sample.

Predictive ability

A ROC analysis of IHDS scores comparing HAND versus healthy HIV+ participants revealed a moderate Area Under the Curve (Table 6), suggesting that the IHDS may be a useful measure of HAND status for the study sample. A score of ≤10 appears to be the optimal cut-off point for this sample (Table 7). The cut-point of ≤10 classified 41.1% of the HIV+ group as suffering from HAND, which is somewhat higher than the outcome from the neurocognitive battery which estimated the HAND burden in this sample at 32.2%. Using the same cut-point for the matched HIV- sample suggests neurocognitive difficulties in 10.6% of that population.

DISCUSSION

As expected, statistically significant demographic influences were observed. However, in most cases, the actual mean differences and statistical effect sizes were too small to be of practical clinical value. Given the results from this sample, different cut-off points for different demographic profiles in this population are probably not indicated.

Women scored better on the speed tests, a finding not previously reported in southern Africa.[10,20] A significant decline in psychomotor speed across age was found, but not in the motor speed task. Simple motor skills might reflect over-learned behaviour which might be less susceptible to the effects of ageing.

Memory was negatively affected if participants had <12 years of education. Fewer than 12 years of education was also associated with slower MS, PMS and lower total scores. Education has also been associated with memory (for HIV- individuals) in previous southern African samples.[10,20] English first-language speakers had, perhaps not surprisingly, better memory recall, but the difference was too small to be of practical use. However, the roles of education and language highlight the need to be sensitive to its effects when administering and interpreting the IHDS of HIV+ individuals.

The current sample differed from the South African reference group in that they were healthy individuals who encountered the IHDS in an occupational health setting, and not while attending a clinic because of health complaints. They were all employed with access to employer-supported healthcare. The HIV+ group was on HAART. In spite of these differences, their mean IHDS scores were remarkably similar to those found in the South African primary healthcare setting. Although local researchers have consistently

recommended developing different cut-offs for different population groups[20,23], it appears that, at this time, the existing South African IHDS norms for HAND can be used in the occupational health setting.

The IHDS appears useful in differentiating between asymptomatic HIV+ persons and those suffering from ANI or MND. Based on the current data, it is recommended that individuals with scores ≤10 be referred for neuropsychological assessment to determine HAND status. In this regard, further research is recommended to explore associations between HAND status and workplace safety; for example, comparing the safety record of employees with ANI to those with healthy neuropsychological functioning. It is cautioned that low IHDS scores (or even classification of mild neurocognitive decline) are not necessarily an indication of work disability, but there is a need for these individuals to be referred for a proper assessment of the specific abilities required for a particular employment position.

This study had a number of limitations. There was only a small number of persons with MND, and none with HAD, limiting the power of the study. The sample was also generally well-educated, which might not reflect the education levels in the general workforce in South Africa.

In conclusion, the IHDS can be used to screen large numbers of HIV+ employees, and should provide results equal to those found in the South African national healthcare system. Testers need to be sensitive to the effect of, particularly, <12 years of education and test-language proficiency when administering and interpreting IHDS scores. It was encouraging that the IHDS could identify milder forms of HAND in this HIV+ sample from an occupational health setting, with ≤10 being the recommended cut-off for referral for further investigation.

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LESSONS LEARNED

1. There is a high prevalence of HAND among PLWHA
2. Neuropsychological assessment is required to diagnose HAND, and appropriate screening can stream affected persons towards such resources
3. The IHDS is helpful in screening for HAND
4. Clinicians need to be sensitive to language and education when administering and interpreting the IHDS

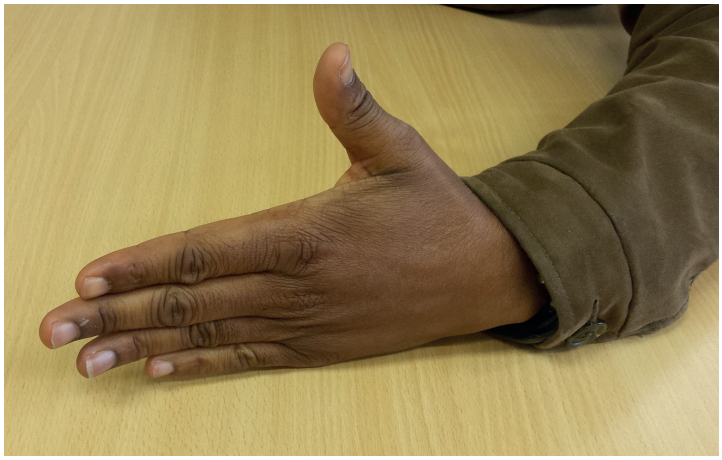
DECLARATION

There are no conflicts of interests, and no external funding was received for this study.

Hand actions when measuring psychomotor speed

1. Clench hand in fist on flat surface

2. Put hand flat on surface with palm down



3. Put perpendicular to flat surface on the side of the 5th digit

Demonstrate and have the patient perform this sequence twice for practice

4 = 4 sequences in 10 seconds
3 = 3 sequences in 10 seconds
2 = 2 sequences in 10 seconds
1 = 1 sequence in 10 seconds
0 = unable to perform

All photos courtesy of Prof. WAJ Meintjes

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Work-related stress among diagnostic radiographers

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ABSTRACT

This study sought to determine work-related stress in public sector diagnostic radiographers in a selected district in KwaZulu-Natal. Data were collected through a cross-sectional descriptive survey using self-administered questionnaires. All public sector diagnostic radiographers in one district participated in the study after ethical approval and informed consents were obtained. The public domain questionnaire was developed by the Health and Safety Executive in the United Kingdom and sought information in five standards believed to result in stress in healthcare workers. The results showed that radiographers were overworked but their stress emanated from a lack of communication, demands and external controls ($p<0.001$). Managers created significant stress in the respondents ($p<0.001$). The other main sources of stress were workload (60%), faulty equipment (54%) and staff shortages (40%). We conclude that stress in diagnostic radiographers as reported by the respondents is dependent on external rather than internal loci of control.

Keywords: **work-related stress, radiographers, public sector**

INTRODUCTION

Work-related stress impacts on the psychosocial, emotional and quality of life of the individuals affected and those being serviced.[1-3] In healthcare environments, absenteeism, poor work performance and reduced quality of patient care ensue.[4,6] Work-related stress is precipitated by staff shortages, increasing demands, and issues of control.[5,7] The South African healthcare industry faces dire shortages in almost every discipline of care. Radiographers have not been immune, especially in the face of needs generated at the primary healthcare level, and the increasing prevalence of malignant and infectious disorders. The ratio of radiographers to the population in the province of KwaZulu-Natal, which stands at 1.42 per 10 000 of the population, is unacceptable.[8] The province has 437 unfilled vacancies for radiographers.[8] The 2008 statistics show an annual graduate output of 180 per year for the entire country, which will do little to mitigate the dire need for radiographers.

Few studies have investigated work-related stress in radiographers.[4-7,9-11] In South Africa, Makanjee et al. studied the effects of occupational stress and organisational support on the quality of service rendered by radiographers and reported that organisational structure contributed to stress.[3] Verrier and Harvey found that support from managers, relationships, role and change were categories of stressors that produced the greatest risks.[7] They also found that staff shortages and heavy workloads produced pressure at work. These findings were affirmed by Yeboah et al.[6] and Rutter and Lovegrove.[5]

Several models of understanding work-related stress have been proposed.[2,6,12] These pertain to external and internal loci of control, and assist in understanding the constructs of work-related stress in healthcare professionals. Where the worker had the opportunity to control his/her environment, stress was managed. Since the extent of occupational stress in radiographers in KwaZulu-Natal is not known, this study investigated public sector diagnostic radiographers' views on work-related stress based on the standards proposed by the Health and Safety Executive (HSE) in the United Kingdom (UK) and used by Verrier and Harvey.[7]

METHODS

A descriptive cross-sectional survey determined stressors in five work-related domains in public sector diagnostic radiographers in the eThekwini district of KwaZulu-Natal.

At the time of the study (February 2014), there were 156 diagnostic radiographers working in public health institutions which offer diagnostic radiographic services in the selected district. Only those radiographers who were registered as independent practitioners with the Health Professions Council of South Africa (HPCSA), had completed their community service by 31 December 2013, and were appointed as diagnostic practitioners, were invited (n = 101).

A questionnaire adapted from that designed by the HSE, which comprised 68 open- and closed-ended questions in six management standards (demands, control, support, relationship, role, and change) was used to collect data.[7] The questionnaire was adapted by the investigator to ensure applicability to the research setting. The first section (13 items) requested demographic data. In the next two

categories, a five-point Likert scale included 27 questions measuring frequency (never to always), and 24 questions gauging agreement (strongly disagree to strongly agree). The anonymised questionnaire was validated using an expert group and a pilot study, for use in the local setting. The overall reliability coefficient (Cronbach's alpha) for the tool was 0.75.

Quantitative data were analysed using the Statistical Package for Social Sciences (SPSS), version 21.0. Descriptive statistics, cross tabulations, Pearson's correlation coefficients and Chi square tests determined relationships between variables at a 95% level. Cronbach's alpha allowed us to determine the internal consistency of the questionnaire.

