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Prevalence of Substance Use and Associated Factors among Police Officers in Dar-Es-Salaam

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Abstract

Background: Substance use among Police Officers has been a concern to many professionals in the field of research and criminal justice since their work is subjected to higher levels of stress and trauma compared to the general population. Despite being aware of the nature of their works, some of the Police Officers are unaware of the mental health problems that may arise from frequent exposure to traumatic and violent events. The higher frequency of exposure to stressful events at work may result in increased prevalence of substance use as one of the coping mechanisms. Several factors have been found to be associated with substance use among Police Officers ranging from socio-demographic factors, job stressors, operational stressors, organizational stressors, rank and duration at work as well as social support. Poor health seeking behaviours and lack of professional treatment with regards to these issues, can negatively impact the productivity at work and raise mental health concerns amongst Police Officers.

Objective: This study aimed at assessing the prevalence and factors associated with substance use among Police Officers in Dar es Salaam.

Methods: Analytical, cross-sectional study was conducted among Police Officers using quantitative data collection methods. Data was collected using self-administered structured questionnaires and statistical analysis was done using SPSS version 25. The descriptive statistics were summarized using proportions, mean and median and their corresponding standard deviation and interquartile range, respectively. Association between categorical variables was determined using odds ratio and Confidence Interval. A p-value of less than 0.05 has been considered statistically significant.

Results: This study found that, the prevalence of ever use of alcohol, tobacco, sedatives, cannabis, amphetamine, inhalants, hallucinogens, cocaine and opioids was 40.2% whereas the prevalence of past three months use of any substance was 31.4%. The prevalence of recent use of alcohol and tobacco were 31.3% and 6.3% respectively. In adjusted and unadjusted analysis, gender, age, marital status, last promotion status and perceived social support were found to be statistically significantly in predicting substance use among Police Officers.

Conclusion: Findings from this study show that there is a relatively high prevalence of substance use among Police Officers in Dar es Salaam as compared to the general population. About half of the Police Officers were shown to have ever used one or more substances and about one third found to be recent users. There is a need to screen for substance use and provide help or referral where necessary as well as creating and strengthening medical centers in police stations and barracks with appropriate manpower to encourage and assist Police Officers get professional assistance to deal with issues related to substance abuse.

Operational Definitions

Mental health problems: In this context, mental health problems refer to behavioral or psychological syndromes or patterns that occurs in an individual, they are characterized by problems that people experience with their mind (thoughts) and their moods (feelings). (DSM-5). For the purpose of this study, common mental health problems to be studied include depression, anxiety, suicide and substance use

Operational stressors: Refers to stressors resulting from police everyday experiences and encounters in their work routine including violence, trauma, fellows being killed in line of duty and critical incidents.

Organizational stressors: Refers to the stressors at the work setting relating to structural and functional aspect of their work including poor management, low morale and lack of acknowledgement, inconsistent shift works

Police Officer: According to Cambridge English dictionary, a police officer is referred to as a male or female member of police force.

Substance Use: In this context, substance use refers to the harmful or hazardous use of psychoactive substances, including alcohol and psychoactive drugs. The most common substances abused are alcohol, marijuana (ganja), bhang, hashish (charas), heroin, cocaine tobacco etc. (WHO substance abuse 2011).

Introduction

Background

Police work tends to be stressful and unpredictably confrontational as the officers are exposed to situations that are dangerous or hazardous to themselves and members of the public (1,2). In all levels of policing, officers regularly experience conditions that other professions rarely face such as unknown or life-threatening situations, serious or fatal accidents, drug overdoses, injury resulting from violence, domestic disputes, and hostile public unrest (1,3,4). Stress is part of the profession and everyday work life of police officers as they are responsible to conduct routine law enforcement activities, gathering evidence, investigating crimes, or working excessive overtime hours (1,5) Nevertheless, Police Officers are aware of the risks to be killed first in the line of duty (6). The study which was done in Norfolk state (2015) revealed that at least one Police Officer would be killed in the line of duty in 32 months (3,7). Police officers' stress reactions to various threatening and disturbing events can lead to psychologically, cognitively, and physically debilitating conditions that impair occupational performance and ultimately engagement into alcohol and other drug abuse as maladaptive responses to stress and trauma (2).

