BURNOUT, GENERAL AND MENTAL HEALTH STATUS OF PHYSICIANS: A CROSS-SECTIONAL SURVEY AMONG ANAESTHETISTS IN NIGERIA

Arinze Duke George Nwosu, Department of Anaesthesia, National Orthopaedic Hospital, Enugu. Nigeria. Edmund Ndudi Ossai, Department of Community Medicine, Federal Teaching Hospital, Abakaliki, Nigeria. Fidelis Anayo Onyekwulu, Department of Anaesthesia, University of Nigeria Teaching Hospital, Enugu, Nigeria. Adaobi Obianuju Amucheazi, Department of Anaesthesia, University of Nigeria Teaching Hospital, Enugu, Nigeria. Chigozie Benedeth Uwandu, Department of Anaesthesia, University of Port Harcourt Teaching Hospital, Port- Harcourt, Nigeria. Okechukwu Onwuasoigwe, Department of Orthopaedic Surgery, University of Nigeria Teaching Hospital, Enugu, Nigeria.

Corresponding author: Arinze Duke George Nwosu, Department of Anaesthesia, National Orthopaedic Hospital, Enugu, Nigeria. E-mail: adnwosu@yahoo.com

BURNOUT, GENERAL AND MENTAL HEALTH STATUS OF PHYSICIANS: A CROSS-SECTIONAL SURVEY AMONG ANAESTHETISTS IN NIGERIA

A. D. G. Nwosu, E. N. Ossai, F. A. Onyekwulu, A. O. Amucheazi, C. B. Uwandu and O. Onwuasoigwe

ABSTRACT

Objective: **To determine occupational burnout among anaesthetists practicing in Nigeria and evaluate their general and mental health status.**

Design: **Cross-sectional study.**

Subjects: **The participants were 129 anaesthetists practicing in different regions of Nigeria.**

Setting: **The 27th annual general meeting of the National Society of Anaesthetists which held from 18th to 22nd November 2019 in Uyo, Akwa Ibom State.**

Materials and Methods: **A self-administered questionnaire containing the Oldenburg burnout inventory, the 2-item patient health questionnaire depression module, and Self-rated health tools was used to evaluate burnout, depression and general health of the participants, respectively. The level of statistical significance was determined by a p value of < 0.05.**

Results: **The response rate was 80.6% (104/129). The prevalence of burnout among the anaesthetists was 68.3% (71/104). Eighteen anaesthetists (17.3%) screened positive for depression. We found strong association between burnout (overall; p=0.001, individual domains; p<0.001) and depression, but not self-rated health of the respondents. The professional grade of the anaesthetists, but not age, gender or marital status was found to be associated with burnout. Resident anaesthetists were more significantly associated with burnout; p=0.03.**

Conclusion: **Burnout prevalence was high among the anaesthetists practicing in Nigeria and a considerable proportion screened positive for depression. A strong association exists between burnout and depression among the respondents.**

Burnout and depression could impair mental health, the general health status notwithstanding.

INTRODUCTION

In May 2019, the World Health Organization (WHO) gave impetus to "occupational burnout" by listing it in the International Classification of Diseases (ICD); defining it as "a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed". Listed as occupational syndrome (rather than as a medical condition, though) the ICD-11 specifies that this phenomenon be applied in the occupational milieu only.

Physician burnout is, and should be of clinical interest, having been linked to both poorer quality of care and physician well-being. Based on earlier finding that burnout and depression are clearly related it has been recommended that occupational health surveys should endeavor to assess both disorders jointly.[1]

The few available studies suggest that occupational burnout is rife within anaesthesiology. In spite of this seeming predisposition there has been worrying paucity of literature on burnout in anaesthesiology; a concern that has received attention in the systematic review by Sanfilippo *et al*.[2] Furthermore, in recognition of the disproportionate impairment suffered by physicians from burnout and depression the World Anaesthesia day 2020 theme was aptly titled; "Occupational Wellbeing of Anaesthesiologists" to draw attention to physician wellness.

