



A cross sectional study: Assessment of levels of burnout amongst health care workers in Tshwane public clinics

by

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Research report in article format submitted in partial fulfilment of the requirements for the degree Masters of Public Health, at the School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria

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Declaration

I, Dithole Brenda Moleboge, do hereby declare that this research report, submitted for the degree Master of Public Health at the University of Pretoria, is my own work, except where duly acknowledged, and has not previously been submitted by me for a degree at another university.

Student's Signature: 

Date: 08 December 2014

Supervisor's signature: Date:

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A cross sectional study: Assessment of levels of burnout amongst health care workers in Tshwane public clinics

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Abstract

Background: South Africa is a country with the unique quadruple burden of disease and a shortage of health care workers (HCWs). This increased HCWs: patient ratio creates an excessive workload on HCWs. HCWs that are trying to compensate for the shortage may be more vulnerable to suffer burnout. The aim of the study was to measure burnout among HCWs at Tshwane clinics; compare the difference in burnout among the clinics; and identify possible reasons and root causes of burnout.

Method: A cross sectional study was conducted on Tshwane HCWs in 4 public clinics. A shortened burnout Maslach inventory questionnaire was used for data collection amongst HCWs. A structured interview was conducted with management to clarify uncertainties raised or observed during data collection. Approval was granted by the University of Pretoria, Faculty of Health Research Ethics Committee.

Results: Of the n=289 targeted, 69% (n=199) received questionnaires. 31% did not return the questionnaires or returned it unanswered. 14% did not complete all sections of the questionnaires handed out. A final sample size of n=109 of the 199 was achieved from the 4 clinics that took part in the study. Nurses represented 57.8% of participants studied. Years of experience, occupational status and type of clinic had a significant influence on burnout variables.

High depersonalization, emotional exhaust and total burnout with a median of 3.29, 3.38 and 9.14 respectively, were observed. High depersonalization ($p=0,0024$) and low personal accomplishment ($p=0,0034$) were observed to have a significant influence on occupational status. Clinic 4 was ranked the highest for emotional exhaustion, depersonalisation and personal accomplishment.

Conclusion: It should be noted that clinics where employees suffered the most burnout were those that operate for 24 hours. The possible root causes of burnout might be workload and moral constrains.

Recommendations: The National Department of Health should invest more resources to reduce workload. A program to identify HCWs that may suffer burnout needs to be implemented to assist and manage HCWs with burnout.

Keywords

Burnout, Public clinics, Health care workers, Tshwane.

Word count = 323

Background

The Occupational Health & Safety Act (OHSA) states that “every employer shall provide and maintain, as far as reasonably practicable, a working environment that is safe and without risk to the health of his/her employees [1]. The WHO states that “Health is not merely the absence of disease but a complete state of physical, mental and social well being” [2]. In 1999 the South African Department of Health developed guidelines for the provision of Occupational Health services as part of health service responsibilities for Public Health Services, including its own personnel [3]. Some objectives of the guidelines were to increase quality service delivery and productivity, to promote employee’s loyalty to the organization and to assist in reducing absenteeism and excessive sick leave.

HCWs in the South African Public Health Services include doctors, nurses, pharmacists, dentists, occupational therapists, physiotherapists and psychologists. These HCWs are reported to be exposed to long working hours [4]. South Africa is faced with a shortage of HCWs and training centres are required to increase capacity to meet the demand for public health services [4,5]. In 2009 there were 140 HCWs for every 100 000 people in SA, 23% less than the world average [6]. This creates a heavy workload for HCWs especially with the HIV/AIDS epidemic along with other unique South African quadruple burden of disease. As a result HCWs may be susceptible to suffer from burnout.

Burnout is described a syndrome consisting of three key dimensions, namely, feelings of emotional exhaustion, depersonalisation and reduced personal accomplishment [7-9]. Emotional exhaustion, representing the individual stress dimension of burnout and refers to feelings of depleted physical and emotional resources [7,9]. This prompts actions in workers to distance themselves emotionally and cognitively from their work, presumably as a way to cope with work overload [8,9]. Depersonalisation entails negative and cynical attitudes or excessively detached responses towards the recipients of service and care (e.g. patients) and this reduce the sufferer to an impersonal object [8,9]. These two dimensions are generally considered to comprise the core symptoms of burnout. The third

dimension, lack of personal accomplishment, represents the self-evaluation dimension of burnout and refers to feelings of insufficiency, incompetence, lack of achievement and unproductiveness [7-9].

The aim of this study was to assess the levels of burnout among HCWs in Tshwane public clinics. The objectives were to measure burnout among HCWs at Tshwane clinics, compare the difference in burnout among the clinics, and identify the possible reasons and root causes of burnout.

Methodology

The study design was a cross-sectional study. Four settings were selected for the study, 2 were community health centers and the other 2 were day clinics. Study settings 3 and 4 were Community Health Centres and had in patients' facilities with a larger personnel and management complement than that of the day clinics, settings 1 and 2. The study population consisted of employees working at the 4 settings. The study was approved by the Ethics Committee of the Faculty of Health Sciences, University of Pretoria, S129/2012.

A validated burnout Maslach inventory questionnaire consisting of 22 questions and additional fields to capture basic demographic data was used for data collection. A structured interview was conducted with management to get clarity on uncertainties raised or observed during data collection from HCWs. Participation in the study was anonymous and voluntary, thus no compensation was given for participation.

Based on the pilot study that was conducted by UP Block 2 students, 20 out of 56 of the HCW suffered from burnout. On average the rate of burnout levels would be around 20-30%. It was assumed that 25% of HCW will be identified to experience burnout with a margin of error of 5%. To achieve a confidence level of 95%, the desired number of HCWs for the study was calculated to be 289. Before questionnaires were handed out to participants, a brief introduction about the research was given to the participants by the researcher. Those who were willing to part-take received the questionnaire. Participants were requested to hand the questionnaire back by the end of the day.

Participants were given the whole day to fill in the questionnaires as they were only able to fill them during the lunch or tea breaks. However, there were deviations from the method, those who did not managed to fill in the questionnaires on the day were further given a day extra. These questionnaires were collected the following day.

Participants were warned that they might experience slight discomfort when filling in the questionnaires. They were advised to contact the counselor assigned to their respective clinic should the need arise.

Issues covered in management questionnaires included organisational culture, support services offered to employees and records of absenteeism. There was no desired sample size for interviews with management but at least one person from each setting was expected to be interviewed.

Data was entered into Excel and cleaned before transferred to Stata 2012 statistical package for further statistical analysis. Non-parametric tests, Wilcoxon signed rank test was used for categorical data with only 2 populations and Kruskal-Wallis test was used for more than 2 populations with continuous data. P-values less than 0.05 were considered statistically significant and the results are given with 95% confidence intervals. Statistical analysis was worked out on averages to account for missed or unanswered questions or blanks. A Spearman's rank correlation test was conducted on variables that had a $p\text{-value} < 0.05$ as shown in Table 4 to assess correlation relationship.

Results

Of the required calculated sample size of $n=289$, a total of $n=199$ (69%) was recruited to participate. Of the 69% recruited, 62 of them (31%) did not give back the questionnaires or returned the questionnaires unanswered. A further $n=28$ questionnaires were excluded from data analysis due to sections not answered. A final response rate of $n=109$ (55%) from the four clinics was therefore achieved for the study. The proportions of the study population are shown in Figure 1. Table 1 summarises all the participants' demographic information. Of the 109 participants 85.3% were female, 12.8% were males and 1.8% did not indicate their gender

status. 18.3% of this population was aged between 18-29, 46.8% between 30-39, with 11.9% aged between 40-49, 15.6% between 50-69, older than 60 years and non-response at 2.8%.

Due to the low response rate from other ethnic groups the data was regrouped to black and others with an outcome of 75.2% and 22.9% respectively. 1.8% of the respondents did not indicate their ethnic status. The majority of the participants were nurses with a response rate of 57.8%. Other occupations were regrouped as one. This yielded a 39.4% response with 2.8% that did not indicate their occupational status.

For the marital status category, 30.3% were married, 56.9% single, 4.6% divorced, 5.5% widowed, 0.9% others and 1.8% did not respond. In terms of years of experience in their job category, 9.2% of the participants had 1-5 years, 36.7% had 6-10 years, 18.3% with 11-15 years, 11.9% with 16-20 years, 11% with more than 20 years' experience and 2.8% that did not respond.

