# A Survey of Impact of Oral Health on Quality of Life and its Determinants among Healthcare Workers in a Tertiary Hospital

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### 7 Abstract

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<sup>8</sup> To assess the OHRQoL of healthcare workers in a teaching hospital in northeastern Nigeria <sup>9</sup> and how it is influenced by sociodemographic factors and dental clinic visits.Methods: A <sup>10</sup> cross-sectional study was performed among doctors and nurses in the teaching hospital using <sup>11</sup> the English version of the short form of the oral health impact profile questionnaire (OHIP-14) <sup>12</sup> to obtain information on their perception of their oral health.Results: The mean overall <sup>13</sup> OHIP-14 score (4.30  $\pm$  0.29(SEM)), and the prevalence of impact (13.2

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15 Index terms— oral health, quality of life, oral health related quality of life, healthcare worker.

## 16 1 Introduction

ral health related quality of life (OHRQoL) is a relatively new but rapidly growing phenomenon 1 that appeared 17 in the literature in the early 1980s. 2 Its dimensions include areas of concern to individual other things reflects 18 on people's comfort while eating, sleeping, as well as the effect of oral health on social The working lives of 19 HCW like doctors and nurses is associated with a high level of work-related stress and these HCWs often do 20 not pay a sufficient both physical and psychological ill health was identified among HCW in the UK. 21 The 21 literature focusing on the OHRQoL of healthcare personnel is scarce. It is important to understand healthcare 22 personnel's O patients. 3 It is therefore multidimensional and among amount of attention to their own health. 23 20 High levels of interactions and self-esteem in everyday life. 4, 5 Slade 6 and others 7,8 identified the shift 24 25 in the perception of health from merely the absence of disease and infirmity to complete physical, mental and 26 social well-being, from the definition of health given by the World Health Organization (WHO), 9 as the key issue in the conception of health related Quality of life (HRQoL) and, subsequently OHRQoL. This definition 27 of health by the WHO thus included quality of life (QoL) within the broader definition of health 10 unlike the 28 biomedical model. Consequently, any measure of health needs to assess social and emotional aspects of health 29 as well as assessing presence or absence of disease. 11 Until recently, the psycho-social consequences of oral 30 conditions have received little attention. Also, the oral cavity has historically been dissociated from the rest 31 of the body when considering general health status. It is however established that oral health is an integral 32 part of general health and is one of the determinants of quality of life. 7 Thus the need to conceptualize oral 33 health as an integral part of overall health and to consider its contribution to overall health related quality of 34 life (HRQoL) has been stressed. 12 This is supported by recent research which highlighted that oral disorders 35 36 have emotional and psycho-social consequences as serious as other disorders. 11,13 Furthermore, Reisine 14 and 37 Gift et al 15 indicated that approximately 160 million work hours a year are lost due to oral disorders. With the 38 growing interest in the QoL, several studies have been conducted to assess QoL among working adults in different occupations. [16][17][18][19] Most of these research has primarily focused on HRQoL, the quality of work life 39 (QWL), and effort-reward imbalance. There is paucity of data on the impact of oral health on QoL among workers 40 and especially among healthcare workers (HCW). revealed that the characteristics and explore their pattern of 41 clinic attendance due to oral health problems and how these impact on their daily lives. This will optimize the 42 use of support and interventional measures and help to reduce negative effects on their lives. Minimizing the 43 burden on healthcare personnel will possibly improve the quality of life and medical outcomes of their patients 44

and the relationships with their private life. Based on: the importance of oral health to psychological well-being; 45 the paucity of data on the impact of oral health on QoL among populations in sub-Saharan Africa and in Nigeria; 46 and the lack of data on OHRQoL among HCWs in Nigeria, this study aimed to determine the OHRQoL among 47 doctors and nurses; explore the association between the OHRQoL and the use of dental services by the HCWs in 48 a teaching hospital in Nigeria.

