

Harmful Alcohol Use Among Healthcare Workers at the Beginning of the COVID-19 Pandemic in Kenya

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Research Article

Keywords: harmful alcohol, healthcare, workers, COVID-19, Kenya

Posted Date: April 13th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-403929/v1>

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Version of Record: A version of this preprint was published at Frontiers in Psychiatry on February 28th, 2022. See the published version at <https://doi.org/10.3389/fpsy.2022.821610>.

Abstract

Background: The on-going COVID-19 pandemic has resulted in a major negative impact on public mental health particularly among health care workers. Alcohol use is a common maladaptive response to stress that is associated with adverse health consequences and that could impair productivity in the workplace for the health workforce. The aim of this study is to document the burden and factors associated with harmful alcohol use among health care workers at the beginning of the COVID-19 pandemic in Kenya.

Methods: This study was a cross-sectional analysis of data obtained from a parent online survey that investigated the prevalence and factors associated with mental disorders among healthcare workers during the COVID-19 pandemic in Kenya. Analyses for this study were conducted to examine the burden and factors associated with harmful alcohol use among a sub-group of 887 participants who completed the Alcohol Use Disorder Identification Test (AUDIT) questionnaire.

Results: Three hundred and eighty nine (43.9%) participants reported harmful alcohol use. The factors significantly associated with increased odds of endorsing harmful alcohol use were: being male (AOR= 1.56; 95% CI=1.14, 2.14; p=0.006), being not married (AOR= 2.06; 95% CI=1.48, 2.89; p<0.001), having 11-20 years of experience as compared to having 20+ years of experience (AOR= 1.91; 95% CI=1.18, 3.12; p=0.009), and being a specialist (AOR=2.78; CI=1.64, 4.78; P=<0.001) or doctor (AOR= 2.82; 95% CI=1.74, 4.63; p<0.001) as compared to being a nurse.

Conclusions: A high proportion of health care workers reported harmful alcohol use at the beginning of the COVID-19 pandemic in Kenya. Males, the unmarried, those with 11-20 years of experience in the health field, doctors and specialists were more likely to report harmful alcohol use. These findings highlight the need to institute interventions for harmful alcohol use targeting these groups of health care workers in Kenya during the COVID-19 pandemic.

Background

The coronavirus disease of 2019 (COVID-19) pandemic which has caused close to 2.5 million deaths to date (1), has resulted in adverse consequences on the mental health of people around the globe (2). This has been occasioned by the pandemic's impact on health and the economy(3), and disruptions to daily routine as a result of disease containment measures (4). In a meta-analysis of studies conducted among the general population during the COVID-19 pandemic, Salari et al (5) reported that: the prevalence of stress in 5 studies with a total sample size of 9074 was 29.6% (95% confidence limit: 24.3–35.4); that of anxiety in 17 studies with a sample size of 63,439 was 31.9% (95% confidence interval: 27.5–36.7), and the prevalence of depression in 14 studies with a sample size of 44,531 people was 33.7% (95% confidence interval: 27.5–40.6). These figures are significantly higher than the global rates for depression and anxiety(6).

Harmful alcohol use, a pattern of alcohol consumption that results in consequences to physical and mental health (7), is a common maladaptive method of coping with stress and has been shown to

increase during and following major disasters. High rates of harmful alcohol use have been reported in the aftermath of the Oklahoma bombing (8); the World Trade Centre bombing (9,10); hurricane Katrina (11) and the Severe Acute Respiratory Syndrome (SARS) pandemic of 2002 (12). The COVID-19 pandemic is no exception and has been characterized by an increase in alcohol sales and consumption. For example in the United States (US), a study conducted over a seven week COVID-19 impacted period between March and April 2020, reported a 234% increase in online sales of alcohol compared to a similar time in the previous year (13). In addition, the study found that there was a preference for purchase of larger pack sizes for wines, spirits and beer (13). Indeed in the US, in a study conducted by Grossman et al (14), 60% of participants reported an increase in alcohol consumption during the COVID-19 pandemic. In that study, participants who reported being stressed by the pandemic reported greater and longer alcohol consumption (14). Increases in levels of alcohol use have also been reported among general population adults in Australia (15) and the UK (16).