Ethical approval was obtained from the Institutional Research Ethics Committee, and the KwaZulu-Natal Department of Health (KZNDOH). Permission to access public sector diagnostic radiographers was also received from the KZNDOH.

RESULTS

The response rate was 42.6% (n = 43) despite repeated attempts to increase participation. The respondents' ages ranged from 20 to 60 years (31.7 ± 9.5 years). About half of the respondents (51%) were aged 20 to 29 years. The majority were single (58%), female (88%) and held a national diploma (67%). The majority (41.9%) of the participants were senior radiographers (level 3); 4.9% were at level one (junior), and the remainder were at the rank of level two.

Thirty-two percent of the respondents had more than 16 years of experience as radiographers. The remainder had three to five years (26.0%), or fewer than two years (19.0%), of experience. Most (72.1%) of the respondents worked in a regional hospital, 16.2% worked in a district hospital, 7.0% in a central hospital, and 4.7% in a community health centre.

Stressors

Demands

Almost one fifth of the respondents often found it hard to manage demands from various people (Table 1). A significant proportion agreed that, more often than not, they had to work intensively ($p<0.001$) and fast ($p<0.001$). Nearly half (48.8%) indicated that their shift duties often added to their stress levels and more than a third stated that some tasks had to be neglected due to them having too much work to do; about one third (34.9%) indicated that they were satisfied with their jobs. Almost 33% of the radiographers experienced unrealistic time pressures (Table 1). Radiographers who worked in regional hospitals (58.0%) had to work intensively, often ($p = 0.002$) compared to those in district hospitals.

A moderate correlation between "deadlines were achievable" and "but difficult to honour due to the various demands" was noted ($r = 0.529$, $p<0.001$). Younger radiographers found it difficult to take sufficient breaks due to divergent demands

Table 1. Responses to items related to demands (%)

	Seldom	Sometimes	Often	p value
Different groups from work demand things from me that are hard to combine	34.9	46.5	18.6	0.079
I have unachievable deadlines	51.2	39.5	9.3	0.002
I have to work very intensively	11.6	14.0	74.4	< 0.001
I have to neglect some of my tasks because I have too much to do	34.9	30.2	34.9	0.911
I am unable to take sufficient breaks	41.9	44.1	14.0	0.026
I am pressured to work long hours	44.2	32.6	23.2	0.242
I have to work very fast	9.3	27.9	62.8	< 0.001
I have unrealistic time pressures	37.2	30.2	32.6	0.850
I am satisfied with my job	27.9	37.2	34.9	0.739
Students in training add to my stress	62.8	27.9	9.3	< 0.001
Students in training affect my ability to complete my work to my satisfaction	58.1	27.9	14.0	< 0.001
My shift duties add to my stress at work	25.6	25.6	48.8	0.098

Table 2. Responses to items related to manager's support and role ambiguity (%)

	Disagree	Neutral	Agree	p value
Manager's support				
I am given supportive feedback on the work I do	32.6	41.9	25.5	0.423
I can rely on my line manager to help me out with a problem	30.2	27.9	41.9	0.486
I have opportunities for personal growth	37.2	39.5	23.3	0.368
I have time for personal growth	60.5	16.2	23.3	0.001
I am allowed to take time off work when personal emergencies occur	23.2	32.6	44.2	0.242
I can talk to my line manager about something that has upset or annoyed me about work	25.6	25.6	48.8	0.098
My line manager encourages me at work	37.2	25.6	37.2	0.559
I am able to take a sufficient number of leave days	25.5	14.0	60.5	0.001
Role ambiguity				
I am clear about what is expected of me from work	2.4	20.9	76.7	< 0.001
I know how to go about getting my job done	0.0	2.3	97.7	< 0.001
I am clear about what my duties and responsibilities are	0.0	11.6	88.4	< 0.001
I am clear about the goals and objectives for my department	4.7	20.9	74.4	< 0.001
I understand how my work fits into the overall aims of the hospital.	0.0	18.6	81.4	< 0.001

compared to older respondents (r = 0.317, p = 0.04). Age (older), rank (senior) and experience (more years) were significantly related to decisions to take a break as required (p = 0.04, p = 0.007 and p = 0.041, respectively). Respondents who worked longer shifts were less satisfied with their jobs (r = -0.315, p = 0.04).

Control

The "often" responses to the items on control ranged from 9.3% to 53.5%; the proportion of responses for "often" was higher for the statements relating to freedom of radiographers to express themselves with regard to their own work speed (p = 0.03) and having a say over how they worked (p = 0.006) compared to "seldom" or "sometimes" (Figure 1). Many respondents (48.8%) reported that they had a say in their own work speed. More of the longer serving radiographers were able to decide on how they did their work compared to those with fewer years of service (p = 0.033).

Managers' support

Many respondents reported that they had neither the time nor the opportunities for personal growth (Table 2). Respondents' opportunities for personal growth was moderately inversely proportional to stress induced by shift duties (r = -0.508, p = 0.001). Respondents who could take time off to deal with personal emergencies felt that they had a say in their work speed (r = 0.437, p = 0.003) as well as in deciding on how to go about doing their jobs (r = 0.399, p = 0.008). The respondents felt that they received less favourable feedback when their shift duties became more strenuous (r = -0.323, p = 0.034). Encouragement received from the manager at work was moderately related to job satisfaction (r = 0.448, p = 0.003). A positive correlation was noted between encouragement received from managers and radiographers having a say in their own work speed (r = 0.377, p = 0.013).

Correlation between statements related to stress

Four out of five statements in this category had significant responses for "often" compared to "sometimes" or "seldom" (p≤0.001). The proportion of responses for these statements ranged from 53.5% to 65.1% (Figure 2).

Peer support

The eagerness of colleagues to help when work got hard was moderately inversely proportional (r = -0.307, p<0.05) to the achievement of deadlines. Respondents also felt that the more they received help from colleagues, the less they felt the pressure from working long hours (r = -0.350, p<0.01). The more the radiographers received respect from their colleagues, the less they neglected their tasks (r = 0.408, p<0.05).

Relationships

Most respondents (58.1%) reported that they were seldom subjected to personal harassment in the form of unkind words or behaviour and close to three quarters felt that they were seldom exposed to bullying at work. Many respondents aged 20 to 29 years (47.2%) reported that they seldom experienced bullying at work. Personal harassment in the form of unkind words was related to unachievable deadlines (r = 0.383, p<0.05). When respondents were subjected to personal harassment, they also had to neglect some of their tasks due to high workloads and vice versa (r = 0.0518, p<0.05). The same group of respondents who experienced personal harassment also felt that they had unrealistic time pressures. Friction and anger amongst radiographers also resulted in them having to neglect some tasks (r = 0.338; p<0.001) and being unable to take sufficient breaks (r = 0.373, p<0.01). Friction or anger between colleagues was moderately inversely proportional to job satisfaction (r = -0.521, p< 0.01).

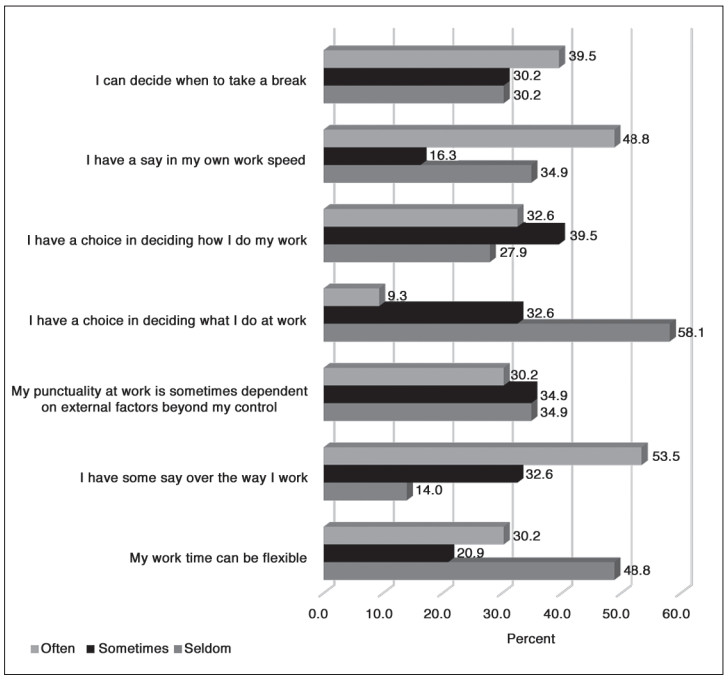

Figure 1. Responses to items related to control (%)