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#### II. $\mathbf{2}$ 50

#### 3 Materials and Methods 51

#### a) Study design and data collection 4 52

This study was conducted as a cross-sectional study assessing the OHRQoL of HCW at the University of 53 Maiduguri Teaching Hospital, Maiduguri, in northeastern Nigeria. The approval for the study was granted 54 by the Research and Ethics Committee of the hospital before commencement. The study population comprised 55 of all doctors and nurses in the various hospital departments that agreed to participate in the study. Thus a 56 total population survey was carried out, but excluded doctors and nurses who were on leave from work during 57 the study as well as doctors sent out for clinical rotations to other hospitals. Consent was sought from each 58 59 participant following an explanation of the study objectives, procedure for the collection of data, the benefits 60 of the research, and the confidentiality of the data collected. A copy of the self-administered questionnaire was 61 given to each participant and retrieved after completion at the end of the working day. The survey used a short 62 demographic questionnaire constructed to collect information such as the participant's gender, age, profession, and dental visits. The remaining part of the questionnaire contained the short form of the oral health impact 63 profile (OHIP-14) used to collect information on oral health impact on QoL. 64

The OHIP-14 is one of the OHRQoL instruments that have been widely used in several cross-sectional and 65 longitudinal studies. 19,20 It consists of self-reported measurements of the adverse impacts of oral conditions 66 into seven domains namely functional limitation, physical pain, psychological discomfort, physical disability, 67 psychological disability, social disability and handicap. Each domain has two questions. The responses to these 68 questions are to be scored on a 5point Likert scale: 0, 1, 2, 3, and 4 for "never", "hardly ever", "occasionally", 69 "fairly often", and "very often" respectively. A more negative impact of oral health on the person's life is indicated 70 by the answers "fairly often" and "very often". One response per question reveals how often the impact is felt 71 in the last one year. The questions have already been pre-weighed to reflect population judgments about the 72 73 relative unpleasantness of each impact. 22 The coded responses are multiplied by their weights and the sum of 74 the products within each domain represents subscale scores, and summation of the subscale scores will produce an overall OHIP-14 score for each participant. Subscale scores for each domain and an overall OHIP-14 score 75 range from 0 to 4 for the subscales and 0 to 28 for the overall OHIP-14 score for the participant. A high score 76 represents a greater impact and thus a low OHRQoL, and a low score represents a lesser impact and a higher 77

OHRQoL. 78

#### b) Data Analysis 5 79

Analysis of the data obtained was performed using Statistical Package for Social Sciences (SPSS) for III. A total 80 of 250 questionnaires were distributed and 236 were completed and returned, a response rate of 94.4%. Their 81 ages ranged between 20 and 58 years with mean age of  $33.1 \pm 7.1$ . The age range 25 -34 accounted for the 82 majority of the study population. (Table 1) One hundred and sixty six of the participants had visited the dentist 83 at least once, 79 (47.6%) of which had been in the last one year. Majority of the participants visited the dentist 84 for check-up and/or prophylaxis. No significant difference was seen between the genders, professions and among 85 the age groups for visit to the dentist (p=0.19). on daily life. 20 The questionnaire has 14 items organized a) 86 The Prevalence of Impact 87

#### Results 6 88

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The prevalence of impact of oral health on the subjects is expressed as the percentage of the participants that 90 responded with "very often" or "fairly b) Severity of Impact 91

The severity of impact calculated as the mean value of the responses to the OHIP-14 items in the domains 92 93 and overall was lowest in the functional limitation domain  $(0.30\pm0.04(S.E.M))$  and highest in the psychological 94 discomfort domain  $(1.16\pm0.07(S.E.M))$  [Figure 1]. No statistical significant difference between the genders in 95 all the domains and overall OHIP scores p>0.05, except in the social disability domain ("Have you been a bit irritable with other people because of the problem with your teeth or mouth? And "Have you had difficulty 96 doing your usual jobs because of the problem with your teeth?"), where the females expressed a higher severity 97 of impact (p = 0.04) [Table 3]. often" to all the items in the OHIP-14 questionnaire. 98

Table 2 shows the percentage of participants that responded with "very often" or "fairly often" to all items in 99 each domain and to all the items in the OHIP-14 questionnaire, expressed as a percentage of the total number of 100 respondents. The highest prevalence of impact (27.9%) was noted in the physical pain domain with item number 101