The four clinic settings were different in terms of size and communities serviced by the clinics. All these clinics are managed by the City of Tshwane Metropolitan municipality. Setting 1 and 2 are located in a township. The majority of the population is black and both operate from 7:30 to 16:00 weekdays, from 08:00 to 13:00 on Saturday and are not operating on Sundays. Setting 3 and 4 are Community Health Care (CHC) centers. Setting 3 is in a black majority township and 4 an Indian township and both operate for 24 hours.

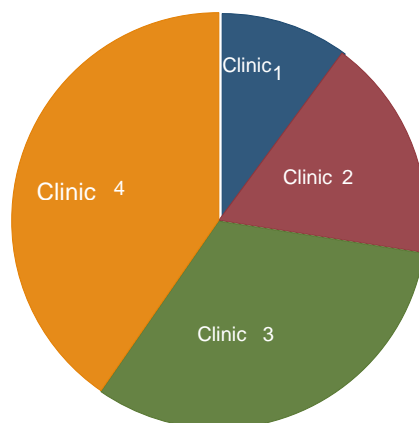


Figure1: Pie chart presentation of the Clinic participants, n=109. Clinic1=11; Clinic2=19; Clinic3=35; Clinic4=44.

Median, standard deviation (SD), range and inter quartile range (IQR) for Maslach burnout inventory key dimensions are tabulated in Table 2. Three scales, emotional exhaust (EE), depersonalization (DP) and personal accomplishment (PA) which represent burnout had median values of 3.38, 3.29 and 2.77 respectively. Table 3 shows how the key dimensions were interpreted.

Table 1: Participants' demographic characteristics.

Demographics	Category	Frequency	Percentage (%)
Gender	Male	14	12.8
	Female	93	85.3
	Did not fill	2	1.8
Age in years	18-29	20	18.3
	30-39	53	48.6
	40-49	13	11.9
	50-59	17	15.6
	60+	3	2.8
	Did not fill	3	2.8
Ethnic	Black	82	75.2
	Other	25	22.9
	Did not fill	2	1.8
Occupation	Nurse	63	57.8
	Other	43	39.4
	Did not fill	3	2.8
Marital Status	Married	33	30.3
	Single	62	56.9
	Divorced	5	4.6
	Widowed	6	5.5
	Others	1	0.9
	Did not fill	2	1.8
Years' Experience	1-5	21	19.2
	6-10	40	36.7
	11-15	20	18.3
	16-20	13	11.9
	20+	12	11.0
	Did not fill	3	2.8

Table 2: Summary and descriptive statistics.

Sub-scale	Median	Standard deviation	RANGE		IQR
			Min	Max	
EE	3.38(High)	1.10	0.27	5	1.23
DP	3.29(High)	1.10	0.53	5.18	1.34
PA	2.77(Low)	1.30	0.14	5.43	2.01
TBS	9.14(High)	3.20	1.59	15.29	4.48

Table 3: Data categorization average median scores.

Rating	EE	DP	PA	TBS
High	>1.23	>0.64	0-1.36	>3.32
Moderate	0.77-1.18	0.41-0.59	1.41-1.64	1.77-3.27
Low	0-0.73	0-0.36	>1.68	0-1.72

NOTE: PA scored in opposite direction to EE&DP

All the four clinics studied showed that employees suffered from burnout with total burnout score (TBS) median of 9.14 and an inter quartile range of 4.48. None of the scores were in the low levels, they were either medium or high. Participants are mostly female thus comparison of burnout based on gender was not done because the results create bias.

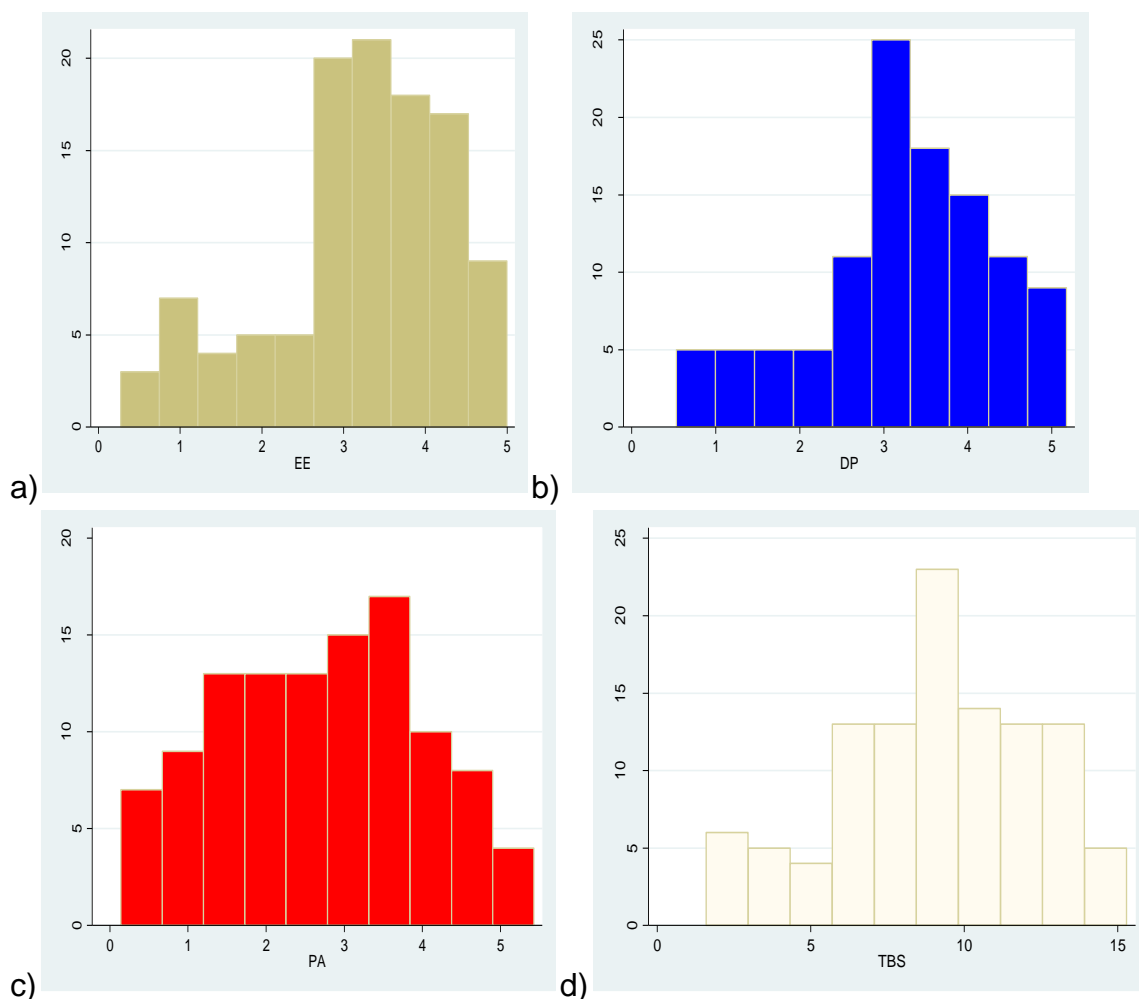


Figure 2: Histograms to illustrate data distribution. a) Emotional exhaust subscale b) depersonalization subscales c) personal accomplishment subscale d) total burnout score subscale.

Table 4: Probabilities for non-parametric tests-(Null hypothesis: samples are independent).

Variable	EE	DP	PA	TBS	TEST
Age	0.4211	0.5791	0.4973	0.9415	KW
Gender	0.1832	0.2279	0.2425	0.1630	MWW
Ethnic	0.6036	0.1185	0.0599	0.0785	KW
Occupation	0.1297	0.0024	0.0034	0.0038	KW
Marital status	0.1730	0.2600	0.0673	0.0761	KW
Years' experience	0.2211	0.3108	0.0019	0.0758	KW
Clinicid	0.0241	0.0191	0.0128	0.0137	KW

Legends: Kw=Kruskal-Wallis equality-of-populations rank test

MWW=Wilcoxon rank-sum (Mann-Whitney) test

$p < 0.05$ = highlighted red-[Such a result indicates that the observed result would be highly unlikely under the null hypothesis.]

Table 5: Kruskal-Wallis (K-W) equality-of-populations rank test.

Stata command	Clinicid/observations (Rank sum)				Probability
	1/11	2/19	3/35	4/44	
K-W EE, by(Clinicid)	587.00	1425.00	1714.50	2268.50	0.0241
K-W DP, by(Clinicid)	579.00	1438.50	1777.50	2200.00	0.0190
K-W PA, by(Clinicid)	487.00	1441.00	1879.50	2187.50	0.0127
K-W TBS, by(Clinicid)	532.00	1452.00	1807.00	2204.00	0.0137

Table 6: Clinic correlation tests (Null hypothesis: Clinic and variables are independent).