A major highlight of the anaesthesia workforce survey by the World Federation of Societies of Anaesthesiologists was the severe personnel shortage in low- and medium-income countries (LMICs).[3]The global survey found a density of physician anaesthetists ranging from 0 to over 20 physician anaesthesia provider per 100,000 population across different regions and recommended a minimum of 5 per 100,000 population. Many developing countries rank abysmally low in this index, with a study reporting per capita physician anaesthetist manpower in Nigeria (anaesthesia providers per 100,000 population) of 0.113.[4] This grim statistics has recently worsened with the wave of physician emigration to Europe and the Middle East, with resultant work overload on the residual workforce. On account of the foregoing, we aimed to determine occupational burnout among anaesthetists practicing in Nigeria, and evaluate their general and mental health status. We also sought to identify the risk factors for anaesthetists burnout and explore any association between burnout and depression in the respondents.

METHODS

The survey was conducted in accordance with the Helsinki Declaration of 1975 regarding ethical principles for medical research involving human subjects, as revised in 2013. The local research ethics committee granted approval for the study. The questionnaires were made anonymous in order to conceal the identity of the respondents and were administered to only those who gave verbal informed consent to participate in the survey.

*Study design, Setting and Participants:*A cross-sectional survey was conducted on a total population sample of anaesthetists who attended the 27th annual scientific conference/ general meeting of the National Society of Anaesthetists which held from 18th to 22nd November 2019. All physician anaesthetist

attendees were eligible to participate in the survey and the questionnaires were handed out in-person to the respondents. The pre-tested semi-structured questionnaire comprised of two sections; the first being of socio-demographic or work-related characteristics of the respondents and tools for health status rating and depression screener for each respondent. The health status rating was done with a 5-point Likert-type 'Self-rated health' tool, while the 2-item patient health questionnaire (PHQ-2) was used to screen for depression among the participants. The second section of the questionnaire is the Oldenburg burnout inventory (OLBI) tool. Repeat visits were made over the days that the conference lasted to enhance capture and minimize non-response bias.

Study tools

The OLBI instrument [5]

Oldenburg burnout inventory is a survey tool which conceives a two-dimensional construct for burnout: exhaustion (physical, cognitive, and affective aspects) and disengagement (negative attitudes toward work objects, work content, or work in general). The OLBI has been validated in several studies and has convergent validity with the Maslach burnout inventory (MBI).[6] Its attractive features include; better psychometric features, specific categorisation of burnout and availability at no fee. The OLBI is increasingly being used in burnout research in different settings around the world. [7-9]

The PHQ-2

The PHQ-2 is a validated, self-reported measure used for depression screening. A PHQ-2 score ≥ 3 had a sensitivity of 83% and a specificity of 90% and this threshold has been identified as being optimal for screening purposes.[10]

Self-rated health/ Self-reported health

Self-rated health is a recommended tool for population global health surveys by the WHO. It was measured as one of the eight health concepts from the Short form health survey (SF-36).[11]

Outcome assessment: The primary outcome was burnout determination while the secondary outcome measures were mental health status and self-reported global health rating of the anaesthetists.

We assessed occupational burnout using the OLBI with the cut-off mean scores of 2.25 (for exhaustion domain) and 2.1(for disengagement domains).[12] Since the degree of agreement indicated for each item is scored 1-4, a minimum score of 8 and a maximum score of 32 is obtainable from the 8 items of each domain. The mean score of each domain was obtained by dividing the total scores for the items in the domain by 8. Burnout was defined by concurrent presence of high exhaustion and high disengagement at, or above the cut-off mean scores.

We utilized the PHQ-2 to screen for depression, applying a threshold score of ≥ 3. In analyzing the respondent's global health rating obtained from the 'Self-rated health' single-item tool we dichotomized the responses such that 'excellent', 'very good' and 'good' were regarded as good health, while 'fair' and 'poor' were regarded as poor self-reported health.

*Data analysis:*The statistical software, Statistical Package for Social Sciences (SPSS) version 25 was used for data entry and analysis (IBM, Armonk, New York, USA). Categorical variables were presented using frequencies and proportions, while means and standard deviations were used for continuous variables. Chi square test was used to compare the difference in proportions between two categorical variables. Student t-test was used to compare the difference in mean of two

samples, while Analysis of variance was used to compare the difference in mean of more than two samples. The level of statistical significance was determined by a p value of less than 0.05.