4, "Have you found it uncomfortable to eat any foods because of the problem with your teeth or mouth?" The 18 102 -24 years age group reported higher impact in all the domains and overall OHIP-14 except in the psychological 103 discomfort domain. These differences were not statistically significant (Table 4). domains. Comparison of 104 105 the severity scores based on reason for clinic attendance showed that participants who visited the dentist for emergency reasons had a significantly higher OHIP-14 score (p < 0.05) (Table 5) and domain scores except in the 106 functional limitation domain (p=0.30). Post hoc analysis (Bonferoni) revealed the significant differences to be due 107 to differences in the severity scores for check-up versus emergency visits in all domains and overall OHIP (p=0.00)108 and the OHIP-14 scores between check-up and routine visit scores (p=0.01). There was no significant difference in 109 domain and overall OHIP-14 scores between routine and emergency visits (p=0.48), as well as between checkup 110 and routine scores in the psychological disability (p=0.12), social disability (p=0.40) and handicap (p=1.00)111 domains. A multiple regression analysis was run to evaluate the relationship between the OHIP-14 score and 112 the variables, age, gender, profession, prior visit to the dentist and reason for last visit. These variables were 113 statistically significantly related to the variations in the OHIP-14 score, F (5, 230) = 10.542, p = .000 (i.e. < 114 .005, R 2 = .186, R = .432 and adjusted R 2 = .169. Where F is the test of fit of the regression model, 5 and 230 115 are the degrees of freedom for the regression and residual models. R-squared gives the percentage of explained 116 variation in the OHIP-14 scores assuming all variables in the model affect it, and the adjusted R-squared gives 117 118 the percentage of variation explained by only those independent variables that in reality affect the OHIP-14 score. 119 In this regression model, however, only age, prior visit to the dentist and reason for last visit added statistically significantly to the prediction of OHIP-14 score, p < .05 (Table 6). 120

The nurses had significantly higher domain scores in the functional limitation  $(0.40\pm0.07, p=0.01)$  and handicap domains  $(0.47\pm0.08, p=0.01)$ . They also reported higher overall impact scores though not significant  $(4.58\pm0.43, p=0.28)$ .

The participants who had visited the dentist at least once in the past had significantly higher overall OHIP-14 severity of impact score when compared to those who had never been to the dentist (Table 5). This trend was noted in all the domain scores except in the functional limitation (p=0.43) and handicap (p=0.33)

## 127 8 Discussion

A relatively small proportion of the participants had their daily life affected negatively by the oral conditions 128 that they suffer from as seen from the reported prevalence of impact (13.2%) in this study. The interpretation of 129 this is that the frequency of the impact of oral disorders on the daily lives of these proportion of the participants 130 is higher than in the rest of the participants. Within the domains, items 2, 3, 4 and 5 in the functional limitation 131 132 (item 2), physical pain (items 3 and 4) and psychological discomfort (item 5) domains had the most prevalent impacts on QoL. The highest, as expected, is item 4 since it reflects level of comfort while eating. This is expected 133 134 since the most common oral disorder still remain dental caries and its sequelae and periodontal disease, both of 135 which would result in pain while eating. It would have been enlightening to compare these prevalence values to 136 that of the general population but for lack of such data. However, a study of OHRQoL among patients with dentine hypersensitivity in Nigeria also reported the highest prevalence of impact (64.7%) on QoL with item 137 4. 23 Pain from oral disorders while eating or drinking therefore appears to have a major effect on QoL. This 138 stand was corroborated again by the calculated mean value of the responses to the items of the OHIP-14, that is, 139 the severity of impact, where the physical pain domain mean score was second only to that of the psychological 140 domain. 141

In conjunction, both the prevalence and severity of impact showed that oral disorders among the participants 142 did have an impact on their QoL. The severity of impact was noted to be highest in the domain of psychological 143 discomfort followed by physical pain as is also seen for the domain scores for both genders in the study. This is 144 145 consistent with results reported by OHIP-14 score was however lower than that reported in other studies: 4.55 among Technical Administrative Workers in Portugal; 26 9.60 among healthy Spanish workers; 27 and 12.0 among 146 dental patients in Ibadan, Nigeria. 28 It is important to stress that these comparisons should be interpreted with 147 caution as differences in perception of impact among populations depends on several factors. The perception of 148 QoL itself is highly subjective, therefore individual perceptions vary with social, cultural, and political conditions. 149 29 The values reported therefore make meaning to the individuals in the setting where the study was conducted. 150 However, the low severity of impact for the HCWs in this study may still be explained by their high level of 151 education, and probably awareness of oral health. Similarly, Mesquita and Vieira 30 reported lower impact of 152 oral health on QoL among subjects with higher income and education and suggested that this may be due to 153 higher income and information about oral health and dental services. 154 155

Concerning the association between sociodemographic variables among the participants and OHRQoL, age and gender had minimal influence. This is Batista et al. 25 for age range and gender respectively.