Health care workers are highly vulnerable to psychological distress and therefore to increased alcohol use during pandemics. Health care workers often have direct contact with infected persons, face increased workload, and are constantly exposed to potentially traumatic events in the course of disease outbreaks. In the aftermath of the SARS 2003 pandemic, significant levels of post-traumatic stress symptoms were reported among health care workers (17,18). Similarly, studies conducted during the COVID-19 pandemic indicate a high psychological impact on health care workers including depression, anxiety and post-traumatic stress (19). Surprisingly, little has been done to explore the burden of alcohol use among health care workers during earlier viral epidemics and the current COVID-19 pandemic. One study we found reported that 42.6% of health care workers in the US had probable alcohol use disorder during the COVID-19 pandemic (20).

The negative impact of harmful alcohol use among healthcare workers cannot be overemphasized. In addition to the well documented negative health consequences (21), harmful alcohol use among health care workers could result in inefficiencies in health service delivery emanating from impaired work performance (22). This is particularly concerning at a time when the world is facing a health crisis and the health workforce is already constrained. In Kenya, data on harmful alcohol use among healthcare workers is limited. The aim of the present study was therefore to document the prevalence and factors associated with harmful alcohol use among health care workers in Kenya at the beginning of the COVID-19 pandemic. Such information could be useful in guiding interventions in Kenya and in other Low and Middle Income Countries (LMICs).

Materials And Methods

Data used for these analyses were derived from a parent online survey investigating the prevalence and factors associated with mental disorders among healthcare workers during the COVID-19 pandemic in Kenya. Eligible healthcare workers for the online survey were trained health professionals working in healthcare during the COVID-19 pandemic. Health professionals working outside hospital settings, e.g. insurance companies were excluded. A virtual snowball sampling was used to recruit participants. In

total, 1190 health care workers consented to participate in the survey. Of these, 957 completed at least one or more of the questionnaires. The detailed methods for the parent study have been submitted for publication elsewhere.

The analyses for this study are based on a sub-population of 887 participants who completed the Alcohol Use Disorder Identification Test (AUDIT) questionnaire(7). All participants provided informed consent. The invitation to the online survey included study information and the option to select “I agree” or “I disagree” to participate in the study. Participants were informed that selecting the “agree” option meant that they had read and understood the invitation, had confirmed that they were the age of 18 and above, and had voluntarily agreed to participate in the study. Ethical approval to conduct the study was obtained from the Institutional Research Ethics Committee (IREC) of Moi University/Moi Teaching & Referral Hospital.

The survey instrument was programmed into Redcap, (Research Electronic Data Capture) (23) a secure, web-based software platform designed to support data capture for research studies. The online survey was sent to healthcare workers in various networks on Facebook, WhatsApp and E-mail between April 1 and April 30, 2020. The healthcare workers were requested to respond to the survey while a track of responses was kept using the Redcap software. A weekly reminder was sent for a duration of one month.

Measures

Socio-demographic data: A researcher designed questionnaire was used for collecting socio-demographic data including age, sex (male/female), marital status (married/not married), cadre (doctor/nurse/specialist/other), type of facility (public/private), contact with COVID-19 patients (yes/no), years of experience in health care (0-10, 11-20, 20+), and history of a chronic medical condition (yes/no).

Harmful alcohol use: The primary outcome for this study was harmful alcohol use. This was measured using the AUDIT (7) which examines for past year alcohol use. The AUDIT consists of 10 questions and total scores range from 0 to 40. A score of 8 and above was considered harmful alcohol use for our study (7). The AUDIT has been used among adults in Kenya (24).

