

Tobacco use, Alcohol Consumption and Self-rated Oral Health among Nigerian Prison Officials

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ABSTRACT

Background: The oral health condition and lifestyle in term of tobacco use and alcohol consumption of custodian of prisons have been left unstudied. The purpose of this study was to determine the prevalence of tobacco use, alcohol consumption and self-rated oral health among Nigerian prison officials.

Methods: This cross-sectional study was conducted among prison officials working in Abuja, Nassarawa and Kano prison yards between March and June 2011 using 28-item self-administered questionnaire as a tool of data collection. The questionnaire elicited information on demography, self-rated oral health, oral health behaviors, oral health conditions, tobacco use, pattern and quit attempts, alcohol consumption, type and pattern.

Results: The participants were aged between 20 and 51 years, with a mean age of 32.25 ± 6.13 years. The majority of the participants were males (66.4%), Christians (76.7%), junior officials (78.1%) and of Northern origin (50.7%). A total of 50 (34.2%) of the participants indicated that they were tobacco users and 39 (78.0%) indulged in cigarette smoking only. Of the study participants, 67 (45.9%) indicated they consume alcohol, beer majorly and gin rarely with 23 (34.3%) consuming it excessively. The dominant tooth cleaning device utilized by the participants was toothbrush and toothpaste, and 65 (44.5%) had visited the dentists with the majority of the visit done >5 years ago. About one-third 57 (39.0%) reported experiencing one or more forms of oral disease. However, it was only 17 (11.6%) of them that rated their oral health poor/fair, and the determinants of self-rated oral health were age, rank, and oral health condition.

Conclusions: Data from this survey revealed that the majority of the participants rated their oral health as good/excellent. The prevalence of tobacco use and alcohol consumption among prison officials was higher than reported values among the general population in Nigeria. This indicates that more surveillance and intervention studies are needed to evaluate the best way to control tobacco use and alcohol consumption among prison officials in Nigeria.

Keywords: Alcohol, prison, smoking, self-rated oral health, tobacco

INTRODUCTION

As of 2010, it was estimated that at least 10.75 million people were imprisoned worldwide with 49,600 of them being held in Nigerian prisons thereby translating to 31 prisoners per 100,000 population.^[1] The safety and security of the prisons plus the care, custody, and control of these prisoners are the responsibilities of prison officials. However, their job goes beyond the physical reformation of the prisoners because their actions and behaviors influence and helps in modeling these law offenders. Positive health behavior of prison officials is expected to positively and significantly influence the prisoners.

Prison officials are one of commonly stigmatized individual mainly because of their involvement in the care and reformation of law offenders. This stigmatization in addition to stress-related to service delivery and dangerous nature of the job due to frequent inmate confrontations favor drug abuse among prison officials. Tobacco use in prison is high and many countries of the world have banned it necessarily to prevent litigation and not for health reasons. Yet tobacco use is a serious health and social problem as its consequences restrict occupational efficiency. A study among police officers revealed that smokers have significantly lower physical fitness than their nonsmoking counterparts.^[2] It has been stated that tobacco use, particularly the practice of cigarette smoking, is the single greatest cause of excess cancer mortality in United States of America populations.^[3]

Tobacco use and alcohol consumption have severally been identified as the most common drug of abuse in Nigeria. It has been established that tobacco use and alcohol consumption exerts adverse effects on individual health and these effects are directly linked to these drugs and indirectly to suboptimal health practices. However, studies on tobacco use and alcohol consumption in prison concentrated on prisoners leaving research gap in smoking and alcohol behavior study among prison officials. The only study retrieved from the literature that addressed the prevalence of smoking among prison staff was conducted in Vermont, United States of America more than a decade ago. The study revealed that 24% of the respondents were current smokers, 38% were ex-smoker, and 38% were never smokers.^[4]

Oral health has been cited as an indicator of combatant readiness among security personnel,

that can be likened to prison official duties.^[5] The prevalent nature of oral diseases, its negative impact of oral diseases on combat readiness of security personnel and detrimental effects on an individual's physical and psychological well-being and quality of life makes a relevant scientific research among prison officials. Conducting preliminary studies using self-rated oral health modality provides more information about how a certain disease affects an individual's life, rather than the objective measurements of this disease.^[6-8] A single-item global self-rating which has been used among dental auxiliaries and pregnant women in Nigeria is a valid, reliable measure of oral health.^[9] The purpose of the study was to determine the prevalence of tobacco use, alcohol consumption and self-rated oral health among Nigeria prison officials.