Variable	rho	p-Value	Correlation	Conclusion
EE	-0.1518	0.1155	Weak, negative	Reject the null hypothesis
DP	-0.1785	0.0632	Weak, negative	Reject the null hypothesis
PA	-0.1462	0.1293	Weak, negative	Reject the null hypothesis
TBS	-0.1612	0.0940	Weak, negative	Reject the null hypothesis

Discussion

The results showed that high depersonalization and low personal accomplishment are significantly influenced by occupation. Nurses were identified as the most vulnerable group as it's shown in other studies [9,11]. Years of experience were shown to have a significant influence on low personal accomplishment. Those mostly affected were participants who have between 6-10 years working experience and those with more than 20 years of work have been the least affected [10]. Clinic had a significant influence on all burnout variables, (Table 5). HCWs of clinics that operate 24 hours were identified to be at highest risk.

The target of 289 participants was not reached because not all HCWs were willing to participate. Other reasons for not achieving the required sample size was because certain sections of the questionnaires were not completed or questionnaires were not returned. The reasons given by participants were that they need to attend to a large number of patients and that they did not have time to complete the questionnaires.

Additional feedback received from participants that may explain the low response rate was that they were reluctant and not obliged to participate in the study because there was no support and buy-in from clinic management. The reason management did not support the project could not be determined because pre-arrangements were made with the clinic managers. On the day of the survey 75% of managers were not present and 50% did not inform their deputies about arrangements made for the research.

The first objective of the investigation was to measure burnout among HCW at the 4 selected Tshwane clinics of which 2 were CHC and the other 2 day clinics. This objective could not be reached as planned due to the low response rate. Burnout data therefore reflects mainly responses of black nurses and not that of other ethnic groups in the health care profession. 36.7% of HCWs with 6-10 years' work experience participated in the study. This was the work category that suffered burnout the most in comparison to years of experience and is in agreement with other studies [10,12].

High depersonalisation and low personal accomplishment with a median of 3.29 and 2.77 respectively, were also observed for the clinics under investigation (Table 2). These deviate from the reference values of the Maslach Burnout inventory categorization average scores of 0.64 and 1.68 for depersonalisation (high) and personal accomplishment (low) scores respectively (Table 3).

Analysis using Kruskal-Wallis rank test showed Clinic 4 participants to be the most vulnerable group for all variables (EE, DP,PA,TBS) in comparison to the other clinics (Table5). It should however be noted that Clinic 4 had the highest response rate in comparison to the other clinic settings and that this might have influenced the outcome. However, the p-values ($p < 0.05$) suggests that burnout variables are

dependent on clinic setting (Table 5) even though it is a very weak negative correlation as shown in Table 6).

Depersonalization and low personal accomplishment showed a significant influence on the occupational status. Nurses were the most vulnerable participants to suffer the effects of depersonalization and low personal accomplishment with a Kruskal-Wallis score of 0.002 and 0.003 respectively (Table 4). Nurses undergo repetitive and continuing exposure to the sick and dying patients, whereas other occupations' contacts with patients are intermittent and shorter in duration [9]. Also, nurses are normally assigned a patient or a section they need to attend to for the duration of their shift rather than rotation for example as it is the case with doctors.

High levels of depersonalisation are shown to affect provider-patient relationship [9,10]. This means that patients may not receive the required attention and care from the HCWs and may therefore affect the quality of care given. One study reported that 54,9% of psychiatric nurses in government hospitals experienced a high level of burnout [12].

Years of experience had a significant influence on low personal accomplishment (Table4). Those mostly affected were participants who have had between 6-10 years working experience followed by those who have worked for 11-15 years. The least affected were employees with more than 20 years of experience which might be attributed to the fact that they have been working for long and have adopted and adjusted to the work environment and can cope with the job challenges and hardships. This was shown in one study where it was said that "burnout usually takes some years to develop, but is less common in older employees with several years of experience" [10].

The second objective was to compare the difference in burnout among the clinics. The clinic with the highest means scores for EE, DP and PA was Clinic 4, followed by 3, then, 2 and then 1. Different burnout levels amongst clinics may be due to differences in social, clinic management and operational schedules and cultural backgrounds of the clinics as it's shown in other studies [11,13-14].

It should be noted that clinics whose employees suffered the most burnout are those that operate for 24 hours and HCWs are working shifts. The shift schedule is from 7:00 to 19:00. There is no conclusive study on whether shift work affects HCW psychologically. Studies conducted showed that even though the circadian rhythm is affected it does not play a significant role in HCWs' psychological well-being [14].

The third objective was to identify the possible reasons and root causes of burnout. From this study, it was observed that occupational status had a significant influence on depersonalization and personal accomplishment burnout sub-scales (Table 4). Nurses were the most affected occupation. Nurses are the first to access the patients before they are referred up the hierarchy of health care, hence they may be considered as the most vulnerable group [15]. Therefore the possible root causes might be workload and moral constrains. For personal accomplishment, those who have been long on the job had adjusted to the job demand and coping in managing the job demands. This was supported in one study where it was shown that years of experience on the specific job category had a significant effect on the personal accomplishment sub-scale [10,12].

From the management questionnaires received (2 out of 4 distributed), it was noted that clinics did not have support systems in place to monitor the development of burnout. Data relating to absenteeism is captured and analyzed to determine the root cause and implications thereof. HCWs annual de-briefing sessions and wellness program are presented at the clinics. The attendance thereof are however voluntary. This means that employees who are suffering from burnout are not selectively identified and their needs may not be addressed.

Burnout is known to result in low production, increased absenteeism, increased personnel turnover and increased errors thus increased health care cost [9,10]. There has been recent incidents in South African hospitals where they have been sued for malpractice and burnout might be the route cause [16,17]. The economic impact is not yet quantified but it may translate in to a significant increase in health costs.

Conclusions

The null hypothesis that “HCWs in Tshwane public clinics without in-patient facilities are not prone to develop burnout” is true. Based on the results, most HCWs suffer from burnout.

Study limitations

One of the limitations to this study was that there was not enough support and full participation of the participants because the study was purely voluntary hence conclusive results could not be attained due to low response rate. Sample size was also limited thus conclusive comparison could not be made among various settings.

Recommendations

The National Department of Health (NDoH) should invest more time in this research and get buy-in of all those involved in order to get clarity and in-depth insight with reference to burnout status. If this research was made compulsory, the participants’ participation might have been higher and conclusive information might have been achieved on burnout and its root causes. Identification of the most vulnerable and in-need of help might have been identified to implement action and control mechanism to reduce future occurrences.

List of abbreviations

- ❖ The Occupational Health & Safety Act (OHSA)
- ❖ Health Care Workers (HCW)
- ❖ South Africa (SA)
- ❖ Community Health Care (CHC)
- ❖ National Department of Health (NDoH)
- ❖ Total burnout score (TBS)
- ❖ Standard deviation (SD)
- ❖ Inter quartile range (IQR)
- ❖ Emotional exhaust (EE)

- ❖ Depersonalization (DP)
- ❖ Personal accomplishment (PA)

Competing interests

The author declares that they have no competing interests.

Author's contribution

DBM collected data, data entering and cleaning, data analysis and interpretation, report writing.

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Annexures

Annexure A – Faculty of Health science research ethics committee approval letter



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

23/01/2013

Number : S129/2012

Title : Assessment of levels of burnout amongst healthcare workers in Tshwane public clinics

Investigator : Dithole Moleboge, School of Health Systems and Public Health, University of Pretoria
(SUPERVISOR: Dr. Niè Claassen)

Sponsor : None

Study Degree: Masters in Public Health- Occupational Hygiene Track

This Student Protocol was reviewed by the Faculty of Health Sciences, Student Research Ethics Committee, University of Pretoria on 23/01/2013 and provisional approval herewith given, pending receipt of approval from the CEOs of the Tshwane public clinics.