Although minimal, the influence of age was seen as a higher impact of oral disorders on QoL in all the domains and overall OHIP-14 score except the psychological domain among the younger age groups. In contrast, a greater impact was reported among older individuals by Guerra et al. 26 and Mesquita and Vieira. 30 The female HCWs in this study only had a significantly greater severity of impact on their daily social life as seen from their score in the social disability domain, but not in the mean OHIP-14 score. The reason for this finding is unknown, but may be due to differing subjective perceptions of social demands between the genders. It may also not be unrelated to the female gender having an emotion-focused approach to coping with health problems. 32

This may therefore explain why they may be a bit irritable with other people as well as having difficulty doing 164 their usual jobs because of the oral disorders. Greater impact in females, that is, lower OHRQoL, has also been 165 reported in other studies. 25,30,33 Participants with a history of use of dental care facilities reported significantly 166 167 lower OHRQoL. It is known that pain is the most frequent reason why adults visit the dental clinic, resulting in attendance that is sporadic and spurred by onset and persistence of symptoms. 34,35 This was supported by the 168 results of this study by the significantly greater severity of impact reported by those who visited the dentist for 169 emergency reasons when compared to routine visits and check-up. Emergency reasons here refers primarily to 170 visits due to pain and discomfort such as endodontic emergencies Locker and Quinonez 24 and Batista et al. 25 171 The mean and trauma. This is consistent with reports on the association between reason for dental appointment 172 and significance of impact from other studies. 25,26,30,31 V. 173

# 174 9 Conclusion

The present study revealed that the impact of oral disorders on the OHRQoL among the HCW was relatively low. 175 All the variables and factors included can however be used as predictors of this impact. Physical pain, functional 176 limitation and psychological discomfort were the most prevalent impacts while psychological discomfort was 177 reported as the most severe impact. The various factors assessed in this study influenced the perception of 178 OHRQoL. Being female, being younger in age, a nursing staff, and having attended a dental clinic for treatment 179 and attendance due to emergency reasons were associated with poorer OHRQoL. Based on the results of multiple 180 regression analysis, all five variables considered in the study added statistically significantly to the prediction of 181 the participants OHIP-14 score and hence their OHRQoL. However, these variables could only account for 16.9% 182

of the variations of the OHIP-14 scores. This mean that there are other factors which may be responsible for the remaining variations. As suggested by Turrel et al., 29 these unexplained variations in the perception of QoL among populations may be due to social, cultural and political differences.



Figure 1: Author ? :

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among the participants	
Variable	Frequency $(\%)$
Age group	
18 -24	27(11.4)
25 -34	143 (60.6)
>35	66(28.0)
Gender	
Male	130(55.1)
Female	106(44.9)
Profession	
Doctors	107 (45.3)
Nurses	129(54.7)
Prior dental visit	
Yes	166(70.3)
No	70 (29.7)
Total	236 (100.0)
Reason for dental visit	
Check-up/prophylaxis	96~(57.8)
Routine treatment/review	46 (27.7)
Emergency treatment	24(14.5)
Total	166 (100.0)

Figure 2: Table 1 :

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Domains

Items

Figure 3: Table 2 :

## 3

Year					
2017					
Volume	Domain $(N = 236)$	Mean scores $\pm$ SEN	A Male Female	$\mathbf{t}$	р
XVII					
Issue VII					
Version I					
DDDD	Functional Limitation	$0.28 {\pm} 0.05$	$0.33{\pm}0.07$	-0.47	0.64
)					
(	Physical Pain	$1.11 {\pm} 0.09$	$0.99{\pm}0.11$	0.84	0.40
	Psychological Discomfort	$1.15 {\pm} 0.08$	$1.17 {\pm} 0.11$	-0.11	0.91
	Physical Disability	$0.46{\pm}0.07$	$0.59{\pm}0.10$	-1.09	0.28
	Psychological Disability	$0.45 {\pm} 0.06$	$0.56{\pm}0.09$	-0.98	0.33
	Social Disability	$0.31 {\pm} 0.05$	$0.52{\pm}0.09$	-2.09	0.04
	Handicap	$0.27{\pm}0.05$	$0.47{\pm}0.09$	-1.96	0.05
	OHIP-14	$4.04{\pm}0.31$	$4.63{\pm}0.52$	-0.97	0.33