RESULTS

A total of 104 duly completed questionnaires were returned from a survey population of 129 anaesthetists who attended the annual scientific conference/general meeting, yielding a response rate of 80.6%. Twenty-five anaesthetists could not be contacted, did not return their questionnaire or declined consent. Among those surveyed twelve anaesthetists did not indicate their affiliated health institution, but data from those who declared their affiliation (92 respondents) showed that they were from at least 23 different health institutions widely distributed over the six geopolitical zones of the country. The prevalence of burnout among the anaesthetists was 68.3%. Eighteen anaesthetists (17.3%) screened positive for depression, whereas ninety-nine anaesthetists (95%) had good self-rated health. A positive screen for depression was associated with overall burnout (p= 0.001) and the burnout domains of exhaustion (p < 0.001) and disengagement (p < 0.001).

The mean age of the anaesthetists was 41.6(9.2) years, range; 26-75 years. There was preponderance of males (64.4%) and resident anesthetists (64.4%), while majority of the anaesthetists (83.7%) were married (Table 1).

Table 1

Demographic and professional characteristics of the anaesthetists

Variable	Frequency(n=104)	Percent (%)
Age of the anaesthetists		
Mean (SD) years	41.6 (9.2)	
	Range 26-75 years	
Age group of the anaesthetists		
<35 years	22	21.2
35-39 years	27	26.0
30-44 years	18	17.3
≥45 years	37	35.6
Gender		
Male	67	64.4
Female	37	35.6
Marital status		
Married	87	83.7
Single	17	16.3
Professional grade of the anaesthetists		
Consultant anaesthetist	37	35.6
Resident anaesthetist	67	64.4

Majority of the anaesthetists (68.3%) were in the burnout group. Eighteen anaesthetists (17.3%) screened positive for depression, while ninety- nine anaesthetists (95.2%) had good self-rated general health (Table 2).

Table 2

Burnout grouping, with general and mental health evaluation of the anaesthetists

Variable	Frequency (n=104)	Percent (%)
Burnout grouping		
Non-Burnout group	17	16.3
Disengaged group	6	5.8
Exhausted group	10	9.6
Burnout group	71	68.3
Burnout		
Yes	71	68.3
No	33	31.7
Self-rated health		
Excellent	25	24.0
Very Good	44	42.3
Good	30	28.8
Fair	5	4.8
Depression		
Yes	18	17.3
No	86	82.7

A higher proportion of the respondents who were resident anaesthetists (76.1%) were in the burnout group when compared to consultant anaesthetists (54.1%) and the difference in proportions was statistically significant, (χ^2 =5.357, p=0.031) (Table 3). There was association between depression and burnout among the anaesthetists. A significantly higher proportion of the anaesthetists who screened positive for depression; 100.0% were in the burnout group when compared to those who screened negative; 61.6% (Fishers exact test, p=0.001). All 18 anaesthetists that screened positive for depression had burnout, while none of those without burnout screened positive for depression (Table 3). All the anaesthetists who reported poor self-rated health had burnout but the association between burnout and self-rated health was not statistically significant (Fishers exact test, p = 0.176).

Table 3

Factors associated with burnout among the anaesthetists

Variable	Burnout (n=104)		χ^2	p value
	Yes N (%)	**No N (%)**		
Age of the anaesthetists				
<43 years	47 (73.4)	17 (26.6)	2.052	0.152
≥43 years	24 (60.0)	16 (40.0)		
Gender				
Male	47 (70.1)	20 (29.9)	0.307	0.579
Female	24 (64.9)	13 (35.1)		
Professional grade of the anaesthetists				
Consultant anaesthetist	20 (54.1)	17 (45.9)	5.357	0.031
Resident anaesthetist	51 (76.1)	16 (23.9)		