Depression: Depression was measured using the Patient Health Questionnaire-9 (PHQ-9) (25). It is a 9-item self-report instrument and examines for symptoms over the past two week period. Total scores range from 0-27. For our study, a score of 0-4 was considered none/minimal depression, 5-9 mild depression, 10-14 moderate depression, 15-19 moderately severe depression, and 20-27 severe depression (25). The PHQ-9 has excellent reliability and validity. The PHQ-9 has been validated among adults in Kenya (26).

Generalized Anxiety Disorder (GAD): GAD was assessed using the GAD-7 scale (27). It is a seven item self-report instrument that examines for symptoms over the past two week period. Total scores range from 0 to 21. A score of 0-4 was considered minimal GAD, 5-9 mild GAD, 10-14 moderate GAD, and 15-21 severe GAD for our study (27). The GAD-7 has been validated in Kenya (28).

Post-Traumatic Stress Disorder (PTSD): We used the Primary Care- Post Traumatic Stress disorder (PC-PTSD) for Diagnostic statistical manual- 5 to measure PTSD(29). The tool is a 5-item screen used for past month PTSD symptoms. A score of 3 and above was considered probable PTSD in our study (29).

Sleep quality: This study used the Pittsburgh Sleep Quality Index (PSQI) (30) to assess for sleep quality. It is a self-rated questionnaire which assesses sleep quality and disturbances over a 1-month time interval. Nineteen individual items generate seven "component" scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The sum of scores for these seven components yields one global score. A score of 5 and above indicated poor quality sleep for our study. Such a score has a sensitivity of 89.6% and specificity of 86.5% in distinguishing good and poor quality of sleep (30). The tool has been used among adults in Kenya (31).

Statistical analysis:

Descriptive statistics were used to summarize the socio-demographic characteristics of the participants. Chi square test was used in the bivariate analysis, to assess for the association between harmful alcohol use and socio-demographic and mental health factors. Significant variables were subjected to the multivariable logistic regression analysis and presented as adjusted odds ratios (AORs) and 95% CIs. Data analysis was performed using R Core Team (2013). In all analysis a p-value less than 0.05 was considered significant.

Results

Socio-demographic characteristics of participants: A total of 887 participants completed the AUDIT questionnaire. Most respondents were aged 35 years and above (51.4%), were female (54.6%), worked in public health facilities (70.0%) and had 10 years or less of experience in health care (57.7%) . Less than one third of the respondents (24.0%) had come into contact with a patient diagnosed with COVID-19. Of the 887 respondents, 39.9% were doctors, 18.8% were nurses, 16.8% were specialists and 24.4% belonged to other cadres (Table 1).

Table 1: Socio-demographic characteristics of participants

Variable		N (%)
Age in years	<35	431 (48.6)
	>=35	456 (51.4)
Gender	Male	403 (45.4)
	Female	484 (54.6)
Marital status	Married	579 (65.3)
	Not married	308 (34.7)
Years of experience in health care	0-10	512 (57.7)
	11-20	219 (24.7)
	20+	156 (17.6)
Cadre	Doctor	354 (39.9)
	Nurse	167 (18.8)
	Other	216 (24.4)
	Specialist	149 (16.8)
Type of facility	Public	621 (70.0)
	Private	266 (30.0)
Have a chronic medical condition	Yes	202 (22.8)
	No	685 (77.2)
Contact with COVID-19 patients	Yes	212 (23.9)
	No	675 (76.1)

Mental health characteristics of the participants:

Out of the 887 participants who responded to the AUDIT questionnaire, 858 (96.7%) completed the PHQ-9; 807 (91.0%) completed the GAD-7, 348 (39.2%) completed the PC-PTSD and 772 (87.0%) completed the PSQI. Of the respondents who completed the PHQ-9, all respondents (100%) endorsed some level of depression. Thirty six percent of those who completed the GAD-7 reported some level of GAD, while poor sleep quality was endorsed by 24.5% of those who completed the PSQ-I. The PC-PTSD was completed by the least number of respondents. Sixty-five percent of participants responding to that questionnaire reported symptoms of probable PTSD (Table 2).