METHODS

Study design and participants: This cross-sectional study was conducted among 150 systematically selected prison officials that work in the prison yards in Abuja, Nassarawa and Kano between July and December, 2012. Prison officials who perform their duties inside the prison yards were included in the study. However, prison officials with diagnosed systemic disease and those that perform their duties outside the prison yards were excluded from the study. Ethical approval from the responsible Prison Authority in Abuja (Research and Ethics Committee of Prison Medical Centre), Nigeria. Written informed consent was obtained from participants. Participation was voluntary, and no incentive was offered.

Study instruments and variable assessment: A tool of data collection was a self-developed validated 28-item self-administered questionnaire. The questionnaire elicited information on demography, self-rated oral health, oral health behaviors, oral health conditions, tobacco use, pattern and quit attempts, alcohol consumption, type and pattern. Quantity of alcohol was illustrated with standard drink with examples given with common alcoholic drinks consumed in the country. The questionnaire was pretested among 10 prison officials that work outside the prison yard in Abuja. The test-retest reliability of Cronbach alpha value of 0.9 was obtained over a 4-week period.

Statistical analysis

The obtained data were subjected to descriptive, nonparametric and regression statistics using the Statistical Package for the Social Sciences (SPSS version 17.0, Chicago, IL, USA). $P < 0.05$ was considered as significant.

RESULTS

Out of the 150 questionnaires distributed, 146 of them were returned filled giving a 97.3% retrieval rate. The participants were aged between 20 and 51 years, with a mean age of 32.25 ± 6.13 years. The majority of the participants were males (66.4%), Christians (76.7%), junior officials (78.1%) and of Northern origin (50.7%). A total of 50 (34.2%) of the participants indicated that they were tobacco users. Of which, 39 (78.0%) smoke cigarette only, 2 (4.0%) used only smokeless tobacco and 9 (18.0%) both smoke cigarette and used smokeless tobacco. Of the 11 participants that reported smokeless tobacco use, 9 (81.8%) sometimes, 1 (9.1%) always, 1 (9.1%)

rarely. The average quantity smoked daily by the cigarette smokers were ≥ 5 sticks 44 (91.6%), 6-10 sticks 2 (4.2%) and >10 sticks 2 (4.2%). Males were more cigarette smokers and overall tobacco users ($P > 0.05$) [Table 1]. The reasons for smoking were 18 (37.5%) for pleasure, 8 (16.7%) to reduce stress, 14 (29.2%) to make friends, peer influence 4 (8.4%), parental smoking influence 1 (2.1%). A total of 27 of the 48 smoking participants have ever sought help on quitting, 3 (11.1%) help from doctors, 24 (88.9%) help from friends. The nontobacco users reported these as reason for not using tobacco were self-discipline 39 (40.6%), religion 27 (28.1%), parental inhibition 12 (12.5%), health implication 4 (4.2%), lack of money 4 (4.2%), cultural inhibition 3 (3.1%), evil and bad 3 (3.1%), and unspecified 4 (4.2%).

Of the study participants, 67 (45.9%) indicated they consume alcohol, beer majorly and gin rarely with 23 (34.3%) consuming it excessively. Type of alcohol consumed were 24 (35.8%) beer, 8 (11.9%) wine, 1 (1.5%) gin, 9 (13.4%) beer and gin, 11 (16.4%) beer and wine, 12 (17.9%) beer, wine

Table 1: Bivariate analysis of tobacco use and alcohol consumption among the participants