Marital status				
Married	60 (69.0)	27 (31.0)	0.119	0.730
Single	11 (64.7)	6 (35.3)		
Depression				
Yes	18 (100.0)	0 (0.0)	FT	0.001
No	53 (61.6)	33 (38.4)		
Self-rated health				
Good	66 (66.7)	33 (33.3)	FT	0.176
Poor	5 (100.0)	0 (0.0)		

FT- Fishers exact test

The mean disengagement domain score for the respondents who screened positive for depression; 2.7(0.3) was higher than that of those who were not; 2.2(0.3) and the difference in mean was statistically significant, (Student t=5.304, p<0.001) (Table 4). The mean disengagement score of the resident anaesthetists; 2.4(0.3) was significantly higher than that of the consultant anaesthetists; 2.2(0.4), (Student t=2.850, p=0.005)(Table4).

Table 4

Comparison of mean disengagement domain scores and the anaesthetists' characteristics

Variable	(n=104)	Disengagement Mean (SD)	F	p value
Age of the anaesthetists				
<35 years	22	2.3(0.3)	0.868	0.461
35-39 years	27	2.3(0.4)		
30-44 years	18	2.4(0.4)		
≥45 years	37	2.2(0.4)		
Gender			Student t	p value
Male	67	2.3(0.4)	0.167	0.871
Female	37	2.3(0.4)		
Marital status				
Married	87	2.3(0.4)	0.587	0.558
Single	17	2.3(0.3)		
Depression				
Yes	18	2.7(0.3)	5.304	<0.001
No	86	2.2(0.3)		
Professional grade of the anaesthetists				
Consultant anaesthetist	37	2.2(0.4)	2.850	0.005
Resident anaesthetist	67	2.4(0.3)		

The mean exhaustion domain score for the respondents who screened positive for depression; 3.0(0.4) was higher than that of those who were not; 2.4(0.4) and the difference in mean was statistically significant, (Student t=5.008, p<0.001) (Table 5). The mean exhaustion domain score of the resident anaesthetists; 2.6(0.5) was significantly higher than that of the consultant anaesthetists; 2.3(0.5), (Student t=2.920, p=0.004) (Table 5).

Table 5

Comparison of mean exhaustion domain scores and the anaesthetists' characteristics

Variable	(n=104)	Exhaustion Mean (SD)	F	p value
Age of the anaesthetists				
<35 years	22	2.6(0.4)	2.497	0.064
35-39 years	27	2.6(0.5)		
30-44 years	18	2.6(0.5)		
≥45 years	37	2.3(0.5)		
Gender			Student t	p value
Male	67	2.5(0.4)	1.254	0.213
Female	37	2.6(0.5)		
Marital status				
Married	87	2.5(0.5)	0.652	0.516
Single	17	2.6(0.4)		
Depression				
Yes	18	3.0(0.4)	5.008	<0.001
No	86	2.4(0.4)		
Professional grade of the anaesthetists				
Consultant anaesthetist	37	2.3(0.5)	2.920	0.004
Resident anaesthetist	67	2.6(0.5)		

DISCUSSION

This survey recorded a response rate of 80.6% and found a burnout prevalence of 68.3% among the anaesthetists, while 17.3% screened positive for depression. A survey conducted among anaesthesiologists in Pakistan reported a response rate of 74.5% and had a similar demographic preponderance of males (70%) and resident anaesthetists (77%).[13] Using the MBI tool for burnout categorisation they found similar high prevalence of burnout with 68.4%, 39%, and 50.3% of the respondents having moderate-high level of burnout in the depersonalization (DP), emotional exhaustion (EE) and personal accomplishment (PA) domains respectively. In another survey of anaesthesiologists in an academic institution in South Africa using the MBI, burnout was indeed very high despite their reported prevalence of 21%.[14] This could wrongly be perceived as low owing to the criteria they used for defining burnout which was; the simultaneous presence of high burnout in all the three domains.They actually recorded high levels of DP in 50.0%, high levels of EE in 45.2%, and low levels of PA in 46.0% of the respondents. The challenges inherent in the criteria variations for defining burnout prevalence when using the MBI has been highlighted in a previous study.[15]In yet another survey of anaesthetists in the United Kingdom Looseley *et al*. posted a prevalence of 25% and 18% for burnout and depression respectively.[16]