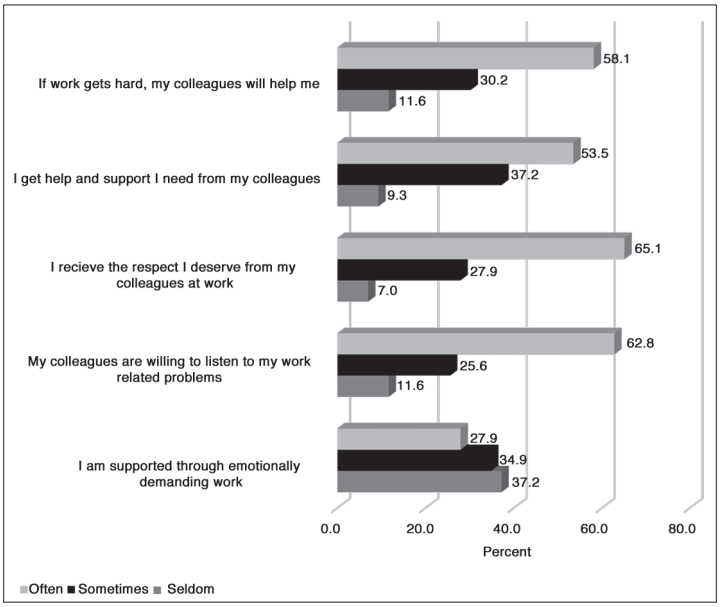

Figure 2. Responses to items related to peer support (%)

Role ambiguity

In this category, 74.4% to 97.7% of the respondents responded "often" to statements (Table 4) compared to "seldom" or "sometimes" ($p<0.001$). Many respondents were clear about their internal loci of control as shown in the responses for role ambiguity in which all "often" responses were significantly higher than "seldom" or "sometimes". Rank of the respondents did not affect the "often" responses. When radiographers were clear about the goals and objectives of their departments, they also had fewer unachievable deadlines ($r = -0.314$, $p<0.01$); less pressure to work long hours ($r = -0.425$, $p<0.01$); more say in their work speed ($r = 0.319$, $p<0.01$); more say over the way they worked ($r = 0.469$, $p<0.01$); more control over factors influencing their punctuality ($r = 0.380$, $p<0.01$); and increased flexibility of work time ($r = 0.379$, $p<0.01$).

Organisational change

Almost 47% of the respondents agreed that staff were consulted about work-related changes and 39.5% agreed that when changes were made, they were clear about how changes would work out in practice (Figure 3).

Other stressors

The three other main sources of stress were workload (19.1%), faulty equipment (16.9%) and staff shortages (12.5%). Less important sources of stress included demands, poor management skills, social support, staff attitudes, and control.

DISCUSSION

The response rate was low in relation to other quantitative studies.[1,2,5] A normal distribution by age and a preponderance of women is supported by the demographic profile of the profession in South Africa. The proportion of respondents who held diplomas is congruent with the developmental level of the profession in this country. The distribution of therapists in the various healthcare settings is reflective of the healthcare structure in South Africa.

Our finding that the respondents find it hard to manage many demands resulting in stress concurs with Verrier's and Harvey's report.[7] The finding that they had to work intensely, for long hours and were sometimes unable to take sufficient breaks is similar to that found in other professions such as pharmacy and nursing.[4,6] Grunfeld et al. reported that the increasing demand for oncology care impacts the work place environment.[11]

In South Africa, radiography students receive their clinical training at public hospitals, and the associated burden of training has been placed on the radiographers. Respondents, however, did not feel that this additional work contributed to stress. Despite the workload, more senior and older radiographers took breaks whenever required. This allowed them to have some degree of control over their work situations. There is no literature to support or refute this finding. As indicated by Sehlen et al.[4], structural conditions that caused high stress among participants included time pressure, "having conflicting demands on the time", and "high workload". Grunfeld et al. affirmed this, based on a survey in 681 cancer care workers in Ontario.[11]

Table 3. Correlations between statements

Statement	Pearson's r	p value	Correlating statement/s
Ability to manage divergent demands	0.529	< 0.01	Achievable deadlines
	0.312	0.04	Work very intensively
	0.317	0.04	Unable to take sufficient breaks
Mismatch between demands and available time	0.364	0.02	Working very intensively
	0.456	0.002	Unable to take enough break times
Job satisfaction	-0.315	0.04	Longer shifts
	-0.358	0.02	Speed at which they worked
If work gets hard my colleagues will help me	-0.350	<0.001	I am pressured to work long hours
I receive the respect I deserve from my colleagues	0.336	<0.001	I am satisfied with my job
We were consulted about changes in the department	0.392	0.009	Had a say over the work they did
	0.471	< 0.001	Had a flexible work time
Clarity of respondents about the outcome of their work changes	0.321	0.036	I am clear about the goals and objectives for my department
	0.325	0.034	I understand how my work fits into the overall aims of the hospital
	0.621	< 0.001	Staff are always consulted about change at work
	-0.382	0.011	Less friction and anger amongst them

Table 4. Responses for role ambiguity (%)

	Seldom	Sometimes	Often	p value
I am clear about what is expected of me from work	2.4	20.9	76.7	< 0.001
I know how to go about getting my job done	0.0	2.3	97.7	< 0.001
I am clear about what my duties and responsibilities are	0.0	11.6	88.4	< 0.001
I am clear about the goals and objectives for my department	4.7	20.9	74.4	< 0.001
I understand how my work fits into the overall aims of the hospital	0.0	18.6	81.4	< 0.001

Similar to the study of Verrier and Harvey[7], the respondents in this study did not feel supported by their managers. Jones et al. found that radiographers working in oncology units reported the highest levels of job satisfaction, co-worker and managerial support, compared to nurses and other healthcare professionals in Scotland.[10] The lack of clarity regarding their specific jobs added to their stress. Support from colleagues reduced stress in the workplace although sometimes there was friction and anger between colleagues. When the latter occurred, tasks were neglected. Similar to findings reported by Verrier and Harvey, Sehlen et al., and Grunfeld et al., other sources of stress included workload and staff shortages.[4,7,11]

Several investigators concluded, based on their studies on radiologists, radiographers and nurses in the German Society of Radiation Oncology (DEGRO), that current workplace environments have a negative impact on the well-being of staff, increased stress levels and decreased job satisfaction.[4,11] A similar situation exists in the South African healthcare environment where demand for healthcare workers has not kept pace with supply and retention.[8] Yeboah et al. reported that healthcare staff at a teaching hospital in Ghana found that the HSE standards impacted on stress on all workers and was high in doctors and nurses but low in other healthcare professionals, including radiographers.[6] Rutter and Lovegrove found that levels of perceived stress were high in all radiographers, regardless of specialisation.[5] Similar to our study, they found that work problems, role ambiguity and conflict were buffered by social support from colleagues. Raj also reported significant stress-related consequences on the physical and mental health of healthcare workers.[9]

CONCLUSION AND RECOMMENDATIONS

This study confirmed that workload and managerial support are significant stressors in the workplace. Role ambiguity was also cited as a stressor. Control over work and support from colleagues were important in reducing stress. A follow-up study should be conducted using private sector radiographers, since the private sector is believed to be better staffed compared to the public sector. In addition, follow-up studies could investigate work-related stressors in the various sub-disciplines of radiography. The outcomes of this study will be communicated to the relevant authorities, to promote necessary interventions.

DECLARATION

The authors declare that there is no conflict of interest

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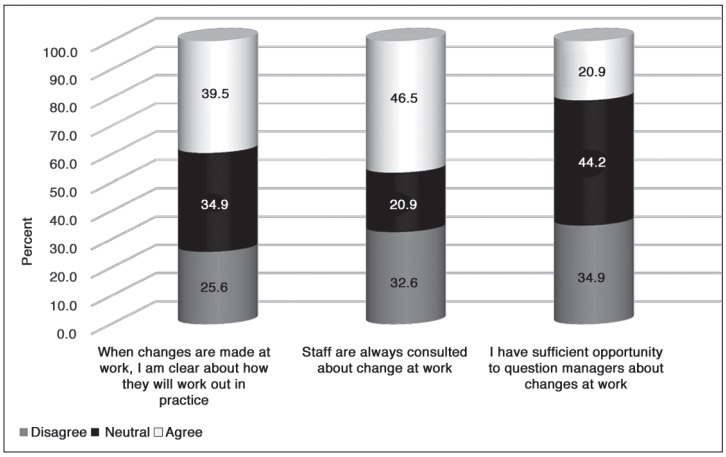

Figure 3. Responses to items related to organisational change (%)

LESSONS LEARNED

1. Health worker health is important and should be nurtured in the workplace in order to protect the quality of patient care
2. Managers must nurture and develop staff to ensure that optimal service is rendered
3. Communication with staff with regard to all matters that concern their work is important in alleviating stress
4. Radiographers should be proactive in planning work schedules to reduce stress
5. Collegiality should be fostered in workplaces

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31st
International
Congress on
Occupational
Health
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ICOH 2015


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ICOH2015 – Anatomy of a Congress that "Bridged the World" in every sense

SETTING THE SCENE

The 31st Congress of the International Commission on Occupational Health (ICOH2015) took place from 31 May to 5 June 2015, at the COEX Convention Centre in Seoul, Republic of Korea. The ICOH2015 Congress, which was themed "Global Harmony for Occupational Health: Bridge the World", was organised by the International Commission on Occupational Health (ICOH), the Korea Occupational Safety and Health Agency (KOSHA), and the Korean Society of Occupational and Environmental Medicine (KSOEM); with the support of the Ministry of Employment and Labour of Korea.