Prof M J Bester BSc (Chemistry and Biochemistry); BSc (Hons)(Biochemistry); MSc (Biochemistry); PhD (Medical Biochemistry)

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Prof T J P Swart BChD, MSc (Odont), MChD (Oral Path), PGCHE

Prof C W van Staden **Chairperson** - MBChB; MMed (Psych); MD; FCPsych; FTCL; UPLM; Dept of Psychiatry

Student Ethics Sub-Committee

Prof R S K Apatu MBChB (Legon,UG); PhD (Cantab); PGDip International Research Ethics (UCT)

Mrs N Briers (female) BSc (Stell); BSc Hons (Pretoria); MSc (Pretoria); DHETP (Pretoria)

Prof M M Ehlers (female) BSc (Agric) Microbiology (Pret); BSc (Agric) Hons Microbiology (Pret); MSc (Agric) Microbiology (Pret); PhD Microbiology (Pret); Post Doctoral Fellow (Pret)

Dr R Leech (female) B.Art et Scien; BA Cur; BA (Hons); M (ECI); PhD Nursing Science

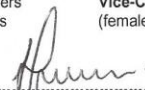
Mr S B Masombuka BA (Communication Science) UNISA; Certificate in Health Research Ethics Course (B compliant cc)


Dr S A S Olorunju BSc (Hons), Stats (Ahmadu Bello University –Nigeria); MSc (Applied Statistics (UKC United Kingdom); PhD (Ahmadu Bello University – Nigeria)

Dr L Schoeman CHAIRPERSON: (female) BPharm (North West); BAHons (Psychology)(Pretoria); PhD (KwaZulu-Natal); International Diploma in Research Ethics (UCT)

Dr R Sommers **Vice-Chair** (Female) MBChB; M.Med (Int); MPhar.Med

Prof L Sykes (female) BSc, BDS, MDent (Pros)


.....
DR L SCHOEMAN; BPharm, BA Hons (Psy), PhD;
Dip. International Research Ethics
CHAIRPERSON of the Faculty of Health Sciences
Student Research Ethics Committee, University of Pretoria


.....
DR R SOMMERS; MBChB; M.Med (Int); MPhar.Med.
VICE-CHAIR of the Faculty of Health Sciences Research
Ethics Committee, University of Pretoria

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Annexure B – Tshwane research committee clearance certificate



**health and
social development**
Department: Health and Social Development
GAUTENG PROVINCE

Kuyasheshwa! Gauteng Working Better

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Enquiries: Dr. K. E. Letebele-Hartell.
e-mail: Manei.Letebele@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE

CLEARANCE CERTIFICATE

Meeting: 31st January 2013

PROJECT NUMBER: 10/2013

Title: Assessment of Levels of Burnout amongst Healthcare Workers in Tshwane Public Clinics.

Researcher: Ms Dithole Moleboge

Co-Researcher:

Supervisor: Dr. N Claassen

Department: School of Health Systems and Public Health, University of Pretoria.

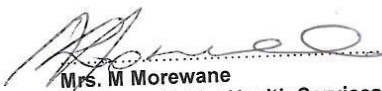
DECISION OF THE COMMITTEE

Approved

**NB: THIS OFFICE REQUESTED A FULL REPORT ON THE OUTCOME
OF THE RESEARCH DONE**

Date: 20th February 2013


.....
Dr. K.E Letebele-Hartell
Chairperson Tshwane Research Committee
Tshwane District


.....
Mrs. M Morewane
Director: District Health Services Support
Tshwane District

NOTE: Resubmission of the protocol by researcher(s) is required if there is departure from the protocol procedures as approved by the committee.

Annexure C - Instructions for authors-BMC journal

Research articles

Criteria | Submission process | Preparing main manuscript text | Preparing illustrations and figures | Preparing tables | Preparing additional files | Style and language

Assistance with the process of manuscript preparation and submission is available from BioMed Central customer support team. See 'About this journal' for information about policies and the refereeing process. We also provide a collection of links to useful tools and resources for scientific authors on our page.

Criteria

Research articles should report on original primary research, but may report on systematic reviews of published research provided they adhere to the appropriate reporting guidelines which are detailed in our Editorial Policies. Please note that non-commissioned pooled analyses of selected published research will not be considered.

Submission process

Manuscripts must be submitted by one of the authors of the manuscript, and should not be submitted by anyone on their behalf. The submitting author takes responsibility for the article during submission and peer review.

Please note that *BMC Nursing* levies an article-processing charge on all accepted Research articles; if the submitting author's institution is a BioMed Central member the cost of the article-processing charge may be covered by the membership (see About page for detail). Please note that the membership is only automatically recognised on submission if the submitting author is based at the member institution. To facilitate rapid publication and to minimize administrative costs, *BMC Nursing* prefers online submission.

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See below for examples of word processor and graphics file formats that can be accepted for the main manuscript document by the online submission system. Additional files of any type, such as movies, animations, or original data files, can also be submitted as part of the manuscript.

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- Portable document format (PDF)
- TeX/LaTeX (use BioMed Central's TeX template)
- DeVice Independent format (DVI)

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If you have used another template for your manuscript, or if you do not wish to use BibTeX, then please submit your manuscript as a DVI file. We do not recommend converting to RTF.

For all TeX submissions, all relevant editable source must be submitted during the submission process. Failing to submit these source files will cause unnecessary delays in the publication procedures.

Publishing Datasets

Through a special arrangement with LabArchives, LLC, authors submitting manuscripts to BMC Nursing can obtain a complimentary subscription to LabArchives with an allotment of 100MB of storage. LabArchives is an Electronic Laboratory Notebook which will enable scientists to share and publish data files in situ; you can then link your paper to these data. Data files linked to published articles are assigned digital object identifiers (DOIs) and will remain available in perpetuity. Use of LabArchives or similar data publishing services does not replace preexisting data deposition requirements, such as for nucleic acid sequences, protein sequences and atomic coordinates.

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Authors linking datasets to their publications should include an Availability of supporting data section in their manuscript and cite the dataset in their reference list.

Preparing main manuscript text

General guidelines of the journal's style and language are given below.

Overview of manuscript sections for Research articles

Manuscripts for Research articles submitted to *BMC Nursing* should be divided into the following sections (in this order):

- Title page
- Abstract
- Keywords
- Background
- Methods
- Results and discussion
- Conclusions
- List of abbreviations used (if any)
- Competing interests
- Authors' contributions
- Authors' information
- Acknowledgements
- Endnotes
- References
- Illustrations and figures (if any)
- Tables and captions
- Preparing additional files

The **Accession Numbers** of any nucleic acid sequences, protein sequences or atomic coordinates cited in the manuscript should be provided, in square brackets and include the corresponding database name; for example, [EMBL:AB026295, EMBL:AC137000, DDBJ:AE000812, GenBank:U49845, PDB:1BFM, Swiss-Prot:Q96KQ7, PIR:S66116].

The databases for which we can provide direct links are: EMBL Nucleotide Sequence Database (EMBL), DNA Data Bank of Japan (DDBJ), GenBank at the NCBI (GenBank), Protein Data Bank (PDB), Protein Information Resource (PIR) and the Swiss-Prot Protein Database (Swiss-Prot).

You can download a template (Mac and Windows compatible; Microsoft Word 98/2000) for your article. For reporting standards please see the information in the About section.

Title page

The title page should:

- provide the title of the article
- list the full names, institutional addresses and email addresses for all authors
- indicate the corresponding author

Please note:

- the title should include the study design, for example "A versus B in the treatment of C: a randomized controlled trial X is a risk factor for Y: a case control study"
- abbreviations within the title should be avoided

Abstract

The Abstract of the manuscript should not exceed 350 words and must be structured into separate sections: **Background**, the context and purpose of the study; **Methods**, how the study was performed and statistical tests used; **Results**, the main findings; **Conclusions**, brief summary and potential implications. Please minimize the use of abbreviations and do not cite references in the abstract. **Trial registration**, if your research article reports the results of a controlled health care intervention, please list your trial registry, along with the unique identifying number (e.g. **Trial registration**: Current Controlled Trials ISRCTN73824458). Please note that there should be no space between the letters and numbers of your trial registration number. We recommend manuscripts that report randomized controlled trials follow the CONSORT extension for abstracts.

Keywords

Three to ten keywords representing the main content of the article.

Background

The Background section should be written in a way that is accessible to researchers without specialist knowledge in that area and must clearly state - and, if helpful, illustrate - the background to the research and its aims. Reports of clinical research should, where appropriate, include a summary of a search of the literature to indicate why this study was necessary and what it aimed to contribute to the field. The section should end with a brief statement of what is being reported in the article.

Methods

The methods section should include the design of the study, the setting, the type of participants or materials involved, a clear description of all interventions and comparisons, and the type of analysis used, including a power calculation if appropriate. Generic drug names should generally be used. When proprietary brands are used in research, include the brand names in parentheses in the Methods section. For studies involving human participants a statement detailing ethical approval and consent should be included in the methods section. For further details of the journal's editorial policies and ethical guidelines see 'About this journal'.

For further details of the journal's data-release policy, see the policy section in 'About this journal'.