Characteristics	Overall tobacco use <i>n</i> (%)		Smoking <i>n</i> (%)		Snuff <i>n</i> (%)		Alcohol consumption <i>n</i> (%)	
	Yes	No	Yes	No	Yes	No	Yes	No
Age (years)								
≤30	24 (29.3)	58 (70.7)	22 (26.8)	60 (73.2)	5 (6.1)	77 (93.9)	31 (37.8)	51 (62.2)*
>30	26 (40.6)	38 (59.4)	26 (40.6)	38 (59.4)	6 (9.4)	58 (90.6)	36 (56.2)	28 (43.8)
<i>P</i>	0.151		0.078		0.457		0.507	
Gender								
Male	48 (49.5)	49 (50.5)*	47 (48.5)	50 (51.5)*	10 (10.3)	87 (89.7)	56 (57.7)	41 (42.3)*
Female	2 (4.1)	47 (95.9)	1 (2.0)	48 (98.0)	1 (2.0)	48 (98.0)	11 (22.4)	38 (77.6)
<i>P</i>	0.000 ^F		0.000 ^F		0.100		0.000	
Religion								
Christian	36 (32.1)	76 (67.9)	34 (30.4)	78 (69.6)	6 (5.4)	106 (94.6)	52 (46.4)	60 (53.6)
Islam	14 (41.2)	20 (58.8)	14 (41.2)	20 (58.8)	5 (14.7)	29 (85.3)	15 (44.1)	19 (55.9)
<i>P</i>	0.331		0.240		0.070		0.813	
Origin								
South	24 (33.3)	48 (66.7)	23 (31.9)	49 (68.1)	5 (6.9)	67 (93.1)	30 (41.7)	42 (58.3)
North	26 (35.1)	48 (64.9)	25 (33.8)	49 (66.2)	6 (8.1)	68 (91.9)	37 (50.0)	37 (50.0)
<i>P</i>	0.819		0.813		0.791		0.312	
Rank								
Junior	40 (35.1)	74 (64.9)	39 (34.2)	75 (65.8)	9 (7.9)	105 (92.1)	55 (48.2)	59 (51.8)
Senior	10 (31.2)	22 (68.8)	9 (28.1)	23 (71.9)	2 (6.2)	30 (93.8)	12 (37.5)	20 (62.5)
<i>P</i>	0.686		0.517		0.100		0.281	
Total	50 (34.2)	96 (65.8)	48 (32.9)	98 (67.1)	11 (7.5)	135 (92.5)	67 (45.9)	79 (54.1)

*Statistically significant, ^FFisher's exact

and gin, 1 (1.5%) beer and wine. Average quantity of the standard drink consumed per episode were 1-2 drink 39 (58.2%), 3-4 drink 24 (35.8%), 5-6 drinks 2 (3.0%) 7-9 drinks 2 (3.0%). The frequency of alcohol consumption were 4-6 times/week 7 (13.4%), 1-3 times/week 15 (22.4%), once in 2-3 weeks 18 (26.9%) once in month 22 (32.8%), More than a month 5 (7.5%). However, only 23 (34.3%) reported excess alcohol consumption with daily 1 (4.3%), weekly 4 (17.4%), monthly 10 (43.5%) >1 month 8 (34.8%). Age and gender were significantly associated with alcohol consumption ($P > 0.05$) [Table 1].

Tobacco users were more alcohol consumers ($P > 0.05$) [Table 2]. Gender and alcohol consumption were determinants of tobacco use among the participants [Table 3], whereas age and tobacco use were determinants of alcohol consumption among the participants [Table 4].

About three-quarters 107 (73.3%) clean their teeth more than once-daily with 114 (78.1%) using a tooth brush and toothpaste for teeth cleaning. Only chewing stick, and combination of chewing stick and tooth brush and tooth paste were used by 5 (3.4%) and 27 (18.5%) of the participants respectively. Among the participants, 57 (39.0%) reported experiencing one or more forms of oral

disease. Gingival bleeding 14 (24.6%), toothache 14 (24.6%), hole 11 (19.3%), tooth mobility 10 (17.5%), discolored tooth 6 (10.5%), lip color change 4 (7.0%), ulcer 3 (5.3%), taste disturbance 1 (1.8%), mouth odor 1 (1.8%) and fractured tooth 1 (1.8%). A total of 65 (44.5%) of the participants have ever visited a dentist. Of this, 17 (26.2%) visited in 6 months to 1 years, 12 (18.5%) in 2-5 years and 36 (55.4%) visited in the past 5 years. Reason for the dental visits were hole on the tooth 22 (33.4%), pain 19 (29.2%) (tooth pain 15 [23.1%], gum pain 4 [6.2%]), tooth mobility 7 (10.8), fractured tooth 6 (9.2%) gingival bleeding 6 (9.2%) discolored tooth 2 (3.1%), oral ulcer 2 (3.1%) and professional oral prophylaxis 1 (1.5%). Poor/fair self-rated oral health was higher in participants with self-reported oral health problems [Table 5]. The determinants of self-rated oral health status were age, rank, and oral health condition [Table 6].