The impact of respondents' demographic characteristics on burnout has been inconsistent, with many studies indicating conflicting, or no association. In tandem with the Pakistani study, we did not find any association between the respondents' demographic characteristics (gender, marital status) and burnout.[13] Similarly, we found an association between the professional grade of

the anaesthesiologist and burnout, with the resident grade having greater burnout than the consultant grade. The challenges of residency training in our country could be dispiriting with very low satisfaction rating.[17] It is conceivable that this background may contribute to the higher level of burnout among the resident anaesthetists in our study compared to consultant anaesthetists. However, in the survey of South African anaesthesiologists there was no statistically significant association between burnout and gender, age, or even the professional grade of the respondents.[14]Nevertheless, conflicting findings havealso trailed the perceived role of anaesthesiologist's gender on burnout, with males being associated with higher risk of burnout by Looseley et al.[16]

The Job demands–resources model of burnouthypothesizes that both high job-demands and low job-resources are risk factors for the development of occupational burnout.[18] But evidence from the research by Peterson et al. suggests that the latter may indeed play a more crucial role.[12] The high rate of burnout in anaesthesiology as revealed in this study and other developing countries [13] contrasts with that from developed countries.[16] Burnout in the latter is characterized by predominant high job demands but with greater access to job resources, lending support to the more crucial role of access to job resources in burnout as suggested by Peterson and colleagues. The grim statistics of low resource availability in developing countries has recently worsened with the wave of physician emigration to Europe and the Middle East, further depleting the residual job resource. Indeed, the high emigration rate among physicians in developing countries could be a reflection of their high burnout experience, since it has been established that a positive association exists between physician burnout and the willingness to emigrate.[19]

Depression has featured prominently in the burnout spectrum such that the 11th of the 12 stages of burnout syndrome as described by Freudenberger corresponds to depression. Earlier report from a Finnish national study had revealed that half of the respondents with severe burnout in their series manifested some depressive symptoms.[1] The researchers had recommended that with the manifest overlap between occupational burnout and depression both entities should be evaluated jointly in occupational settings. Peterson et al. had subsequently used the OLBI, Self-rated health and the Hospital anxiety and depression scale to evaluate burnout, physical and mental health among Swedish healthcare workers and concluded that burnout was associated with depression and poor self-rated health.[12] Our study also utilised the OLBI and Self-rated health tools to evaluate burnout and physical health but employed the PHQ-2 to screen for depression. We similarly found a strong association between burnout and depression, but not self-rated health. Looseley et al. also found a strong association between burnout and depression in their survey of anaesthetists in the United Kingdom (p < 0.0001).[16]

Self-rated health is a commonly used indicator of overall health and has good correlation with objective health assessment.[20]Ninety-nine respondents in our series (95%) had good self-rated health and thus adjudged to be in good general health. All five respondents with poor self-rated health in our survey manifested burnout, but the association between the two was not statistically significant. Peterson et al, also reported a higher frequency of respondents with poor self-rated health in the burnout group compared to the non-burnout group of Swedish healthcare workers, but this

association attained statistically significant in their cohort.[12]

Furthermore, a recent survey of medical students from 25 Nigerian medical schools which used the OLBI to assess for burnout revealed a worrisome prevalence of burnout and psychiatric morbidity which was attributable to medical education.[7]It is thus important to institute remedies that will mitigate the factors that imperil medical education and physician practice in Nigeria and similar environments.

A limitation of our study was the purposive sample of anaesthetists we used for the survey which may not be truly representative of anaesthetists practicing in our country. However, in view of the remarkable response rate, the demographic heterogeneity of the respondents and the geographical spread of their practice setting it could be adjudged to be a fairly representative sample of anaesthetists practicing in the country. Furthermore, being a survey-based study the potential for response bias is real and could have a variable effect on the validity of the findings.

CONCLUSION

This study concludes that there is high prevalence of burnout among anaesthetists practicing in our country, and a strong association exists between burnout and depression among the respondents. Burnout and depression could impair anaesthetists, their general health status notwithstanding.