Results and discussion

The Results and discussion may be combined into a single section or presented separately. Results of statistical analysis should include, where appropriate, relative and absolute risks or risk reductions, and confidence intervals. The Results and discussion sections may also be broken into subsections with short, informative headings.

Conclusions

This should state clearly the main conclusions of the research and give a clear explanation of their importance and relevance. Summary illustrations may be included.

List of abbreviations

If abbreviations are used in the text they should be defined in the text at first use, and a list of abbreviations can be provided, which should precede the competing interests and authors' contributions.

Competing interests

A competing interest exists when your interpretation of data or presentation of information may be influenced by your personal or financial relationship with other people or organizations. Authors must disclose any financial competing interests; they should also reveal any non-financial competing interests that may cause them embarrassment were they to become public after the publication of the manuscript.

Authors are required to complete a declaration of competing interests. All competing interests that are declared will be listed at the end of published articles. Where an author gives no competing interests, the listing will read 'The author(s) declare that they have no competing interests'.

When completing your declaration, please consider the following questions:

Financial competing interests

- In the past five years have you received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? Is such an organization financing this manuscript (including the article-processing charge)? If so, please specify.
- Do you hold any stocks or shares in an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? If so, please specify.
- Do you hold or are you currently applying for any patents relating to the content of the manuscript? Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript? If so, please specify.
- Do you have any other financial competing interests? If so, please specify.

Non-financial competing interests

Are there any non-financial competing interests (political, personal, religious, ideological, academic, intellectual, commercial or any other) to declare in relation to this manuscript? If so, please specify. If you are unsure as to whether you, or one your co-authors, has a competing interest please discuss it with the editorial office.

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According to ICMJE guidelines, An 'author' is generally considered to be someone who has made substantive intellectual contributions to a published study. To qualify as an author one should 1) have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) have been involved in drafting the manuscript or revising it critically for important intellectual content; 3) have given final approval of the version to be published; and 4) agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.

We suggest the following kind of format (please use initials to refer to each author's contribution): AB carried out the molecular genetic studies, participated in the sequence alignment and drafted the manuscript. JY carried out the immunoassays. MT participated in the sequence alignment. ES participated in the design of the study and performed the statistical analysis. FG conceived of the study, and participated in its design and coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

All contributors who do not meet the criteria for authorship should be listed in an acknowledgements section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chair who provided only general support.

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Acknowledgements

Please acknowledge anyone who contributed towards the article by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship. Please also include the source(s) of funding for each author, and for the manuscript preparation. Authors must describe the role of the funding body, if any, in design, in the collection, analysis, and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication. Please also acknowledge anyone who contributed materials essential for the study. If a language editor has made significant revision of the manuscript, we recommend that you acknowledge the editor by name, where possible.

The role of a scientific (medical) writer must be included in the acknowledgements section, including their source(s) of funding. We suggest wording such as 'We thank Jane Doe who provided medical writing services on behalf of XYZ Pharmaceuticals Ltd.'

Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements section.

Endnotes

Endnotes should be designated within the text using a superscript lowercase letter and all notes (along with their corresponding letter) should be included in the Endnotes section. Please format this section in a paragraph rather than a list.

References

All references, including URLs, must be numbered consecutively, in square brackets, in the order in which they are cited in the text, followed by any in tables or legends. Each reference must have an individual reference number. Please avoid excessive referencing. If automatic numbering systems are used, the reference numbers must be finalized and the bibliography must be fully formatted before submission.

Only articles, datasets, clinical trial registration records and abstracts that have been published or are in press, or are available through public e-print/preprint servers, may be cited; unpublished abstracts, unpublished data and personal communications should not be included in the reference list, but may be included in the text and referred to as "unpublished observations" or "personal communications" giving the names of the involved researchers. Obtaining permission to quote personal communications and unpublished data from the cited colleagues is the responsibility of the author. Footnotes are not allowed, but endnotes are permitted. Journal abbreviations follow Index Medicus/MEDLINE. Citations in the reference list should include all named authors, up to the first 30 before adding 'et al.'.

Any *in press* articles cited within the references and necessary for the reviewers' assessment of the manuscript should be made available if requested by the editorial office.

Style files are available for use with popular bibliographic management software:

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Article within a journal Koonin EV, Altschul SF, Bork P: **BRCA1 protein products: functional motifs.** *Nat Genet* 1996, **13**:266-267.

Article within a journal supplement Orengo CA, Bray JE, Hubbard T, LoConte L, Sillitoe I: **Analysis and assessment of ab initio three-dimensional prediction, secondary structure, and contacts prediction.** *Proteins* 1999, **43**(Suppl 3):149-170.

In press article Kharitonov SA, Barnes PJ: **Clinical aspects of exhaled nitric oxide.** *Eur Respir J*, in press.

Published abstract Zvaifler NJ, Burger JA, Marinova-Mutafchieva L, Taylor P, Maini RN: **Mesenchymal cells, stromal derived factor-1 and rheumatoid arthritis [abstract].** *Arthritis Rheum* 1999, **42**:s250.

Article within conference proceedings Jones X: **Zeolites and synthetic mechanisms.** In *Proceedings of the First National Conference on Porous Sieves: 27-30 June 1996; Baltimore*. Edited by Smith Y. Stoneham: Butterworth-Heinemann; 1996:16-27.

Book chapter, or article within a book Schnepf E: **From prey via endosymbiont to plastids: comparative studies in dinoflagellates.** In *Origins of Plastids. Volume 2*. 2nd edition. Edited by Lewin RA. New York: Chapman and Hall; 1993:53-76.

Whole issue of journal Ponder B, Johnston S, Chodosh L (Eds): **Innovative oncology.** In *Breast Cancer Res* 1998, **10**:1-72.

Whole conference proceedings Smith Y (Ed): *Proceedings of the First National Conference on Porous Sieves: 27-30 June 1996; Baltimore*. Stoneham: Butterworth-Heinemann; 1996.

Complete book Margulis L: *Origin of Eukaryotic Cells*. New Haven: Yale University Press; 1970.

Monograph or book in a series Hunninghake GW, Gadek JE: **The alveolar macrophage.** In *Cultured Human Cells and Tissues*. Edited by Harris TJR. New York: Academic Press; 1995:54-56. [Stoner G (Series Editor): *Methods and Perspectives in Cell Biology*, vol 1.]

Book with institutional author Advisory Committee on Genetic Modification: *Annual Report*. London; 1999.

PhD thesis Kohavi R: **Wrappers for performance enhancement and oblivious decision graphs.** *PhD thesis*. Stanford University, Computer Science Department; 1995.

Link / URL **The Mouse Tumor Biology Database** [<http://tumor.informatics.jax.org/mtbwi/index.do>]

Link / URL with author(s) Corpas M: **The Crowdfunding Genome Project: a personal genomics community with open source values** [<http://blogs.biomedcentral.com/bmcblog/2012/07/16/the-crowdfunding-genome-project-a-personal-genomics-community-with-open-source-values/>]

Dataset with persistent identifier Zheng, L-Y; Guo, X-S; He, B; Sun, L-J; Peng, Y; Dong, S-S; Liu, T-F; Jiang, S; Ramachandran, S; Liu, C-M; Jing, H-C (2011): **Genome data from sweet and grain sorghum (*Sorghum bicolor*).** *GigaScience*. <http://dx.doi.org/10.5524/100012>.

Clinical trial registration record with persistent identifier Mendelow, AD (2006): **Surgical Trial in Lobar Intracerebral Haemorrhage.** *Current Controlled Trials*. <http://dx.doi.org/10.1186/ISRCTN22153967>

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- Title of data
- Description of data

Additional files should be named "Additional file 1" and so on and should be referenced explicitly by file name within the body of the article, e.g. 'An additional movie file shows this in more detail [see Additional file 1]'.

Additional file formats

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 - PDF (Adobe Acrobat)
- Animations
 - SWF (Shockwave Flash)
- Movies
 - MP4 (MPEG 4)
 - MOV (Quicktime)
- Tabular data
 - XLS, XLSX (Excel Spreadsheet)
 - CSV (Comma separated values)

As with figure files, files should be given the standard file extensions.

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Small self-contained websites can be submitted as additional files, in such a way that they will be browsable from within the full text HTML version of the article. In order to do this, please follow these instructions:

1. Create a folder containing a starting file called index.html (or index.htm) in the root.
2. Put all files necessary for viewing the mini-website within the folder, or sub-folders.
3. Ensure that all links are relative (ie "images/picture.jpg" rather than "/images/picture.jpg" or "http://yourdomain.net/images/picture.jpg" or "C:\Documents and Settings\username\My Documents\mini-website\images\picture.jpg") and no link is longer than 255 characters.
4. Access the index.html file and browse around the mini-website, to ensure that the most commonly used browsers (Internet Explorer and Firefox) are able to view all parts of the mini-website without problems, it is ideal to check this on a different machine.
5. Compress the folder into a ZIP, check the file size is under 20 MB, ensure that index.html is in the root of the ZIP, and that the file has .zip extension, then submit as an additional file with your article.