ICOH was established in Milan, Italy in 1906 and the triennial congress is the flagship activity of ICOH, having become one of the largest of the world congresses, bringing together practitioners of occupational health and safety across various disciplines, to share expertise, experiences and knowledge. Today, ICOH is the world's leading international scientific society in the field of occupational health with a membership of 2000 professionals from 93 countries. To this end, and to further showcase the collaborative aspects of the occupational health field and take full advantage of the participation of experts from around the globe, four parallel conferences were held concurrently with ICOH2015: 30th Asia-Pacific Occupational Safety and Health Organisation (APOSHO) Annual Conference (31 May – 4 June); 25th Korea China Japan Joint Conference on Occupational Health (3 June); 31st International Symposium on Safety and Health in the Construction Industry (4 June); 10th Meeting of the Global Network of WHO Collaborating Centres for Occupational Health (27 – 30 May); as well as the associated ICOH meetings for Board Members, Officers, and the ICOH General Assemblies.

The city of Seoul, the capital of the Republic of Korea, located at the western centre of the Korean peninsula, is the business centre of Northeast Asia, and a dynamic and vibrant regional hub in terms of economic and technical development, highly competitive and advanced industries, and efficient finance and distribution systems. At the same time, Seoul is also very traditional, and a centre of Asian culture and art, with numerous national monuments and heritage sites. Geographically, Seoul boasts beautiful natural scenery with the Hangang River traversing the city and dividing it into the cultural and historical northern region, and the business oriented southern region, against an impressive backdrop of mountains. The rich contrasts of tradition versus modernism, and tranquillity versus vivacity, identified Seoul (and Korea) as the ideal venue for the ICOH2015 Congress.

All photos courtesy of Claudina Nogueira unless otherwise stated.

(a) Opening ceremony.

(b) Organisers and presenters – Oral Session on Occupational Infectious Agents: left to right: Drs Claudia de Hoyos and Nicolas Santoro (Argentina); Dr Robert Orford (USA); Ms Claudina Nogueira (SA); Prof. Albert Nienhaus (Germany); Prof. Antoon de Schryver (Belgium); Prof. Mary Ross (SA).

(c) KIHA President's Dinner at Phil-kyung-jae. *Photo courtesy of Ms So Rah Oh, Asian Network of Occupational Hygiene (ANOH).*

(d) Newly elected ICOH Officers and Board Members, 2015–2018.

(e) Closing Ceremony – recital by children's choir.

(f) Haesugwaneum Buddha at Naksansa Temple.

(g) Korea night.

(h) Seoraksan National Park.

ICOH OFFICERS AND BOARD MEMBERS

The newly elected ICOH Officers and Board Members for the 2015-2018 triennium were announced at the Congress.

The Officers: President – Dr Jukka Takala (Finland / Singapore); Secretary General – Prof. Sergio Iavicoli (Italy); Vice President – Dr Marilyn Fingerhut: Scientific Committees portfolio (USA); Vice President – Dr Seong-Kyu Kang: National Secretaries portfolio and Editor-in-Chief of the ICOH Newsletter (Korea); Past President – Dr Kazutaka Kogi (Japan).

The Board Members: Prof. Andrew Curran (UK); Dr Dag Ellingsen (Norway); Dr Elia Enriquez (Mexico); Prof. Monique Frings-Dresen (The Netherlands); Dr Mats Hagberg (Sweden); Dr Martin Hogan (Ireland); Prof. Seichi Horie (Japan); Dr Dingani Moyo (Zimbabwe); Ms Claudina Nogueira (South Africa); Dr Robert Orford (USA); Dr Rosa Maria Orriols Ramos (Spain); Prof. Christophe Paris (France); Prof. Kari Reijula (Finland); Dr Edoardo Santino (Brazil); Prof. Malcolm Sim (Australia); and Prof. Jukka Vuori (Finland).

ICOH2015 SCIENTIFIC PROGRAMME

The Congress was extremely well organised and efficiently run, with very competent and pleasant assistance from the members of the Korean organising entities throughout the duration of the Congress and all its associated activities.

The ICOH2015 Congress Bulletin was distributed every day of the Congress as a printed two-page leaflet of "daily news", and kept participants interested and informed – it summarised highlights of the previous day, reminded delegates of the main events of the current day, and included *ad hoc* short interviews with attendees, and snippets and vignettes related to the activities and the "eyes and ears" of the Congress.

The ICOH2015 scientific programme at a glance: 10 keynote/plenary addresses; 33 semi-plenary sessions; and 233 sessions, comprising Special Sessions, Free Paper/Oral Sessions, and Business Meetings.

The topics of the keynote addresses ranged from the burden of occupational disease, and toxic metals in the community and the workplace, to the predictive risk assessment of nanotechnologies, and the possible prevention of psychosocial risks. The topics of the semi-plenary sessions ranged from the changing world of work, and global approaches to health promotion in the workplace, to worksite prevention and control of cancer in women, and the economic dimensions of occupational safety and health.

The now 37 Scientific Committees within ICOH, as well as five Working Groups, were instrumental in drawing up the framework of the scientific programme which ensured that all the topics chosen were the right ones to address the occupational health and safety concerns of workers and practitioners alike.

Two focus events within the scientific programme were the especially dedicated Policy Forum Sessions – Asian and Global – held on 1 and 2 June, respectively. These sessions brought together key ministries, WHO and ILO leadership, sister organisations, representatives of both employer and worker organisations, and various partners and stakeholders, all with the common objective of a firm commitment of ensuring safe and healthy workplaces for the global workforce. The Policy Fora presented ideal opportunities to share information, adopt learnings, develop networks and build a culture and mind-set of prevention as the best framework for policy and decision makers to implement the protection of workers from occupational illness, injury or death.

Two professional development courses were offered free of charge to ICOH2015 participants on 30 May: "Nanomaterial Exposure Assessment" and "Experience Programme of Seoul Workers' Health Centre".

ICOH2015 delegates also had the benefit of participating in technical tours, free of charge, to the Hyundai Elevator Company (Ltd) and the Bucheon Workers' Health Centre, which were arranged during the week of the Congress. One- and two-day technical tours were also offered to participants, post-congress.

Pioneered at ICOH2009 in Cape Town, South Africa, the Student Poster Competition is a forum where international students in the various disciplines of occupational health have the opportunity to showcase their original research, meet other students involved with occupational health and safety, and interact with occupational health professionals. The competition was held over three days, 2 to 4 June, and was introduced at the Student Welcome Session held on 1 June. Each student poster was critiqued and reviewed by two judges from the International Judging Panel; said judges also interviewed the students on the day of their respective poster assignments.

The International Safety and Health Exhibition was a high-level and well-attended event that ran concurrently with ICOH2015, and brought together organisers, sponsors, international organisations and over 50 leading companies

View of the Bongeunsa Temple, from COEX Convention Centre *(Photo courtesy of Claudina Nogueira)*

displaying products, equipment, education and training materials, and analysis methods related to the disciplines of safety, health and environment.

STATISTICS OF INTEREST: ICOH2015 BY NUMBERS

The final number of ICOH2015 participants was 3535: 1599 international (representing approximately 100 countries) and 1936 Korean nationals, which is a testimony to the remarkable support received from the Korean authorities and organising bodies, for ICOH2015 to be a runaway success. The total number of accepted abstracts was 1631 (versus 1346 at ICOH2012 in Mexico), from the more than 2000 abstracts that were submitted.

- ICOH member participants: 500 (14%); non-ICOH member participants: 3035 (86%).
- Participants by continent: Asia (72%); Europe (17%); Africa (4%); North America (3%); South America (3%); Oceania (1%).
- Top 10 countries (in terms of number of participants): Republic of Korea (1936); Japan (151); Finland (98); Sweden (84); Germany (78); USA (75); PR China (66); Italy (54); South Africa (52); Thailand (51); Belgium (51); India (51); remaining 81 countries (788).
- Participants by gender: male (2314; 65%); female (1026; 29%); unknown (195; 5%).
- Participants by profession: physicians (925); safety engineers (490); occupational/industrial hygienists (400); public officers (259); office workers (236); epidemiologists (129); nurses (99); ergonomists (70); toxicologists (59); policy makers (52); psychologists (42); other (573); unknown (201).
- Abstracts by session: Keynote/Plenary (10); Semi-plenary (33); Policy Fora (16); Special Sessions (511); Oral Sessions (502); Poster Sessions (559).
- Abstracts by continent: Asia (678); Europe (563); North America (168); Africa (118); South America (63); Oceania (41).
- Top 10 topics: Work Organisation and Psychosocial Factors; Health and Safety Culture; Occupational Medicine; Epidemiology in Occupational Health; Occupational Health for Healthcare Workers; Accident Prevention; Musculoskeletal Disorders; Occupational Health and Development; Rural Health; Health Services Research
- Financial Assistance Statistics: see table.

Category	Total	ICOH Members	ICOH Non-members
Registration	150	94	56
Airfare	86	72	16
Accommodation	94	78	16
Total number of participants funded	157	101	56

ICOH2015 OFFICIAL EVENTS

The social functions linked to ICOH2015 were ideal platforms to showcase the rich culture, traditions, heritage and hospitality of the Korean nation.