DISCUSSION

The workplace has been recognized as a major source of tobacco smoke exposure with consequent adverse effects on health and businesses. This study demonstrated that the overall prevalence of tobacco use in Nigeria among prison official was high with cigarette smoking (32.9%) dominating over smokeless tobacco use (7.5%). The prevalence of cigarette smoking in this study was higher than 20.3% reported among Nigerian soldiers^[10] and 17.9% reported among adults in Nigeria in a household survey. It was also lower than 24% documented among prison staff in Vermont, United States of America more than a decade ago.^[4]

Although, the smokeless tobacco use was found to low, and the frequency reported as always-1

Table 2: Association between tobacco use and alcohol consumption among the participants

Variable	Tobacco use			P
	Yes n (%)	No n (%)	Total n (%)	
Alcohol consumer	41 (82.0)	26 (27.1)	67 (45.9)	0.000*
Nonalcohol consumer	9 (18.0)	70 (72.9)	79 (54.1)	

Tobacco use is independent variable. *Statistically significant

Table 3: Determinants of tobacco use among the participants

Variable	B	SE	Wald	OR (95.0% CI)	P
Age	-0.051	0.486	0.011	0.950 (0.366-2.464)	0.916
Gender	-2.914	0.800	13.267	0.054 (0.011-0.260)	0.000*
Religion	0.880	0.570	2.386	2.410 (0.789-7.360)	0.122
Rank	-0.087	0.611	0.020	0.917 (0.277-3.038)	0.887
Origin	-0.599	0.486	1.518	0.549 (0.212-1.425)	0.218
Alcohol consumption	-2.390	0.501	22.752	0.092 (0.034-0.245)	0.000*
Constant	1.197	1.057	1.283	3.310	0.257

Reference: ≤ 30 years, female, Christian, South origin, Junior rank. *Statistically significant. SE=Standard error, OR=Odds ratio, CI=Confidence interval

Table 4: Determinants of alcohol consumption among the participants

Variable	B	SE	Wald	OR (95.0% CI)	P
Age	0.951	0.439	4.699	2.589 (1.095-6.121)	0.030*
Gender	-0.577	0.470	1.509	0.561 (0.224-1.410)	0.219
Religion	-0.787	0.531	2.195	0.455 (0.161-1.289)	0.138
Rank	0.832	0.532	2.451	2.299 (0.811-6.517)	0.117
Origin	0.381	0.442	0.741	1.463 (0.615-3.483)	0.389
Tobacco use	-2.368	0.495	22.870	0.094 (0.036-0.247)	0.000*
Constant	0-421	0.910	0.214	0.656	0.644

Reference: ≤ 30 years, female, Christian, South origin, Junior rank, nontobacco users. *Statistically significant. SE=Standard error, OR=Odds ratio, CI=Confidence interval

(9.1%), sometimes-9 (81.8%) and rarely-1 (9.1%), this prevalence was comparable to 7.49% reported among adults in Yola, North-East Nigeria.^[11] The favorability of smoked tobacco over smokeless tobacco may be attributed the stylish nature of smoking mode, almost non-enforcement of the restriction of smoking in public places in developing countries and younger age range of the participants.^[11] The stress related to service delivery and dangerous nature of the job due to frequent inmate confrontations and prison breaks in Nigeria may have favored and heightened tobacco use among the studied prison officials. The finding of stress reduction among the main reasons for cigarette smoking in this study was somehow confirmatory. Other major reasons like pleasurable effect and friendship seeking/peer pressure have been similarly reported in Nigerian military services.^[10] The majority of the smokers took about quarter packet of cigarette (5) per day. In comparison most smokers (52.4%) smoke fewer than five cigarettes daily.^[12] Although the quantity appears small but the cumulative role in morbidity and mortality especially with the accentuation of risk for cancer both general and oral is a cause for concern.^[13] Furthermore, the money used for the habit that is more common in low socioeconomic group reduces the available money for investment in feeding, medical and economic empowerment of the family.^[14]