Table 2: Mental health characteristics of the participants

Depression (N= 858)	N (%)
Mild	581 (67.7)
Moderate	144 (16.8)
Severe	133 (15.5)
GAD (N= 807)	
Mild/Moderate	232 (28.7)
None/minimal	516 (64.0)
Severe	59 (7.3)
PTSD (N=348)	
None	123 (35.3)
Probable PTSD	225 (64.7)
Sleep quality (N=772)	
Poor quality of sleep	189 (24.5)
Good quality of sleep	583 (75.5)

Prevalence of harmful alcohol use:

Three hundred and eighty nine (43.9%) participants reported harmful alcohol use based on an AUDIT score of 8 and above (95%CI: [40.6%,47.2%]).

Factors associated with harmful alcohol use

In bivariate analysis, gender, marital status, cadre and years of experience in the health field were significantly associated with harmful alcohol use (Tables 3 and 4). In multivariate analysis, the factors significantly associated with increased odds of endorsing harmful alcohol use were: being male (AOR= 1.56; 95% CI=1.14, 2.14; p=0.006), being not married (AOR= 2.06; 95% CI=1.48, 2.89; p<0.001), having 11-20 years of experience in health care as compared to having 20+ years of experience (AOR= 1.91; 95% CI=1.18, 3.12; p=0.009), and being a specialist (AOR=2.78; CI=1.64, 4.78; P=<0.001) or doctor (AOR= 2.82; 95% CI=1.74, 4.63; p<0.001) as compared to being a nurse. Age, and endorsing depression or generalized anxiety were not associated with harmful alcohol use (Table 5).

Table 3: Bivariate analysis of socio demographic factors and harmful alcohol use

Variable		Alcohol use (N=887)		p-value
		Harmful ^a N (%)	Not Harmful N (%)	
Age in years	<35	198 (45.9)	233 (54.1)	0.251
	>=35	191 (41.9)	265 (58.1)	
Gender	Male	198 (49.1)	205 (50.9)	0.005
	Female	191 (39.5)	293 (60.5)	
Marital status	Married	224 (38.7)	355 (61.3)	<0.001
	Not married	165 (53.6)	143 (46.4)	
Years of experience in health care	0-10	238 (46.5)	274 (53.5)	0.001
	11-20	104 (47.5)	115 (52.5)	
	20+	47 (30.1)	109 (69.9)	
Cadre	Doctor	178 (50.3)	176 (49.7)	<0.001
	Nurse	38 (22.8)	129 (77.2)	
	Other	104 (48.1)	112 (51.9)	
	Specialist	68 (45.6)	81 (54.4)	
Type of facility	Public	265 (42.7)	356 (57.3)	0.312
	Private	124 (46.6)	142 (53.4)	
Have a known medical condition	Yes	97 (48.0)	105 (52.0)	0.202
	No	292 (42.6)	393 (57.4)	
Contact COVID-19 patients	Yes	92 (43.4)	120 (56.6)	0.940
	No	297 (44.0)	378 (56.0)	

^a harmful alcohol use was defined by a score of 8 and above on the AUDIT

Table 4: Bivariate analysis of mental disorder and harmful alcohol use

Variable		Alcohol use (N=887)		p-value
		Harmful ^b N (%)	Not Harmful N (%)	
Depression	Mild	241 (41.5)	340 (58.5)	0.065
	Moderate	63 (43.8)	81 (56.2)	
	Severe	70 (52.6)	63 (47.4)	
GAD	Mild/Moderate	115 (49.6)	117 (50.4)	0.061
	None/minimal	211 (40.9)	305 (59.1)	
	Severe	29 (49.2)	30 (50.8)	
PTSD	None	57 (46.3)	66 (53.7)	0.430
	Probable PTSD	93 (41.3)	132 (58.7)	
PSQI	Poor quality sleep	86 (45.5)	103 (54.5)	0.672
	Good quality sleep	253 (43.4)	330 (56.6)	

^b harmful alcohol use was defined by a score of 8 and above on the AUDIT

Table 5: Multivariate analysis of association between harmful alcohol use and socio-demographic and mental health factors