Style and language

General

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There is no explicit limit on the length of articles submitted, but authors are encouraged to be concise. *BMC Nursing* will not edit submitted manuscripts for style or language; reviewers may advise rejection of a manuscript if it is compromised by grammatical errors. Authors are advised to write clearly and simply, and to have their article checked by colleagues before submission. In-house copyediting will be minimal. Non-native speakers of English may choose to make use of a copyediting service.

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Abbreviations

Abbreviations should be used as sparingly as possible. They should be defined when first used and a list of abbreviations can be provided following the main manuscript text.

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- Please use double line spacing.
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- Use hard returns only to end headings and paragraphs, not to rearrange lines.
- Capitalize only the first word, and proper nouns, in the title.
- All lines and pages should be numbered. Authors are asked to ensure that line numbering is included in the main text file of their manuscript at the time of submission to facilitate peer-review. Once a manuscript has been accepted, line numbering should be removed from the manuscript before publication. For authors submitting their manuscript in Microsoft Word please do not insert page breaks in your manuscript to ensure page numbering is consistent between your text file and the PDF generated from your submission and used in the review process.
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- Greek and other special characters may be included. If you are unable to reproduce a particular special character, please type out the name of the symbol in full. **Please ensure that all special characters used are embedded in the text, otherwise they will be lost during conversion to PDF.**

Annexure D: Research protocol

University of Pretoria
Faculty of Health Science
School of Health Systems & Public Health

**Assessment of levels of burnout amongst health care
workers in Tshwane public clinics**

For Masters in Public Health- Occupational Hygiene Track degree

Author: Dithole Moleboge

Student #: 22343645

Contact details:

Address: Faculty of Health Science
Faculty building
Bophelo road 31
Gezina
0001

Tel: 012 354 1985/ 1289/ 1979

Supervisor: Dr. Nico Claassen

Date: July 2012

Assessment of the levels of burnout amongst health care workers in Tshwane health care clinics

Executive Summary

Background

South Africa (SA) is a developing country faced with a unique quadruple burden of disease, namely, HIV/AIDS, communicable diseases, non-communicable diseases and violence and injury. This burden resulted in the country experiencing high levels of mortality and morbidity. In order to combat this burden, the SA National Department of Health (NDH), among other interventions, decided to launch the National Health Insurance (NHI) so as to provide quality and specialised health care to all the SA citizens. Provision of quality care was also stated as one of the 10 point plans for the NDH. However for provision of quality care, health care providers' needs are to be assessed and support offered to them so as they can deliver the quality of care required.

Aim

The aim of this study is to assess the levels of burnout among health care workers (HCW) in Tshwane public clinics.

Objectives

The objectives of the study are as follows:

- ❖ Measure burnout among HCW at Tshwane public clinics.
- ❖ Compare burnout among different clinic setups.
- ❖ Identify the possible reasons/ root causes of burnout by using a structured interview.

Method

The study will be cross-sectional using mixed methods. Seven scaled Likert-type shortened questionnaires with a frequency of 0-6, adapted from Maslach burnout inventory will be used. These questionnaires will consist of 22 questions with a possible scaling between 0 and 132. A score of up to 38 will indicate low burnout levels, 39-72 moderate and a score above 73 would indicate burnout. In addition to the Maslach questionnaire, demographic questions will be asked. Questionnaires will be distributed among 289 HCW and will be collected before the end of the day.

These questionnaires will be filled in anonymously and one questionnaire will take about 15 minute to complete.

A structured in-depth interview will be conducted with management to get clarity on uncertainties raised or observed during data collection from HCW's. Interviews with management will be done before analysis of data to avoid bias. Issues covered will include organisational culture, support services offered to employees and records of absenteeism if available.

The study will be self financed. Ethical approval will be sought through the University of Pretoria students' ethics committee before commencement of the study.

Data analyses

Data will be analysed with Stata 12 statistical package.

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1. INTRODUCTION

1.1 Background

In 1994, the newly elected South African democratic government took over a highly fragmented, inequitable and inaccessible health care service ¹. The health system then was hospital and doctors based with a curative approach. Since then, the Primary Health Care (PHC) approach was introduced. The PHC covers comprehensive services ranging from preventative, promotional, curative and rehabilitative. The PHC is the first point of contact with the health services. It is offered at clinics and community health care centers which are run by nurses with regular visits from doctors ¹.

A Clinic is defined as a facility at and from which a range of PHC services are provided, but that is normally open only 8 hours a day. Certain staff may, however, be required to sleep at or near the clinic so that they are available on call in case of emergencies ¹.

A Community Health Centre is defined as a facility that, in addition to a range of other PHC services, normally provides 24 hour maternity and accident and emergency services and up to 30 beds where patients can be observed for a maximum of 48 hours. There will be a procedure room but not an operating theatre, patients will not be given general anaesthetics, and they will not be admitted as inpatients in the community health centre. However, there is some confusion of roles in certain places where community health centers are very similar to district hospitals ¹.

The burden of health service delivery was then shifted to primary levels resulting in a massive patient load at the clinics. This has somehow compromised quality due to health care workers shortage at lower levels of care especially in rural areas and the challenge of been unable to retain them ¹. SA is faced with a quadruple burden of disease namely HIV/AIDS, communicable disease, non-communicable diseases and violence and injury ². This quadruple burden has resulted in high levels of mortality and morbidity. In order to combat this burden, “improving the quality of health services and care” was included as one of the SA national department of health 2009-2014 10 point plan ². Therefore for provision of quality care, health care

providers' workload and needs are to be assessed and support offered to them so as they can deliver the quality of care required.

The City of Tshwane is more challenged as they have to provide health services to an increasing number of residents due to urbanisation, migrations and natural population growth.

1.2 Rationale of the study

A group of block 2 students, School of Medicine and School of Dentistry at the University of Pretoria conducted a pilot study at setting 3 CHC in 2011. Their topic was "Burnout in health care workers: which group is more vulnerable and what are the main reasons?" Out of the 56 sampled HCW 20% had burnout. Nurses were found to be the group that suffered more burnout levels in comparison with other groups.

This study will be measuring burnout levels among HCW and identifying possible root causes. Block 2 students have limited time to explore data in more depth thus their study is more on an exploratory level. I will look at different health care setups in order to identify the root cause of burnout where it exists. This will assist in implementing better coping mechanisms.

1.3 Literature review

According to the mid-2011 estimates from statistics South Africa (SA), the countries' population stands at 50.5 million (statssa-2012). Majority of this population, about 80% depends on public health sector for their health care needs. In many sectors of SA the PHC facilities are the only available and easily accessible services ³. As a result the PHC service providers and facilities carry a large burden and responsibilities for health care provision ³. In 2009 there were 140 health care workers (HCW) for every 100 000 people in SA ⁴. This is 23% less than the world average ⁴. This creates a heavy workload for HCW (includes doctors, nurses, pharmacists, dentists, occupational therapists, physiotherapists and psychologists) especially with the HIV/AIDS epidemic which is increasing the HCWs' workload along with other SA quadruple burden of disease. As a result of excessive workload HCW are made susceptible to suffer from burnout.

Burnout is described a syndrome consisting of three key dimensions, namely, feelings of emotional exhaustion, depersonalisation and reduced personal accomplishment. Emotional exhaustion, representing the individual stress dimension of burnout, refers to feelings of depleted physical and emotional resources and prompts actions in workers to distance themselves emotionally and cognitively from their work, presumably as a way to cope with work overload. Depersonalisation entails negative and cynical attitudes or excessively detached responses towards the recipients of service and care (e.g. patients), reducing the recipient to an impersonal object. These two dimensions are generally considered to comprise the core symptoms of burnout. The third dimension, lack of personal accomplishment, represents the self-evaluation dimension of burnout and refers to feelings of insufficiency, incompetence, lack of achievement and unproductiveness⁵.

Work related burnout can results from various factors. Some of them are as follows ⁶:

- ❖ Feeling like you have little or no control over your work
- ❖ Lack of recognition or rewards for good work
- ❖ Unclear or overly demanding job expectations
- ❖ Doing work that's monotonous or unchallenging
- ❖ Working in a chaotic or high-pressure environment

Burnout if left unattended can lead to various signs and symptoms including physical, emotional and behavioral.