In the Opening Ceremony on the evening of 31 May, Ko Un, widely published Korean poet, writer and professor at Dangut University, delivered a stage performance on the importance of safety and health from a humanity and philosophy perspective; and Marianna Virtanin, a research professor at the Finnish Institute of Occupational Health (FIOH), presented the opening plenary on the psychosocial burden of modern working life to health. A number of political leaders addressed the audience and thereafter the Opening Ceremony was followed by the Welcome Reception, which was the ideal "meet and greet" opportunity for colleagues and friends to reconnect, in a relaxed and casual environment.

The Korean Night on 2 June gave participants a taste of the splendid and colourful traditional dance and drumming, music and Buddhist cuisine, as well as an introduction to Korean Buddhism by Venerable Hyemin, who led an exercise

View of the city from Seoul Tower *(Photo courtesy of Claudina Nogueira)*

in group deep breathing and meditation. The night ended with a moonlight visit to the traditional Bongeunsa, a 1200-year-old temple in the heart of modern Seoul, located within a short walking distance from the COEX Convention Centre.

On 3 June, Dr Doo Yong Park, President of both the Korean Industrial Hygiene Association (KIHA) and the Asian Network of Occupational Hygiene (ANOH), hosted a dinner for Congress participants representing affiliate member societies of the International Occupational Hygiene Association (IOHA), at Phil-kyung-jae, a royal cuisine restaurant at a heritage site originally built as the residence of a Korean royal descendant in the 1400s.

The Gala Dinner on 4 June was a sumptuous banquet of food, drink and entertainment, conducive to yet more networking opportunities. Lastly, the Closing Ceremony on 5 June opened with an inspiring recital by a children's choir that thrilled the audience, and was a fitting tribute to a very successful Congress, the highlights being the presentation of awards. In a symbolic gesture akin to the passing of the torch at the Olympic Games, the ICOH flag was passed from the Korean ICOH2015 Organising Committee to their Irish counterparts, who will be hosting the ICOH2018 Congress in Dublin, Ireland.

The grand prize of the Student Poster Competition was awarded to Ismaniza Ismail of Malaysia, for her poster titled "The effects of temperature, ultraviolet light and abrasion on the performance of gloves used by agricultural workers handling organophosphate pesticides". The second prize was awarded to Angela Butkovic of South Africa, for her poster titled "Quality in industrial audiometry, refined"; and third prize went to Lena Friedrich of Germany, for her poster titled "Hygienic and microbiological measurements in cleanrooms and operating theatres in medical facilities". Runners-up were from Korea, Sweden and Belgium. The most popular poster award, as voted for by the students themselves, went to Seunghon Ham of Korea, for his poster titled "Measurement of background concentrations for the engineered nanoparticles at manufacturing workplaces".

A panel of four judges awarded two fellowships to the ILO Master Course, a professional development programme. Prof. Gloria Fajardo (Colombia) and Prof. Victor Hoe (Malaysia) were the worthy recipients of partial fellowships for a three-month residence at the ILO's international training centre in Turin, Italy, and a three-month distance-learning class.

A number of tour programmes were on offer to delegates and accompanying persons during and after the Congress. These included traditional and cultural experiences in the form of visits to the Korean Folk Village and the Bukchon Hanok Village; Changdeok Palace; Seoul Tower; museums; shrines; a walking tour of the Namsan Rampart (city wall); a Korean culinary course; and a shopping day in Seoul. Post-congress, there were one- and two-day trips to the islands of Ganghwa, Nami and Jeju; as well as outings to temples and national parks.

ICOH2015 MILESTONE OUTPUTS

The recently revised *ICOH International Code of Ethics for Occupational Health Professionals* (third edition, 2014) was repackaged as a special ICOH2015 edition and distributed to all registered participants. The third edition of the document is accessible at: http://www.icohweb.org/site/multimedia/code_of_ethics/code-of-ethics-en.pdf

The Congress adopted the *"Seoul Statement on the Development of Occupational Health Services for All"* which stresses greater recognition of the importance of occupational health services and advancement of the field through education, training and greater global cooperation. The 10-point Seoul Statement ended with a promise to follow up and evaluate the points at the ICOH2018 Congress, in Dublin, Ireland, and was signed by Dr Young Soon Lee, President of both the ICOH2015 Congress and KOSHA, and Dr Kazutaka Kogi, now Past President of ICOH, and is accessible at: http://www.icohweb.org/site/multimedia/news/pdf/ICOH2015_Seoul_Statement.pdf

A *Memorandum of Understanding* on collaboration between ICOH and the International Social Security Association (ISSA) was signed during the Congress by Dr Kazutaka Kogi (now ICOH Past President), Prof. Sergio Iavicoli (ICOH Secretary General), and Mr Hans-Horst Konkolewsky (ISSA Secretary General), and is accessible at: http://www.icohweb.org/site/multimedia/news/pdf/issa.pdf

The Congress saw the launch of a valuable resource in the form of a concise guide for owners and managers of business enterprises, developed especially for use in developing countries, aimed at identifying, reducing, and eliminating hazards in the workplace. *"Creating a Safe and Healthy Workplace: A Guide to Occupational Health and Safety for Entrepreneurs, Owners and Managers"* is accessible at: http://www.icohweb.org/site/oh-guide.asp#oh-guide

The ICOH members at the Congress voted for the venue of the 33rd Congress, from amongst three contenders: Marrakech (Morocco), Hyderabad (India) and Melbourne (Australia). The bid to host ICOH2021 was won by Melbourne, Australia, with the proposed dates of 21 – 26 March, the Congress theme being *"Sharing Solutions and Occupational Health: Locally, Regionally, Globally"*.

On a personal parting note, a very pleasant two-day post-congress tour beyond the city limits of Seoul to the scenic Eastern Region of Korea did not disappoint, and was the perfect ending to 10 most rewarding days in Korea. Designated by UNESCO as a Biosphere Protection site, Seoraksan National Park, located in Sokcho, boasts oddly shaped rock formations, dense forests, abundant wildlife, hot springs and ancient Shilla-era temples. Seoraksan (Snowy Crags Mountain) is the third-highest mountain in South Korea, with its highest peak, Daecheongbong, standing at 1708 m. Set against this landscape are two stately temples, Sinheung-sa and Baekdam-sa. Along the coast, Naksansa Temple is located north of Naksan Beach and boasts a 1300 year history. The temple overlooks the sea and houses many Buddhist cultural landmarks, of which the 16 m tall stone statue of Buddha, called "Haesugwaneum", is particularly famous.

Report by Claudina Nogueira, on behalf of SASOM and SAIOH,
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SA AIDS acknowledges Paul Matthew, regional director of North Star Alliance

On Tuesday 9 June 2015, South Africa's largest gathering of HIV researchers, policymakers, activists and people living with HIV, the 7th South African AIDS conference, awarded Paul Matthew, North Star Alliance Regional Director of Southern Africa, with the Dira Sengwe Leadership in AIDS award.

Paul Matthew

Each year, the prestigious award goes to an individual or organisation that has made an extraordinary contribution in the fight against HIV/AIDS through work in human rights, treatment, research and development or access to care for people living with HIV/AIDS.

Dira Sengwe, meaning "Take action", is the South African based NGO behind the South African AIDS (SA AIDS) conference. When it came to leadership in the field, the board became aware that there were numerous people and groups doing excellent work under challenging circumstances that was relatively unknown and unrewarded. Therefore, the Dira Sengwe board decided to institute their leadership award to recognise exceptional contributions by individuals or organisations in the country in the response to the HIV epidemic.

Professor Hoosen Coovadia who presented the award to Paul on the evening said that not only was the impact of the work a key criteria for the award but so was the bravery required. He went on to say that AIDS was not a medical epidemic but rather a social, political and cultural epidemic and therefore bravery was required to confront this.

"Leadership is nothing without people. While it is an honour to be recognised through this award as an individual, from my point of view the achievements are only possible through the collective efforts of the North Star Alliance team," stated Paul.

Paul's nomination and win of this award highlights the excellent work of North Star Alliance.

ABOUT THE SA AIDS CONFERENCE

The SA AIDS Conference, held every two years, has become an established barometer of the advances made in confronting and controlling HIV infections, in South Africa and in the regional states. As Africa has experienced the epidemic in a particularly vivid way, the continent accounts for the majority of new HIV infections, with sub-Saharan Africa having the global burden of this disease. The importance of the lessons and events discussed at the conference can be applied throughout the world. There is no doubt that the immediacy of learning from the centre of the worldwide pandemic at the ICC in Durban instills a breadth of knowledge and a sustained image of the effects of one of the worst epidemics to have affected humanity.

North Star Alliance was launched in response to the growing impact of HIV and other communicable diseases on mobile populations, the organisation has constantly created innovations over the past eight years to bring health services to hard-to-reach populations in strategically positioned 'Blue Boxes'.

"North Star Alliance has improved the quality of life of key populations across the African continent by providing access to complimentary healthcare in areas that are hard-to-reach and at times that are more suitable to mobile communities," says Paul, "North Star has participated in cross-sector collaboration between the medical and transport industries and has delivered on social impact by reducing the HIV footprint in Africa. Working in collaboration with the Ministries of Health to strengthen healthcare systems, North Star is innovative in our use of the Blue Box Roadside Wellness Centre and the Corridor Medical Transfer System (COMETS) which acts as a medical passport to the Network of North Star Blue Boxes."