Characteristic	AOR ^c	95% CI ^d	value	p-
Age in years				
<35	1			
>=35	1.10	0.70, 1.72	0.700	
Gender				
Female	1			
Male	1.56	1.14, 2.14	0.006	
Marital status				
Married	1			
Not married	2.06	1.48, 2.89		<0.001
Years of experience in health care				
20+	1			
11–20	1.91	1.18, 3.12	0.009	
0-10	1.53	0.88, 2.69	0.140	
Cadre				
Nurse	1			
Specialist	2.78	1.64, 4.78	<0.001	
Doctor	2.82	1.74, 4.63	<0.001	
Other	2.59	1.57, 4.34	<0.001	
PHQ				
Mild	1			
Moderate	1.15	0.73, 1.81	0.500	
Severe	1.50	0.90,	0.120	

		2.52	
GAD			
None/minimal	1		
Mild/Moderate	1.07	0.72, 1.57	0.700
Severe	1.13	0.52, 2.44	0.800

^cAdjusted Odds Ratio

^d Confidence Interval

Discussion

To the best of our knowledge, this is the first study to examine harmful alcohol use among health care workers during the COVID-19 pandemic in a LMIC. Our findings indicate that 43.9% of the participants endorsed harmful patterns of alcohol use based on the AUDIT. Using a similar tool Hennein et al (20) reported comparable findings. The authors found that 42.6% of health care workers in the US had probable alcohol use disorder during the COVID-19 pandemic. Our findings are considerably higher than those reported by Mokaya et al. (32) among health care workers in the pre-pandemic period in Kenya. The study found that only 2.9% of health care workers endorsed moderate risk alcohol use and that none endorsed high risk use (32). This suggests an increase in rates of alcohol consumption during the COVID-19 pandemic among health care workers in Kenya. Such a high burden of harmful alcohol use is likely to further constrain the already limited workforce (33) and contribute to inefficiencies and disruptions to health service delivery at this crucial time.

In our study, being male was associated with increased odds of harmful alcohol use. This finding is consistent with prior studies conducted among health care workers (32) and the general population (34) in Kenya, and might be explained by the fact that in many cultures, traditional gender roles may prevent the development of problematic substance use for women (35). Unmarried health care workers were more likely to report harmful alcohol use compared to the married. This is comparable to other studies that have shown a higher prevalence of alcohol use among single or divorced persons (36). Being unmarried may be associated with social isolation, a well documented risk factor for harmful substance use (37,38). Specialists, doctors and other cadres were significantly more likely to endorse harmful alcohol use as compared to nurses. Nurses in Kenya have strong social welfare systems that could potentially prevent the use of alcohol as a way of coping with stress during the pandemic. Having 11-20 years of experience in the health profession was associated with increased odds of harmful alcohol use as compared to having 20+ years or having 0-10 years of experience. Findings concerning the association between years of experience and harmful alcohol use have been inconsistent. Obadeji et al., in a study conducted among doctors in Nigeria reported no association between years of experience and hazardous alcohol

use (39). Kenna and Lewis found alcohol use disorder among health care providers to be associated with having younger licenses (40). A possible reason for significant harmful alcohol use among healthcare workers with 11-20 years of experience could be that that phase represents a period of heightened psychological stress linked to residency, and increasing family and work place responsibilities.

Our study reported no significant differences in the rates of harmful alcohol use among health care workers with and without mental health disorders. This was an unexpected finding since prior studies conducted during the COVID-19 pandemic have overwhelmingly reported a positive association between harmful alcohol use and mental health symptoms including depression (15,16,41); PTSD (42); anxiety (15,42,43), and Stress (43). It is not clear why the present study did not find an association between harmful alcohol use and mental health symptoms. Future longitudinal research in our setting could shed more light on this.