Physical signs and symptoms of burnout are as follows:

- ❖ Feeling tired and drained most of the time.
- ❖ Lowered immunity, feeling sick, frequent headaches, back pains and muscle aches.
- ❖ Change in appetite or sleep habits.

Emotional signs and symptoms of burnout are as follows:

- ❖ Loss of motivation

- ❖ Decrease satisfaction and sense of accomplishment.
- ❖ Feeling hopeless, trapped and defeated.
- ❖ Detachment, feeling alone in the world.

Behavioral signs and symptoms of burnout are as follows:

- ❖ Withdrawing from responsibilities.
- ❖ Isolating yourself from others.
- ❖ Procrastinating, taking longer to get things done.
- ❖ Using food, drugs and alcohol to cope.
- ❖ Taking your frustrations on others.
- ❖ Skipping work or coming in late and leaving early.

It is vital that the Department of Health understand concepts such as HCWs' engagement and satisfaction and how the levels of engagement and satisfaction relate to delivering quality care and their overall experiences. The resulting demand for health care services and a relative shortage of some health care professionals makes it difficult for hospitals and other health care providers to provide consistently high levels of care.

2. AIM AND OBJECTIVES

2.1 Aim

The aim of the study is to assess the level of burnout amongst health care workers at Tshwane clinics.

2.2 Objective

The objectives of this study are to:

- ❖ measure burnout among HCW at Tshwane clinics;
- ❖ compare the difference in burnout among the clinics; and
- ❖ identify the possible reasons and root causes of burnout.

2.3 Hypothesis

Health care workers in Tshwane public clinics without in-patient facilities are more prone to develop burnout.

2.4 Null hypothesis

Health care workers in Tshwane public clinics without in-patient facilities are not prone to develop burnout.

3 METHODS

3.1 Study design

The study design will be a cross-sectional. For data collection, mixed (qualitative and quantitative) methods will be used. A seven scaled Likert-type questionnaire adapted from Maslach burnout inventory with a frequency of 0-6 will be used on health care workers. These questionnaires will consist of 22 questions with a possible scaling between 0 and 132. A score of up to 38 will indicate low levels of burnout, 39-72 moderate and a score above 73 would indicate burnout. In additions to the Maslach questionnaire self-compiled demographic questions will be asked.

A structured depth interview with open ended questions will be conducted with management.

3.2 Setting

Setting 3 Community Health Centre, Setting 1 clinic, Setting 4 clinic and Setting 2 clinic will be the study setting. Setting 3 and Setting 2 have in patients' facilities and personnel and management complement is larger than that of Setting 1 and Setting 4 clinics.

3.3 Study population and sampling

Health care workers at Setting 3 Community Health Care Centre, Setting 1, Setting 4 and Setting 2 clinic will be included. The principle investigator will approach HCW and encourage them to participate in the research. The principle investigator will collect data herself.

The HCW will be grouped in to three different categories, nurses, doctors and others, which will include occupational therapists, dentists, occupational therapists, psychologists and physiotherapists. Each facility will be assessed individually for all three categories and then the overall results of the two facilities will be compared to establish if significant differences exist between HCW at the different clinics.

A consecutive sampling method will be used until a desired number of participants, 289 samples, are reached. Since the research date is scheduled, participants will have already been informed of the study by the time we collect our data. However, a brief introduction will be done on the day informing participants about the aim and the purpose of the research whilst handing out questionnaires. No incentive will be offered to participants.

Management for the identified clinics will be interviewed. The purpose of this interview will be to address issues that could not be covered in the HCW's questionnaires. This would include issues such as organisational culture, support services offered to employees and records of absenteeism.

3.3.1 Inclusion criteria

The study will include all registered health care workers who are willing to participate and those present on data collection days.

3.3.2 Exclusion criteria

HCW who are not registered and registered HCWs who refuse to give their consent will be excluded from the study. Part-time employees will also be excluded.

3.4 Sampling size

From the UP 2011 block 2 students study, 20% out of the 56 HCW had burnout. On average the rate of burnout levels would be around 20-30%. We assume that 25% will be identified to experience burnout with a margin of error of 5%. Using confidence level of 95%, the required number of HCW for the study would be 289. This sample size will be split proportionally between the clinics.

There is no desired sample size for interviews with management but at least one person is expected to be interviewed for each setting.

3.5 Data collection

Questionnaires will be handed out to participants to be filled in anonymously and they will be collected back on the same day to avoid loss of data or misplacement of questionnaires. Before questionnaires are filled in, consent forms will be handed out

to participants to sign them. These consent forms will state the purpose, benefits, risks, duration of the study and the declaration that they are participating voluntarily. Questionnaires will be distributed among 289 HCW and will take 15 minutes to be completed.

The principal investigator will be responsible for conducting and recording notes during management interviews. With the given consent from the interviewee, the interviews will be recorded for post interview analysis. The recordings will then be erased thereafter for confidentiality reasons.

4 STATISTICAL ANALYSIS

4.1 Data capture and analysis

The characteristics of the sampled HCW's would be summarized using frequencies for categorical data and means or medians and standard deviation for continuous data. Baseline demographics between the four clinics will be compared using Chi-square (χ^2) test for the independence for categorical variables e.g. gender; and analysis of variance (ANOVA) for continuous variables such as age and years of work.

For each subject the average response on the questions answered would be taken as response for that subject on the level of burnout, thus the burnout response is a continuous variable. Comparison between levels of burnout is measured using the 22 questions on the 7 point Likert scale would be done using group comparison test such as analysis of variance (ANOVA) or its non-parametric equivalent. Forwardly a linear regression on the burnout level will be done using the baseline characteristics as cofounders or covariates.

The level of burnout would be categorized as positive (an average score of 3.3) for burnout or not. This new variable would be analysed by logistic regression to identify predictors of burnout. All statistics would be done in Stata12.

The following reference values will be used for data interpretation.

Reference value

Score	Average score	Comment
0 – 38	0-1.72	Low levels of burnout
39– 72	1.77-3.27	Moderate level of burnout
73+	3.32	May suffer from burnout

4.2 Record keeping

During the course of the survey the completed questionnaires will be stored safely by the researchers where only the researchers can access the information and other relevant reviewers. After completion of the research, data will be stored for a period of 15 years in University of Pretoria data storage rooms.

5 ETHICAL AND LEGAL CONSIDERATIONS

Approval for the study will be sought from the University of Pretoria Research Ethics Committee. All subjects for this study will be provided with a consent form in English, since participants are all literate. The consent form will also state the purpose, risks and benefits of the study. Sufficient information will be provided for subjects to make an informed decision about their participation in this study and no incentives will be offered for participation. The consent form will be signed by all study participants before questionnaires are handed out so they can be filled anonymously. No names or codes will appear on the questionnaires. See Appendix for a copy of the Subject Informed Consent Form. This consent form will also be submitted with the protocol for review and approval.

6 LOGISTICS AND TIME SCHEDULE

6.1 Gantt's chart-2012/13

action	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 2013	Feb 2013
Literature study	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Statistician consultation						✓	✓							
Ethical aspects							✓							
Data collection													✓	☐
Data processing													✓	✓
Statistical analysis														✓
Publication preparation														✓
Congress													✓ ☐	☐

7 BUDGET

7.1 Funding

No funding is currently available for the study. The principal investigator will carry out all the costs incurred.

7.2 Costs analysis

PROJECTED BUDGET				
Photocopying and Printing	Quantity	Value	Pages	TOTAL
Research protocol	10	R0.30	20	R60.00
Survey questionnaires	289	R0.30	150	R260.10
Research Report	5	R0.30	40	R60.00
Binding	2	R30.00		R60.00
Sub-Total				R440.10
TRAVELING EXPENSES	Units	RATE (Rand)		TOTAL
Petrol	1 tank	R500.00		
Sub-Total				R500.00
<u>GRAND TOTAL</u>				<u>R940.10</u>

8 REPORTING OF RESULTS

A mini-dissertation will be submitted for Masters in Public Health (Occupational Hygiene sub-track), School of Health Systems and Public Health, Faculty of Health Science by the University of Pretoria. In addition, the outcome of the research will be communicated through the submission of an article and a presentation at the conference.

9 REFERENCES

1. Kerry Cullinian. Health services in South Africa: A basic introduction. Health e-services. January 2006. Available at: www.health-e.org.za/uploaded/cb. Accessed May 03, 2012.
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5. Jacoba J. Van der Colff, Sebastiaan Rothman. Occupational stress, sense of coherence, coping, burnout and work engagement of registered nurses in South Africa. SA j. ind Psychol 2009; 35(1).
6. Melinda Smith, Jeanne Segal, Robert Segal. Preventing burnout: signs, symptoms, causes and coping strategies. April 2012; Available at: www.helpguide.org. Accessed May 03, 2012.