For more information on North Star Alliance please contact Esti on +27 (0)31 701 1258, esti.nell@northstar-alliance.org, www.northstar-alliance.org

NORTH STAR ALLIANCE

North Star Alliance brings health to hard-to-reach people across Africa in a "Blue Box". We use converted shipping containers (painted blue) to house clinics that deliver public health programmes for people with increased health risks, like truck drivers and sex workers, and primary healthcare to communities with limited or no access to medical services. Since 2007, we've grown from one clinic with 5 000 visitors, to a network reaching over 230 000 people in 12 countries every year. Each drop-in clinic is run by well trained clinical and outreach teams and supported by our electronic health passport system, which allows patients to access their health records at every clinic within our network. We work with more than 70 partners from the private, public and humanitarian sector to achieve our goals.

ICOH 2015

31st International Congress on Occupational Health

(d)

Report on ICOH 2015 Congress

The International Commission on Occupational Health (ICOH) held its 31st International Congress on Occupational Health in Seoul, South Korea from 31 May to 5 June 2015. ICOH is a non-government organisation (NGO) in official partnership with other organisations such as the World Health Organization (WHO), International Labour Organization (ILO), and three sister organisations [the International Occupational Hygiene Association (IOHA), the International Ergonomics Association (IEA), and the International Social Security Society Association (ISSA)].

A total of 3535 people registered to attend the Congress which had the theme: "Global Harmony for Occupational Health: Bridge the World." The Welcoming Ceremony on 31 May in the COEX Grand Ballroom was an opportunity for some to meet old friends and colleagues and for others, like myself (at such a congress for the first time), to stand in awe of all that occupational health is achieving around the globe.

The opening address was by Mr Young Soon Lee, President of the ICOH Congress 2015, and also the President of the Korea Occupational Safety & Health Agency (KOSHA). He stated that the Congress had invited world-renowned speakers to take part in plenary sessions, and had organised some 300 other sessions, including semi-plenary, oral and poster sessions. In these sessions, around 1500 participants gave presentations.

The first welcome address was by the President of ICOH, Dr Kazutaka Kogi. He mentioned that, since the inception of ICOH in 1906, it has been playing a leading role in advancing occupational health through research and practice. He praised the organising committee of the 2015 congress for the interactive programme that they had arranged for delegates.

(a) Front: Karen Michell, Louwna Pretorius, Kim Davies, Theresa Bosman. Back: Prof. Alp Ergor, (Secretary-General ICOH for Turkey), Angie Butkovic, Jennifer Ludwig, Belinda Walters-Girout and Trudy Oates; (b) New SCOHN Committee: Kirsi Niirane, Kazuka Kanishi, Susan Randolph (Chair), Kim Davies (Secretary); (c) Louwna Pretorius with her Special Award for Service to ICOH; (d) Kim Davies presenting at ICOH; (e) Angie Butkovic, 2nd in the Student Poster competition; (f) Ice sculpture.
Photos supplied by Belinda Walters-Girout, with the exception of the ice sculpture, which was taken by Gill Nelson.

Mr Kuck-Hyun Woo (President of the Korean Society of Occupational and Environmental Medicine (KSOEM)), gave the second welcoming address. He stated that Seoul has been progressing very rapidly with economic development since the 1960s, with a focus on manufacturing. It was seen, during a tour of the country, just how much building is going on and, for this reason, the need to be on top of the occupational risks involved in this ever-growing industry.

The Congress ran over six days and offered a variety of topics with sessions focusing on Safety in Occupational Health (OH), Occupational Medicine, Epidemiology in Occupational Health, Safety of Healthcare Workers, Accident Prevention, Musculoskeletal Disorders, OH and Development, Rural Health, Health Services Research, Small-scale Enterprises and the Informal Sector, Industrial Hygiene, Occupational Toxicology, and Education and Training in Occupational Health.

It was obviously impossible to attend everything so I had to be selective in the sessions I chose. Of those that I did attend, I was very impressed with how South Africa has made progress in the fields of occupational health and how we are progressing in relation to what is happening around the world. What was significant for me was the plight of occupational health nursing. Worldwide, it appears that job descriptions and what the occupational nurse is allowed to do, are problematic. However, standards of occupational health nursing are very high and the involvement of nurses in the Congress was significant.

It was obvious, in one of the sessions that I attended, that occupational health nursing is more prevalent in certain countries than others. In countries such as the USA and South Africa, there are a number of initiatives to maintain the level of occupational health training for nurses. However, countries like the Philippines are struggling to retain their nurses for general nursing and are having a problem implementing occupational health, as their focus is on keeping good nursing standards in place to decrease the number of nurses immigrating. Despite these challenges, they do see the need for occupational health nursing.

A number of South African occupational health nurses presented papers and posters.

Theresa Bosman (SASOHN and ICOH Member) presented 'Factors influencing occupational health nurses' functions within selected organizations in the Western Cape, South Africa'.

Karen Michell (Concepts Safety Systems CC)

presented 'Stakeholders' perceptions of an accreditation system for OH service delivery in South Africa'. The main idea was that the accreditation of the OH services must be monitored so that it can be ensured that all occupational health is of similar quality.

Kim Davies (SASOHN President and SANDF) gave an informative account of 'The monitoring of returning workers from Ebola infected areas of West Africa'. In light of the Middle East Respiratory Syndrome (MERS) outbreak that occurred while we were in Korea, it was enlightening to know that the South African National Defence Force has measures in place to monitor workers and make sure that the spread of communicable diseases is kept at bay.

Louwna Pretorius (SASOHN/Corobrik Pty (Ltd)) presented 'The impact of occupational healthcare training programmes on the worklife of employees in the South African context'. This was another topic that made one think that the care of employees is not the responsibility of only the occupational health practitioner but also the employee himself, together with the necessary training from his workplace.

South African OH nursing was represented on some of the committees with Louwna Pretorius as the Chair of the Scientific Committee on Occupational Health Nursing (SCOHN); hence she had various meetings to attend as part of her duties.

As far as awards went, the South African occupational health nurses put up their hands and a number were winners. Karen Michell won the Yukiko Okui Award, from SCOHN, which was awarded to the nurse for the best abstract/oral/ poster presentation at an international level. There were 24 abstracts that were independently reviewed. ICOH presented the 3rd student poster competition. To be eligible for the poster presentation, participants had to identify themselves as a student on the conference registration form, submit an abstract of their occupational health research in advance of the Congress, and prepare a scientific poster to be displayed at a special Congress session. The posters were then judged over four days by various members of the relevant boards. The criteria used for judging were scientific quality, poster presentation quality and clarity, and the student's ability to answer questions from a panel of international judges, with the winner being announced at the closing session. The South African Society of Occupational Health Nurses is proud to announce that Angie Butkovic won second place in the poster presentation with her topic 'Quality in industrial audiometric screening refined'.

Kim Davies was elected as the Secretary of SCOHN, together with elected members, Kirsi Niirane and Kazuka Kanishi, and new Chair, Susan Randolph.

During the closing ceremony, Louwna Pretorius received an ICOH Service award for her contribution to ICOH as the Chair of the Scientific Committee of Occupational Health Nursing from 2009 to 2015.

There was a Korean Evening on the Tuesday night that offered a taste of the culture and cuisine of the country, and the Gala Evening on the Thursday night did not disappoint with the entertainment that was provided.

The 32nd ICOH Congress will be held in Dublin, Ireland, from 29 April to 4 May 2018.

Report by Belinda Walters-Girout
SASOHN member, e-mail: blak@telkomsa.net

Louwna Pretorius, Kim Davies, Belinda Walters-Girout and Lewis Walters-Girout at Seoul Tower

SASOM Annual Congress 2015

The Annual Congress was hosted at the Protea Hotel OR Tambo Airport in Kempton Park on 19 and 20 June 2015. According to the delegates, it was very enlightening and the presenters scored high marks on the evaluation forms.

In the first session, Dr Jan Lapere presented the SASOM position paper on medical assessment for workers in the construction industry. This document is available on the SASOM website – www.sasom.org. Mr Peter Strasheim, a senior advocate who is well known for his excellent advice to all members in the occupational health team and to business in general, discussed the difference between what is right and what is ethical in the workplace. He also answered the question 'When is an injury at work an injury on duty?' Ms Mariette Redelinghuys, an advocate for a workers' organisation, explained when a worker is an employee.

In recognition of the vital work done by members of the Occupational Health Team, the second session was devoted to the Team. The President of SAIOH, Prof. Cas Badenhorst, explained the principles and practices of occupational hygiene and the Professional Certification Board (PCB). SASOHN members, Ms Elana Venter and Ms Angie Butkovic, presented papers on the physical hazards of hazardous chemical substances and an overview of the South African Hazardous Chemical Substances Regulations, and 'Quality in industrial audiometric screening refined', respectively.

The third session of the first day began with Dr Russell Raath, who works in a pain clinic, explaining the possible reasons for and treatment of a pain in the leg. Dr BB Ramjee presented an excellent eye-opening paper on nuclear medicine in practice. Prof. Pierre Joubert, a neuro-psychiatrist, delivered an interesting presentation on psychiatry in occupational health. He discussed a psychiatric interview, mental health evaluation, and the diagnosis and principles of treatment.