REFERENCES
1. Ahola K, Honkonen T, Isometsä E, Kalimo R, Nykyri E, Aromaa A, *et al*. The relationship between job-related burnout and depressive disorders--results from the Finnish Health 2000 Study. J Affect Disord. 2005;88:55-62.
2. Sanfilippo F, Noto A, Foresta G, Santonocito C, Palumbo GJ, Arcadipane A, *et al*. Incidence and Factors Associated with Burnout in Anesthesiology: A Systematic Review. Biomed Res Int. 2017;2017:8648925.
3. Kempthorne P, Morriss WW, Mellin-Olsen J, Gore-Booth J. The WFSA Global Anesthesia Workforce Survey. AnesthAnalg. 2017;125:981-90.
4. Onyekwulu FA, Nwosu ADG, Ajuzieogu VO.Anaesthesia manpower in Nigeria. Orient journal of medicine. 2014;26:83-7.
5. Demerouti E, Bakker AB. The Oldenburg Burnout Inventory: A good alternative to measure burnout and engagement. In: Halbesleben J, ed. Stress and burnout in health care. Hauppauge, NY, USA: Nova Science Publishers; 2008. pp. 65–78.
6. Demerouti E, Bakker AB, VardakouI, Kantas A. The convergent validity of two burnout instruments: A multitrait-multimethod analysis. Eur J Psychol Assess.2003;19:12-23.
7. Ayinde OO, Akinnuoye ER, Molodynski A, Battrick O, Gureje O. A descriptive study of mental health and burnout among Nigerian medical students. Int J Soc Psychiatry. 2022;68(6):1223-31.
8. Khan A, Yusoff RBM. Psychometric Testing of Oldenburg Burnout Inventory among Academic Staff in Pakistan. Int. Rev. Manag. Mark 2016;6(4):683-7.
9. Sinval J, Queirós C, Pasian S, Marôco J. Transcultural Adaptation of the Oldenburg Burnout Inventory (OLBI) for Brazil and Portugal. Front. Psychol. 2019;10:338.
10. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire-2: validity of a two-item depression screener. Med Care. 2003;41:1284-92.
11. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care. 1992;30:473-83.
12. Peterson U, Demerouti E, Bergström G, Samuelsson M, Asberg M, Nygren A. Burnout and physical and mental health among Swedish healthcare workers. J Adv Nurs. 2008;62:84-95.
13. Khan FA, Shamim MH, Ali L, Taqi A. Evaluation of Job Stress and Burnout Among Anesthesiologists Working in Academic Institutions in 2 Major Cities in Pakistan. Anesth Analg. 2019;128:789-95.

14. van der Walt N, Scribante J, Perrie H. Burnout among anaesthetists in South Africa. South. Afr. J. of Anaesth.Analg. 2015; 21:169-72.

15. Doulougeri K. Georganta K. Montgomery A. (Reviewing Editor)"Diagnosing" burnout among healthcare professionals: Can we find consensus?Cogent Med. 2016;3:1

16. Looseley A, Wainwright E, Cook TM, Bell V, Hoskins S, O'Connor M, *et al*.; SWeAT Study investigator group. Stress, burnout, depression and work satisfaction among UK anaesthetic trainees; a quantitative analysis of the Satisfaction and Wellbeing in Anaesthetic Training study. Anaesthesia. 2019;74:1231-9.

17. Ogunnubi OP, Ojo TM, Oyelohunnu MA, Olagunju AT, Tshuma N. Stress and training satisfaction among resident doctors in Nigeria: Any justification for a change in training policy?.J Clin Sci. 2018;15:32-40.

18. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. J Appl Psychol. 2001;86:499-512.

19. Győrffy Z, Dweik D, Girasek E. Willingness to migrate — a potential effect of burnout? A survey of Hungarian physicians. Hum Resour Health. 2018;16:36.

20. Wu S, Wang R, Zhao Y, Ma X, Wu M, Yan X, *et al*. The relationship between self-rated health and objective health status: a population-based study. BMC Public Health. 2013;13:320.