Overall, the tobacco use was found to be higher among participants older than 30 years, males, Christian, junior officials and those from the northern part of Nigeria. The semblance of the prison service to military service that has been

Table 5: Bivariate analysis of self-rated oral health among the participants

Variable	Good/excellent n (%)	Poor/fair n (%)	P
Age (years)			
≤ 30	76 (92.7)	6 (7.3)	0.065
> 30	53 (82.8)	11 (17.2)	
Gender			
Male	87 (89.7)	10 (10.3)	0.479
Female	42 (85.7)	7 (14.3)	
Religion			
Christianity	98 (87.5)	14 (12.5)	0.763 ^F
Islam	31 (91.2)	3 (8.8)	
Origin			
North	64 (86.5)	10 (13.5)	0.475
South	65 (90.3)	7 (9.7)	
Rank			
Junior	98 (86.0)	16 (14.0)	0.121 ^F
Senior	31 (96.9)	1 (3.1)	
Daily tooth cleaning frequency			
Once	33 (84.6)	6 (15.4)	0.395
Twice	96 (89.7)	11 (10.3)	
Dental attendance			
Yes	54 (83.1)	11 (16.9)	0.075
No	75 (92.6)	6 (7.4)	
Self-reported oral health problem			
Yes	44 (77.2)	13 (22.8)	0.001* ^F
No	85 (95.5)	4 (4.5)	
Tobacco use			
Yes	45 (90.0)	5 (10.0)	0.655
No	84 (87.5)	12 (12.5)	
Alcohol consumption			
Yes	59 (88.1)	8 (11.9)	0.918
No	70 (88.6)	9 (11.4)	
Total	129 (88.4)	17 (11.6)	

^FFisher's exact, *Statistically significant

found to increase tobacco use explained why participants older than 30 years old were tobacco users.^[15] The increasing prevalence of smoking with increasing age has also been reported among men in the urban area of Chad.^[12] The junior officials are usually of lower socioeconomic status and educational attainment than senior official thereby offering explanation for higher tobacco use among junior officials.^[16,17] Schei^[18] also reported smoking among older and less educated military officers. Religion and ethnicity were found to minutely influence tobacco use thus the link

Table 6: Determinants of self-rated oral health among the participants

Variable	B	SE	Wald	OR (95.0% CI)	P
Age	-1.597	0.645	6.140	0.203 (0.057-0.716)	0.013*
Gender	-0.544	0.754	0.521	0.580 (0.132-2.543)	0.470
Religion	0.862	0.803	1.154	2.368 (0.491-11.421)	0.283
Rank	-2.658	1.186	5.021	0.070 (0.007-0.717)	0.025*
Origin	-0.199	0.636	0.097	0.820 (0.236-2.85) 3	0.755
Tobacco use	-0.703	0.826	0.723	0.495 (0.098-2.501)	0.395
Alcohol consumption	-0.171	0.748	0.052	0.843 (0.194-3.650)	0.819
Oral problem	1.890	0.696	7.374	6.622 (1.692-25.917)	0.007*
Dental attendance	0.527	0.655	0.648	1.695 (0.469-6.122)	0.421
Daily teeth cleaning frequency	-0.503	0.678	0.550	0.605 (0.160-2.286)	0.459
Constant	4.628	2.009	5.306	102.263	0.021

Reference: ≤ 30 years, female, Christian, South origin, Junior rank, nontobacco users, nonalcohol consumer, no oral health problem, nondental attendees, once daily teeth cleaning. *Statistically significant. SE=Standard error, OR=Odds ratio, CI=Confidence interval

between ethnicity; belief and tobacco use may be contributory explanation of the findings in this study.^[19] Males have dominantly used tobacco more than females especially in developing countries historically until date and the fact that gender was a significant predictor of tobacco use provided supporting evidence.^[20]

More than half of the smokers 27 (56.3%) have sought help on smoking cessation, but unfortunately only 3 (11.1%) sought assistance from doctors, whereas the majority 24 (88.9%) of them depending on friend for this assistance. This portrays ignorance and poor preventive health seeking attention among the studied participants. The non-expert seeking attention may have led to failed attempt to quit smoking as has been documented in military service.^[10]

Among nonsmokers, major reasons for nontobacco use were self-discipline, religious belief and parental influence. This therefore emphasis the need to start early in inculcating discipline and exerting positive parental influence in religion and general behaviors.