The second day of the Congress commenced with a pulmonologist, Dr Gerhard Ras, explaining the reasons for a cough and the management thereof in the fourth session. Ms L Naude followed with wound care and chronic ulcers, before Dr Andre van Jaarsveld addressed the identification and management of fatigue in the workplace. The session ended with an interesting introduction to available medical apps, by Dr Leon Seymore.

The fifth session of the Congress was devoted to an in-depth explanation on the interpretation of an ECG and the principles of management of abnormalities in a consulting room or clinic, by Dr Carin Claassens.

In the sixth and final session of the Congress, Prof. James Ker gave two excellent presentations – the first on 'Human lipids and how to stay healthy' and the second on 'Human health genetics'. Rheumatologist, Dr Elsa van Duuren, provided an interesting take on arthritis and the management and medication thereof. To end the Congress, Ms Charlene Kruger introduced her canine companions who aid recovery of patients after a cardio-vascular incident, severe trauma or coma.

Congress delegates earned 16 Continuing Professional Development points for full attendance.

The next SASOM Conference will take place in the Western Cape to coincide with the SASOM Annual General Meeting on 20 November 2015.

Report by Jenny Acutt,
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Pictured at ICOH2015 are SASOM members Frank Fox and Mary Ross, with Jill Murray (Wits), and Michael Donoghue (ALCOA, Australia)

SAIOH 2015 Annual Conference

EARLY BIRD REGISTRATION IS NOW OPEN!

The SAIOH Annual Conference is scheduled to take place from 28 to 30 October 2015 at the very spectacular Lagoon Beach Hotel – Cape Town's Premier Beach Hotel: www.lagoonbeach-hotel.co.za. Do not miss out! Visit the SAIOH website: www.saioh.co.za to register and receive the discounted offer. You can expect not only a jam-packed programme with some of the best speakers in the occupational hygiene field, but the opportunity to visit and explore famous and beautiful attractions that have made Cape Town one of the most unique travel destinations in South Africa.

ANNOUNCEMENT – NEW ORGANISATIONAL MEMBERS

SAIOH is pleased to welcome the following enterprises to the SAIOH family as Organisational Members. Organisational Membership is open to all enterprises that wish to play a part in building the occupational hygiene community within southern Africa and promote healthier workplaces.

- RPS Group
- ISO-Q Consulting (Pty) Ltd
- Bureau Veritas M&L Laboratory Services (Pty) Ltd

Important notes from the SAIOH PCB – assessment outcomes, problems and preparation

We are now onto our second batch of written and oral assessments of 2015 and, as usual, we are seeing a mixed bag of results and outcomes in our written assessment papers.

The reality is that our candidates present with a wide and varying range of backgrounds and qualifications. This identifies, at assessment, the large set of skills and knowledge base required to become a fully competent practicing occupational hygiene practitioner.

In addition, we are faced with legislative requirements from both the Department of Labour and the Department of Minerals Resources, for workers practicing occupational hygiene to be registered with SAIOH. Many complaints and accusations against SAIOH relate to these requirements and should be addressed with the relevant departments. SAIOH looks after individual professionals, not AIAs or qualifications. We are not educators, but we should be providing guidance to members.

The past two years have been difficult for the PCB members and assessors, and more so for candidates who are under undue pressure to achieve a registration that is not always a viable target in the time frames set, especially given the entry level skill set mentioned above. The question we all need to ask ourselves is, "How do we address these issues in a structured and sensible manner?" It is time for honesty from all sides to enable us to move forward in a positive manner and to ensure that we are achieving the aims of our Institute, our assessment body and our national and international peers – ensuring that we register knowledgeable and competent occupational hygiene practitioners. Anything less is an insult to all and a danger to the workers of southern Africa.

I would like to share some facts and ideas with you all and to ask for your understanding and help to achieve our goals as quickly and effectively as possible:

1. Many members and candidates do not understand the SAIOH role as a professional body and our responsibility with regard to Approved Inspection Authorities (AIAs). All requirements for AIAs are the responsibility of the Department of Labour and queries relating to AIA issues should be addressed directly to the Department, including queries relating to the Legal Knowledge Certificate and SANAS accreditation.
2. There is a problem with the Chamber of Mines Intermediate Certificate in Mine Environmental Control with regard to its acceptability as a base qualification. This is recognised by SAQA, the national qualification frameworks (NQF) system and our PCB, all of which are guided by the NQF requirements. This issue is being addressed by the South African Mine Ventilation Society (MVS), and SAIOH PCB representatives are holding meetings with the MVS to find a way to close obvious gaps in content and knowledge requirements for candidates applying for the Intermediate Certificate via this route.

   The previous implementation of a 'Grandfather' clause which allowed applicants to substitute experience years for qualification years was phased out and removed at the end of 2014 as this was a requirement for the SAIOH PCB to remain an accredited assessment body with the International Occupational Hygiene Association. No other country in the world allows this and it is an unacceptable practice for most professional bodies. Our SAQA accreditation would also be affected by this practice. This situation was regularly communicated throughout 2014, via SAIOH mail drops, at our meetings, at our annual conference, and on our website. Our updated procedures, reflecting the new rules that have been in place since January 2015, are available on the SAIOH website.
3. The above issue and the high failure rate of our candidates, especially at occupational hygiene technologist (OHT) level, are causes for concern, and both feature high on our key strategic deliverables for 2015. However, we are failing to achieve even basic outcomes – why? The legal requirements are putting individual members under serious stress, with jobs and livelihoods on the line. We understand this and want to help rectify the situation. However, continuous

individual scenarios, and the demands around addressing these, take up precious time that could be better utilised in delivering a fix-for-all solution.

4. So what can our members and prospective candidates do to help?
   a. Please be patient and allow us to deliver support material for all affected members and candidates. Understand that our council members and assessors are volunteers and work after hours on your behalf to try and improve our Institute and our systems.
   b. Do not make personal threats and harsh, unfounded claims – it is draining and reduces enthusiasm for delivery of much-needed support systems. It also has the potential of incurring high costs for legal advice, which is a waste of the funds generated by our members. This money can be far better used to develop education, guidance and support materials for use by all members and candidates.
   c. Offer your services as a volunteer with SAIOH and help to speed up the processes – you will learn so much from your peers along the way.

WHAT ADVICE CAN THE SAIOH PCB GIVE TO CANDIDATES PREPARING TO SIT WRITTEN OR ORAL ASSESSMENTS?

The final, and hopefully most useful, information for our next set of candidates is to:

1. Ensure that you are familiar with and confident in your understanding of standards and common occupational hygiene terminology and principles. There are many good resources and texts available that cover these aspects in detail (the MHSC handbook, Schoeman, Di Nardi, OHTA Health Effects and the Measurement of HCS modules, etc.; the SA Regulations for HCS annexures are also an excellent source of information). OH associations such as BOHS, AIOH, AIHA, and national agencies such as the HSE (UK) and NIOSH or the ACGIH (USA), have lots of information and material that can be downloaded for free from their websites.
2. Know and understand the gaps that exist on basic knowledge of hazardous chemical substances, toxicity, common processes, etc. Again, knowledge and understanding of these subjects needs to be improved and expanded.
3. Be confident and able to perform the common calculations used in our work. Key areas are chemicals where calculations of results from measurement data and analysis, TWA corrections, additive results and exposure Indices, as well as conversion of ppm to mg/m^3 (and vice versa), are all important. Basic noise calculations (addition of sound sources and TWA corrections) and the use of the 3 dBA correction models really help in the assessment process and day-to-day practice of OH in the field. The PCB is developing short tutorials to help candidates practice and become more confident in using the basic calculations, the first of which was issued in preparation for the July written assessments. These will also be posted on the SAIOH website. The OHTA training material is available free of charge on the www.ohlearning.com website. Specific lectures and practical examples for these are available and should be sourced and practised.
4. Read the new self-assessment tool that the SAIOH PCB is rolling out, comprising a detailed skillset and knowledge requirement syllabi to help candidates prepare for the examinations. A copy of this will be provided to you to help you better understand your own knowledge gaps and enable you to focus on key areas requiring further study and preparation.
5. Attend the OHTA intermediate modules. This is highly recommended, even at occupational hygienist level, as the variable entrance qualifications result in very specific knowledge gaps depending on candidates' backgrounds. The intermediate modules allow you to attend subject-specific modules to gain detailed knowledge about subjects in which you are weak. SA-based accredited training providers (ATPs) advertise on the SAIOH website and by mail drops, as well as on the www.ohlearning.com website. Look for courses running in your area.
6. Finally, attend local SAIOH branch meetings and workshops. These are usually free of charge or low cost, and speakers are invited to talk on topics of interest. This, as well as many of the above suggestions, also earns you valuable CPD points for your annual submission and recertification.

By working together and understanding our aims and roles, we can improve delivery and registration of much-needed occupational hygiene practitioners into the southern African market place.

COMMENTS AND VIEWS

Please remember to send us comments, views and any other information you have about the profession, which you believe can add value. You can e-mail saiohpresident@saioh.co.za or info@saioh.co.za.