[Note: KA Survey of Impact of Oral Health on Quality of Life and its Determinants among Healthcare Workers in a Tertiary Hospital]

Figure 4: Table 3 :

## $\mathbf{5}$

attendance and reason for attendance				
Variable	Mean score	$\pm$	$\mathbf{t}$	р
	S.E.M.			
Dental clinic attendance				
Yes	$4.04{\pm}0.31$	$4.04{\pm}0.31$		0.01
No	$4.63 {\pm} 0.52$			
Reason for clinic attendance			F	р
Check-up/prophylaxis	$3.42{\pm}0.31$			
Routine treatment/review	$5.77 {\pm} 0.80$		13.81 (	0.00
Emergency treatment	$8.55 {\pm} 1.19$			

Figure 5: Table 5 :

18 -24	Mean score $\pm$	S.E.M. 25 -34	$35 \mathrm{F}$	р
			-	
			44	
$0.59{\pm}0.17$	$0.25{\pm}0.05$	$0.30{\pm}0.10$	2.98	0.05
$1.36{\pm}0.23$	$1.00 {\pm} 0.08$	$1.08 {\pm} 0.14$	1.31	0.27
$1.11 {\pm} 0.26$	$1.24{\pm}0.09$	$1.00{\pm}0.12$	1.29	0.28
$0.70 {\pm} 0.17$	$0.48 {\pm} 0.07$	$0.54{\pm}0.12$	0.75	0.48
$0.73 {\pm} 0.19$	$0.51 \pm 0.06$	$0.38{\pm}0.09$	2.02	0.14
$0.64{\pm}0.20$	$0.39 {\pm} 0.06$	$0.33{\pm}0.09$	1.71	0.18
$0.65{\pm}0.22$	$0.30 {\pm} 0.06$	$0.36{\pm}0.09$	2.36	0.10
$5.80{\pm}1.03$	$4.17 {\pm} 0.35$	$3.98{\pm}0.57$	1.76	0.18
	$\begin{array}{c} 18 \ -24 \\ 0.59 \pm 0.17 \\ 1.36 \pm 0.23 \\ 1.11 \pm 0.26 \\ 0.70 \pm 0.17 \\ 0.73 \pm 0.19 \\ 0.64 \pm 0.20 \\ 0.65 \pm 0.22 \\ 5.80 \pm 1.03 \end{array}$	18 -24Mean score $\pm$ $0.59\pm0.17$ $0.25\pm0.05$ $1.36\pm0.23$ $1.00\pm0.08$ $1.11\pm0.26$ $1.24\pm0.09$ $0.70\pm0.17$ $0.48\pm0.07$ $0.73\pm0.19$ $0.51\pm0.06$ $0.64\pm0.20$ $0.39\pm0.06$ $0.65\pm0.22$ $0.30\pm0.06$ $5.80\pm1.03$ $4.17\pm0.35$	18 -24Mean score $\pm$ S.E.M. 25 -34 $0.59\pm0.17$ $0.25\pm0.05$ $0.30\pm0.10$ $1.36\pm0.23$ $1.00\pm0.08$ $1.08\pm0.14$ $1.11\pm0.26$ $1.24\pm0.09$ $1.00\pm0.12$ $0.70\pm0.17$ $0.48\pm0.07$ $0.54\pm0.12$ $0.73\pm0.19$ $0.51\pm0.06$ $0.33\pm0.09$ $0.64\pm0.20$ $0.39\pm0.06$ $0.36\pm0.09$ $0.65\pm0.22$ $0.30\pm0.06$ $0.36\pm0.09$ $5.80\pm1.03$ $4.17\pm0.35$ $3.98\pm0.57$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

Figure 6: Table 4 :

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Variables	Unstandardiz	zed Coefficients B Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-4.308	1.480		-2.911	.004
Gender	.712	.547	.079	1.301	.194
Age	-1.142	.451	155	-2.531	.012*
Profession	.295	.550	.033	.536	.592
Visit to the dentist	8.508	1.226	.873	6.938	.000*
Reason for last visit	2.699	.445	.770	6.065	.000*
p < 0.05					
IV.					

Figure 7: Table 6 :

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## 9 CONCLUSION

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