A total of 45.9% ($n = 67$) indicated they consume alcohol, especially beer majorly and gin rarely with 23 (34.3%) consuming it excessively. The prevalence of alcohol consumption was lower than 71.4% reported among Royal Thai Army male personnel and pattern of alcohol beverage, which mixed spirit and beer (30.7%) contrasted with the finding of this study.^[21] The restriction of compared study to only male personnel and younger age group in addition to cultural differences may explain the noted differences.

A total of 7 (13.4%) of the alcohol consuming participants engaged in daily or nearly everyday drinking with majority (94.0%) of them drinking < 5 standard drink consumed per episode. However, only 23 (34.3%) reported excess alcohol consumption. This findings bears some similarities and differences with findings from a study on Royal Thai Army male personnel as 10.7% drank as often as daily or nearly every day with 57.5% drinking at least five drinks per drinking day and up to 28.2% having binge drinking or episodic heavy drinking practices.^[21] Alcohol consumers were found to be more of participants older than 30 years old, males, Christian, junior officials and those from the northern part of Nigeria. This trend was similar to that among tobacco users and explanation lies in the fact the 82% of the alcohol consumers also use tobacco. However, slight difference was noted as age and gender were the significant predictors of alcohol consumption in binary regression analysis. Schei,^[18] have reported that smokers generally belonged to higher alcohol consumption officers and onset of smoking behavior among Norwegian army conscripts has also been correlated with frequent alcohol consumption.^[22] This study report concurred majorly with Bray *et al.*^[23] report of higher alcohol use among less educated and junior and mid-career enlisted personnel in among U.S. military personnel but contrasted with their finding of higher alcohol use among younger personnel. The dual consumption of alcohol and tobacco is well-known and has been stated to have a synergistic effect in etiology of cancers.^[13]

Hence, strategies to stop this habit will contribute immensely into the prevention of cancers and improvement of health of the studied group. The dominant consumption of beer brand of alcohol and experiences of excessive drink among about one-third of alcohol consumer signal that this habit will exert negative health and economic effects, which may need further study.

The compliance with recommended oral self-care practices was high as (73.3%) of participants indulge more than once-daily teeth cleaning dominantly using toothbrush and toothpaste. Less than half (44.5%) of the participants had visited the dentists with the majority of the visit done >5 years ago. The symptomatic dental visit predominant over preventive dental visits as majority visited because of the hole on the tooth and pain. Among the participants, 57 (39.0%) reported experiencing one or more forms of oral diseases. Although, self-reported, this prevalence of oral disease is significant and may not be unconnected with increasing prevalence of oral disease in developing countries due to lifestyle and dietary changes. The majority of oral health problems reported was gingival bleeding, toothache, hole and tooth mobility, which are symptom manifestations of the periodontal disease and dental caries, which are the two prevalent oral diseases worldwide. However, it was only 17 (11.6%) of them that rated their oral health poor/fair, while 129 (88.4%) rated it good/excellent. The determinants of self-rated oral health status were age, rank, and oral health condition. Ageing, lower socioeconomic status and having oral health problem negatively affect oral health-related quality and indirectly exert a negative influence of self-rated oral health.

CONCLUSIONS

Data from this study revealed dominant good/excellent oral health rating with determinants as age, rank and oral health condition. The reported alcohol consumption among the participants was significant. The prevalence of tobacco use was higher among prison officials compared with the general population in Nigeria, which suggests that prison service is a potential factor associated with tobacco use. This indicates that more surveillance and intervention studies are needed to evaluate the best way to control and to stop tobacco use among

prison officials to facilitate them into serving as good lifestyle models to prisoners in Nigeria.

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