Implications for practice: The high prevalence of harmful alcohol use among health care workers in Kenya during the COVID-19 pandemic specifically among doctors and specialists, males, the unmarried, and those with 11-20 years of experience highlights the urgent need to put in place appropriate prevention and treatment interventions targeting these groups. Several interventions may be delivered including (i) health education on the harmful impact of alcohol use and debunking of myths that encourage alcohol use during the pandemic (ii) education on strategies for health promotion such as a healthy diet, adequate sleep, physical activity and stress management (iii) screening and brief interventions for alcohol use and (iv) interventions to promote social connectedness (44,45). Virtual platforms and mobile health strategies represent a potential platform for delivering the above interventions given the current COVID-19 restrictions. Currently the Ministry of Health has established a call centre whose aim is to offer both knowledge and psychosocial support to frontline health workers (46). This presents an avenue through which alcohol related health education and screening and brief interventions may be conducted.

If the patterns observed post other disasters are anything go by (12,47), the rise in alcohol use observed during the COVID-19 outbreak is likely to persist for several years beyond the pandemic period. It is therefore important that long term strategies are put in place to manage alcohol use within health care settings. We recommend that health care settings in Kenya establish employee assistance programs and develop policies that address substance use in the workplace. Fortunately, the National Authority for the Campaign Against Alcohol & Drug Abuse (NACADA), has published guidelines for the development of workplace substance use programs and policies that institutions can use for reference (48).

At policy level, delisting alcohol use as an essential commodity during the pandemic could reduce its availability and thus limit its use as a way of coping during the pandemic.

We acknowledge some limitations. Firstly, this being an online survey, it may have been less accessible to people who lacked smartphones, had no internet access, or were not on the social media platforms we utilized. Our findings may therefore not include their experiences. Secondly, our sample was not representative of the composition of healthcare workers in Kenya. Our sample was comprised of mostly doctors while nurses comprise more than a half of health care workers in Kenya. Thirdly, this was a cross-

sectional study and therefore no causal relationships may be determined. Nonetheless this study provides for the first time important information on harmful alcohol use among health care workers during the COVID-19 pandemic in a LMIC.

Conclusion

In conclusion, a high proportion of health care workers in Kenya reported harmful alcohol use. Males, the unmarried, those with 11-20 years of experience in health care, doctors and specialists were more likely to report harmful alcohol use. Given the potential negative impact of harmful alcohol use not only on the mental and physical health of the HCWs but also on health service delivery, it is critical that the government puts in place interventions to address this problem. In the short term, virtual platforms and mobile health strategies could be utilized to deliver health education, as well as screening and brief interventions for harmful alcohol use. In the long term, health care settings ought to establish substance use workplace programs and policies.

Abbreviations

1. AOR - Adjusted Odds Ratio
2. AUDIT - Alcohol Use Disorder Identification Test
3. COVID-19 - Corona Virus Disease of 2019
4. DSM-5 - Diagnostic Statistical Manual 5th Edition
5. GAD - Generalized Anxiety Disorder
6. IREC - Institutional Research Ethics Committee
7. LMIC - Low and Middle Income Country
8. NACADA - National Authority for the Campaign Against Alcohol & Drug Abuse
9. PHQ-9 - Patient Health Questionnaire-9

10. PC- PTSD - Primary Care- Post Traumatic Stress disorder

11. PSQI - Pittsburgh Sleep Quality Index

12. PTSD - Post Traumatic Stress Disorder
13. SARS - Severe Acute Respiratory Syndrome
14. US - United States

Declarations

Ethics approval and consent to participate

The authors confirm that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The study was approved by the Moi Teaching and Referral Hospital/Moi University School of Medicine Institutional Research and Ethics Committee (IREC/2020/59: FAN 003589) and the National Council for Science and Technology (Nacosti/P/20/4835).

Informed consent was obtained from the participant by ensuring that only those who clicked on agree to participate were able to access the online survey.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This work was completed with support by Kenya Medical Association, Equity project.

Authors' contributions

All authors participated in designing the study. A.M. conducted the analyses. F.J. drafted the manuscript. All authors contributed to and reviewed all versions of the manuscript. All authors approved the final version of the manuscript.

Acknowledgements

None

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