Report by Julie Hills, Chairperson: SAIOH PCB and the PCB Committee
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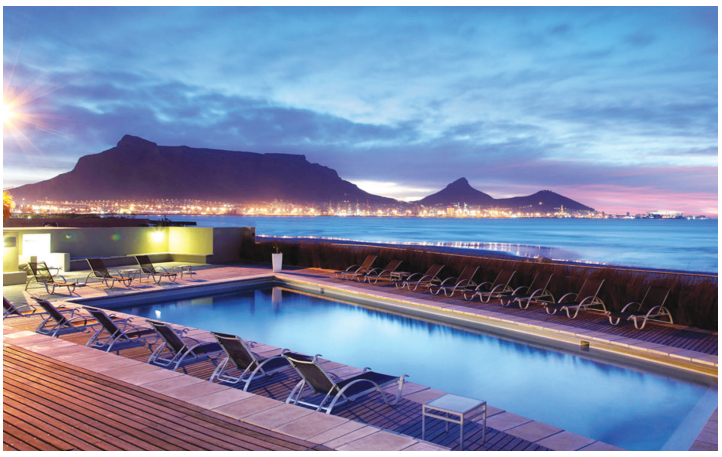

Lagoon Beach Hotel, venue for the SAIOH Annual Conference

Mine Medical Professionals' Association
Academic Symposium and AGM: 27 June 2015

The Mine Medical Professionals' Association (MMPA) held its Regional Academic Symposium, followed by the AGM, at Emperors Palace in Kempton Park on 27 June 2015. Despite the blustery winter weather, the event was well attended by representatives of the occupational health departments of various mines, as well as researchers, other health professionals and sponsors.

Proceedings were opened by the MMPA President, Dr Vusumuzi Nhlapho who highlighted the importance of robust and critical conversations among all stakeholders, in order to address ongoing health and other challenges in the mining industry, as well as assessing the progress made in achieving the goal of zero harm.

Dr Balfour-Kaipa is Head of Health at the Chamber of Mines. Her presentation, 'Occupational Health Priorities for the Mining Industry', commenced with involvement of the delegates when she asked for five priorities from the floor. These were listed as: submission of all cases to the MBOD; decreasing prevalence of hearing loss and the differentiation between work and non-work related cases; chronic diseases and HIV management; medical boarding/incapacity; and status of health versus safety. She then drilled down to the three most important priorities which the Chamber had identified as TB, silicosis, and hearing loss.

According to Dr Balfour-Kaipa, the bill for new legislation on the Mine Health and Safety Act is likely to be promulgated before the end of this year, after negotiations with NEDLAC and MHSC. Key changes to the Act include:

- Re-insertion of the provision for 'other health professionals'
- The occupational medical practitioner (OMP) issuing a certificate of fitness for work
- The OMP informing the employee and the medical inspector if the employee is found unfit to work after seven days, and the employee being informed of the right of appeal.

Policy change guidelines, which have been in discussion since 2013, have not yet been signed off.

The Chamber of Mines has been working on how to fairly implement compensation to silicosis sufferers who are mainly from the gold mines. The focus must now be on prevention. A challenge in the matter of TB infection testing comes from the Mine Health and Safety Council's milestone target of testing 500 000 mine workers by 2024. OMPs also face challenges in proposed changes to legislation and the treatment of silicosis and TB.

Chief Director of Occupational Health at the Department of Mineral Resources, Dr Lindiwe Ndelu's presentation, 'The New Occupational Health Milestones: Review and Expectations' showed data to suggest that occupational health risks, such as exposure to heat and noise, silicosis, TB, and hearing loss, had all improved slightly in the 10 years prior to 2013. Deaths from both accidents and respiratory disease have also been on the decrease. However, Dr Ndelu made a plea for mines to be conscientious about completing forms correctly as her department sometimes struggles to make sense of what appears to be conflicting information.

Dr Ndelu reminded delegates that the milestones of the Mine Health and Safety Summit have been developed in collaboration with the industry, together with action plans that have clear timeframes for delivery. Many challenges remain, including a high rate of occupational health disease infections, inadequate or no reporting of health statistics by some mines, OHS representative training, and women's health, safety and security in mines. In conclusion, Dr Ndelu urged mines to align their practices to the Summit milestones.

Among the speakers was Dr David Spencer, Head of Infectious Diseases at Helen Joseph Hospital. Dr Spencer is an experienced physician and lecturer, passionate about helping patients who are unable to help themselves due to their disadvantaged backgrounds and lack of knowledge. His presentation, 'Antiretroviral Therapy (ART) in 2915: Where are we Going?', looked at the future of HIV treatment in the next decade. He spoke about the evolution of current therapies and said that new, more effective and targeted therapies are being developed continuously. The key for Africa remains the use of a standardised, simplified approach.

A 2009 study proved conclusively that patients should be started on ARTs immediately, irrespective of their CD4 counts. The sooner treatment is initiated, the easier it becomes to prevent the virus causing secondary problems. If this strategy is pursued by the Department of Health (DoH), the cost to the State will initially be significantly increased, but this is more than justified when measured against the current costs of treating recurring infections, multiple re-admissions of the same patient, and increased spread of the virus in the community. Currently, up to 60% of patients admitted to the Helen Joseph Hospital are HIV positive. Dr Spencer believes that patients should be informed and counselled and that the DoH will have to re-think second and third line treatments if it is serious about getting to grips with the HIV epidemic in South Africa.

A thought-provoking presentation was given by Dr Salome Charalambous, Research Director at the Aurum Institute. This important South African public benefit organisation researches and runs clinical trials involving both HIV and TB sufferers in the community. Dr Charalambous presented the Institute's findings on the National TB epidemic and modelling strategies to reduce TB incidence in South Africa. According to data released up to the end of 2013, the highest burden of TB infection is carried by the province of KwaZulu-Natal (KZN). As well as being the most populous province, it also had the highest case rate per 100 000 population, which throws into doubt whether the mining industry is the biggest contributor to the disease. The data also showed that around 10% of all cases are in children younger than 15 years.

Although the initiation case rate has decreased from a high of 406 082 in 2009 to 328 896 in 2013, the number of multiple drug resistant cases of TB (MDR TB) is increasing. According to Dr Charambolous, the decrease in case rates can be attributed to, among other things, an increase in ART coverage. She presented the findings of the TB Modelling and Analysis Consortium on its report targeting the global reduction of TB infections by 50% by 2025. The conclusions reached were that 1.2 million cases a year could be averted simply by improving existing tools such as diagnostics of patients entering hospitals, access to high quality care, and adhering to follow ups. As one of the countries with the highest case load in the world, South Africa would do well to rise to these challenges.

'Key Criteria for the Diagnosis of Occupational Diseases' was the title of Dr Dzingwa's presentation. He is Regional Manager for the Rand Mutual Association and he discussed why there is under-diagnosis and under-reporting, and the criteria for the identification and recognition of occupational disease. One of the problems faced is the long latency period after exposure and the difficulties this raises in distinguishing between non-occupational and occupational disease. He noted that diagnosis is not an exact science; in the end, it is the result of clinical decision-making and applied clinical epidemiology, giving rise to an informed judgement based on available data. Occupational health history also plays a significant role in assessing if the disease is work-related.

Dr David Spencer, Head of Infectious Diseases, Helen Joseph Hospital, presenting on ARV therapy with delegates listening attentively

As sponsors of the event, Mylan, Sanlam and Aspen were given an opportunity before the main presentations to speak briefly about their offerings on very different subjects. Mylan is a supplier of high quality, affordable pharmaceutical products with special relevance to the MMPA as suppliers of generic drugs for the treatment of HIV and TB. Sanlam's representative, Kresen Pillay, gave a thought-provoking presentation on income protection and the changing landscape of tax-free investments. Aspen presented on its proud South African heritage as a leading manufacturer of generic and low cost pharmaceuticals.

Moderators for the day's proceedings were Dr Blondie Mokgata, Dr Phillip du Preez and Dr Dipalesa Mokoboto. A Q & A discussion following Dr Ndelu's presentation raised the issue of clarity on how data forms are written in order to avoid mis-interpretation. Dr Ndelu promised a workshop to discuss the matter further, a suggestion that was supported by Dr Nhlapho. She also promised that final guidelines on the interpretation of proposed key policy changes would be available by the end of July 2015. MMPA President, Dr Nhlapho, enquired about the status of the mooted class action lawsuit following the Mankayi ruling and Dr Balfour-Kaipa responded that no information was available yet.

Key outcomes of the Annual General Meeting, which followed the academic session, saw Dr Vusumuzi Nhlapho being re-elected to the office of President, with Dr Khanyile Baloyi elected to the office of Vice President and Drs Jenny Sapire and Mandla Mphuti to the Executive Council. The Annual Congress of the MMPA will be held on 4 and 5 September 2015 at Tsogo Sun - Riverside Sun Hotel (Vaal).

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Classifieds

Occupational Health and

Breaking the **SOUND** barrier

KUDUWAVE

The ultra portable, light and compact **KUDU**WAVE is a major technology breakthrough in occupational health. **KUDU**WAVE eliminates the need for expensive sound booths, allowing for effective hearing tests to the SABS standard as specified in SANS 10083. **KUDU**WAVE carries the CE Mark for Europe and is registered for use in the USA and Australia.

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