Annexure E: Participants' information leaflet & informed consent for anonymous questionnaires

PARTICIPANTS' INFORMATION LEAFLET & INFORMED CONSENT FOR ANONYMOUS QUESTIONNAIRES

Researcher's name: Dithole Moleboge

Student number: 22343645

Department of: Faculty of Health Science, School of Health Systems & Public Health
University of Pretoria

Dear participant

I am an MPH student in Occupational Hygiene track in the School of Health Systems and Public Health, Faculty of Health Science, University of Pretoria. You are invited to volunteer to participate in our research project which will take place in July and August 2012.

This letter gives information to help you decide if you want to take part in the study. Before you agree you should fully understand what is involved. If you do not understand the information, or have any questions, do not hesitate to ask. You should not agree to take part unless you are completely sure about what we expect of you.

We would like you to complete the questionnaire. This may take about 20 minutes. We will collect the questionnaire from you before you leave the clinic. Questionnaires will be kept in a safe place to ensure confidentiality. Please do not write your name on the questionnaire.

The principal investigator will be available to give any clarity required in filling the questionnaire.

The research ethics committee of the University of Pretoria, Faculty of Health Science granted written approval for this study. They can be contacted at the following address.

Ethics contact details: Deepeka Behari

Tel: 012 3541677

Fax: 086 6516047

E-mail: deepeka.behari@up.ac.za

Website: www.healthethics-up.co.za

Your participation in this study is voluntary. You can refuse to participate or stop at any time without giving reasons. As you do not write your name on the questionnaire, you give us the information anonymously. Once you have handed back the questionnaire, you cannot recall your consent. We will not be able to trace

your information. Therefore, you will also not be identified as a participant in any publication that comes from this study.

It should be noted that there might be slight discomfort experienced when filling in the questionnaires. Should you need help please do not hesitate to contact the counselor assigned to your clinic. For further assistance enquire from your respective clinic manager.

Note: The implication of completing the questionnaire is that informed consent has been obtained from you. Thus any information derived from your form may be used for publication by researchers.

We sincerely appreciate your help,

Yours truly

Health care workers' questionnaires

You are requested to participate in this research study by filling in the questionnaire. The study topic is “Assessment of levels of burnout amongst health care workers at Tshwane clinics”. The aim of this study is to assess the levels of stress among health care working within and across health care settings.

The objectives of the study are as follows:

- ❖ Measure burnout among HCW at Tshwane clinics.
- ❖ Compare burnout among different clinic setups.
- ❖ Identify the possible reasons/ root causes of burnout by using a structured interview.

The questionnaires will be filled in anonymously and will be collected before you leaving the clinic. The results of the study can be used for publications. Your participation in this study will be highly appreciated, however no incentives will be offered for your participation and there are no foreseeable risks or discomforts amongst study participants.

Demographics

Age:

18-29	<input type="checkbox"/>
30-39	<input type="checkbox"/>
40-49	<input type="checkbox"/>
50-59	<input type="checkbox"/>
60+	<input type="checkbox"/>

Gender:

Female	<input type="checkbox"/>
Male	<input type="checkbox"/>

Ethnicity:

Asian	<input type="checkbox"/>
Black	<input type="checkbox"/>
Coloured	<input type="checkbox"/>
Indian	<input type="checkbox"/>
Others	<input type="checkbox"/>

Occupation:

Doctor	<input type="checkbox"/>
Nurses	<input type="checkbox"/>
Physiotherapists	<input type="checkbox"/>
Psychiatrists	<input type="checkbox"/>
Others	<input type="checkbox"/>

Marital status:

Married	<input type="checkbox"/>
Single	<input type="checkbox"/>
Divorced	<input type="checkbox"/>
Widowed	<input type="checkbox"/>
Others	<input type="checkbox"/>

Years of experience?

1-5 years	<input type="checkbox"/>
6-10 years	<input type="checkbox"/>
11-15 years	<input type="checkbox"/>
16-20 years	<input type="checkbox"/>
20+ years	<input type="checkbox"/>

Questionnaires

Please choose the most approximate option and answer all questions

QUESTIONS	0 Never	1 Few times a year	2 Once a month or less	3 Few times a month	4 Once a week	5 Few times a week	6 Everyday
I feel emotionally drained from my work							
I feel used up at the end of the workday							
I feel fatigued when I get up in the morning and have to face another day on the job							
I easily understand how my patients feel about things							
I feel I treat some patients as impersonal objects							
Working with people all day is a strain for me							
I deal very effectively with my patient's problems							
I feel burned out from my work							
I feel I am positively influencing other peoples' lives through my work							
I have become more callous towards people since I took this job							
I worry that this job is hardening my emotions							
I feel very energetic							
I feel frustrated by my job							
I feel I am working too hard on my job							
I don't really care what happens to some patients							
Working with people directly put too much stress on me							
I can easily create a relaxed atmosphere for my patients							
I feel exhilarated after working closely with my patients							
I have accomplished many worthwhile things in this job							
I feel like I am at the end of my rope							
In my work, I deal with emotional problems very calmly							
I feel patients blame me for some of their problems							

Source: Adopted from Maslach Burnout Inventory. <http://www.mindtools.com>

Annexure F: Management's questionnaire

INFORMATION LEAFLET AND INFORMED CONSENT FOR NON-CLINICAL RESEARCH

Researcher's name: Dithole Moleboge

Student number: 22343645

Department of: Faculty of Health Science, School of Health Systems & Public Health
University of Pretoria

TITLE OF STUDY:

Assessment of levels of burnout amongst health care workers at Tshwane public health clinics.

Dear Participant

I invite you to participate in a research study. This information leaflet will help you to decide if you want to participate. Before you agree to take part you should fully understand what is involved. If you have any questions that this leaflet does not fully explain, please do not hesitate to ask the investigator.

The aim of this study is to assess the levels of burnout amongst health care workers in Tshwane public clinics. You as a client are a very important source of information on the success of the study.

The objectives of the study are as follows:

- ❖ Measure burnout among HCW at Tshwane clinics.
- ❖ Compare burnout among different clinic setups.
- ❖ Identify the possible reasons/ root causes of burnout by using a structured interview.

We will ask you some questions about the operations of the clinics and staff management. Some of the questions we are going to ask you may make you feel uncomfortable, but you need not answer them if you don't want to. The interview will take about 30 minutes of your time.

You will benefit directly by the study because at the end of the study your district will get the results of the overall survey, however it's upon them to utilise the findings.

Your participation in this study is entirely voluntary and no compensation will be offered. You can refuse to participate or stop at any time during the interview without giving any reason.

This study has received written approval from the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria and a copy of the approval letter is available if you wish to have one. The contact person for the study is Deepeka Behari. She can be contacted at the following address:

Tel: 012 3541677

Fax: 086 6516047

E-mail: deepeka.behari@up.ac.za

Alternatively you can contact the supervisor at the following address:

Dr. Nico Claassen

Tel: 012 354 2015

Email: nicoo.claassen@up.ac.za

All information that you give will be kept strictly confidential. Once we have analysed the information no one will be able to identify you. Research reports and articles in scientific journals will not include any information that may identify you.

Informed consent form

I confirm that the person asking for my consent to take part in this study has told me about the nature, process, risks, discomforts and benefits of the study. I have also received, read and understood the above written information (Information Leaflet and Informed Consent) regarding the study. I am aware that the results of the study, including personal details, will be anonymously processed into research reports. I am therefore participating willingly. I have had time to ask questions and have no objections.

I have received a signed copy of this informed consent agreement.

Participant's name (Please print)

Participant's signature: Date.....

Investigator's name: Dithole Moleboge

Investigator's signature Date.....

Management questionnaire

1. Is there any support in place for dealing with burnout-debriefing sessions?

1.1 How often are the sessions held?

1.2 What is the criterion for attending the sessions?

1.3 How are employees selected for attendance of sessions?

1.4 Are the sessions compulsory?

2. Are there absenteeism statistics?

2.1 If available, are they analysed to pick up trends?

3. Do the clinics have their own monitoring programs of burnout?

3.1 If yes, what evaluation method is used?

3.2 If yes, how long has the program been in place?

4. Any employee wellness programs?

4.1 If yes, is attendance and participation compulsory?

5. Are there quality assurance officers?

5.1 If yes, are the current reports available and accessible?