Substance abuse is widespread among Police Officers for a range of reasons including coping with job and life stressors, mistreatment of physical pain, addressing anxiety, depression, and post-traumatic stress disorder (PTSD), attempting to stay awake or get adequate sleep, and other physical and psychological medical problems (1,3,7). Police frequently encounter addictive drugs in their work environment, for example, officers confiscate illicit and prescription drugs at crime scenes, interact with drug dealers and users, and have access to evidence rooms where drugs are stored. Whether used recreationally or for a particular physical or mental issue, such as sleep deprivation, stress, pain, or anxiety, these easily accessible drugs can become risky to the user (1,5)

Because of the nature of their work, Police Officers tend to practice toughness and extreme loyalty and for the officers who do not comply to the nature of the work and display anything less than that are considered to be weak and sometimes face stigmatisation from their peers and leaders. (3,5,8). Police officers who maintain negative or traumatic information in long-term memory are vulnerable to mental illness, unstable emotional and behavioral responses, interpersonal problems, and impaired social relationships (3).

Literature suggests that more than one in every six police officers requires professional intervention related to their drinking, and further, one in every twenty has an untreated alcohol use disorder (1). Moreover, researchers have found that police officers tend to either not seek mental health treatment, try to fix their own mental health problem, or if in treatment will not be forthcoming with internalized thoughts of psychological distress and with the fear that these issues will negatively impact their career path (3,5). Besides this, there is no training provided to Police Officers on psychological preparednes, better coping mechanisms and ways of taking care of their mental health (3,7). There is a need for periodic re-evaluation and initiation of early intervention programs which could begin with instructing officers to expect and recognize stress reactions and to use constructive stress-management techniques as well as providing mechanisms and services such as professional and peer counseling, trauma teams, and instruction in the dangers of substance abuse (2,9).

Problem Statement

Police Officers are considered as one of the high-risk groups due to exposure to stressful and traumatic life events at work as compared to other profession. They are prone to developing mental health problems and particularly substance use as a result of what is known as internalization or code of silence. Despite the fact that this group of people is found to have a high prevalence of substance use, not much has been done to intervene this problem. Several studies have been conducted worldwide on prevalence of substance use among police officers including post-traumatic stress disorders, depression, anxiety, suicide and substance use disorders. However not much have been done in Tanzania to obtain the magnitude of this problem such that we don't have much data that represent the magnitude of substance use among the police officers in our country. In addition to that, most of the researches that have been done around substance use only address alcohol use and not other substances. In most of the studies, substance use has been explained as an associated factor that comes about as a means to cope with other common mental health problems among police officers and not merely as an independent mental health problem.

Despite the fact that most of the studies have come up with several associated risk factors for substance use disorders among police officers including gender, marital status, organizational stressors, operational stressors and organizational culture, other factors that put the police population at risk of substance use disorders are such as occupational rank, duration or experience at work and age have been partly addressed in some of the studies.

This study aims at providing data on the magnitude of substance use among police officers in Tanzania. In the current era there has been several encounters that may be a result of the so not obvious psychological consequences, since culturally the police occupation is considered a work of the tough and mental or physical health disturbances may be considered as a sign of weakness.

Rationale of the Study

The work environment of police officers is predisposing them to significant psychosocial risk factors as they experience conditions that other professions rarely face such as unknown or life-threatening situations, serious or fatal accidents, injury resulting from violence, domestic disputes, hostile public unrests, being killed on duty and anti-terrorist operations; all these psychosocial risk factors are highly likely to predispose them into substance use as one of the means to cope with job and life stressors, addressing anxiety, depression, and post-

traumatic stress disorder (PTSD), attempting to stay awake or get adequate sleep, and other physical and psychological medical problems. This study aims to assess the magnitude substance use and associated factors which are reported to be higher among police officers as compared to the general population in Tanzania. The results of the study may help in adding knowledge on substance use and associated factors among Police Officers which will help in establishment of routine screening of substance use among, intervention and development of better coping skills among Police Officers.

Research Questions

What is the magnitude of substance use among Police Officers in Dar es Salaam?

What are the factors associated with substance use among Police Officers in Dar es Salaam?

Study Objectives

Broad Objective

Assessment of substance use and associated factors among Police Officers in Dar es Salaam

Specific Objectives

- To assess the prevalence of substance use among police officers in Dar es Salaam
- To determine the typology of commonly used substances among Police Officers in Dar es Salaam
- To determine factors associated with substance use among police officers in Dar es Salaam.

Literature Review

Globally, the prevalence of substance use varies significantly from one part to the other. Highest prevalence has been found in the Eastern and Central Europe reaching up to 16% in some countries (10). Most studies show that majority of people who use substances are found to be ageing between 15 and 16 years, this is about 5.6% of people in the general population. (11,12). Many studies have found a statistically significant association between gender and substance use with higher rates of substance use seen in males as compared to females in many countries (13). In Eastern European countries, the prevalence of alcohol use disorders among males is found to be 6.4% while it is 1.6% among females (10). In the United States, the prevalence of alcohol consumption was found to be higher among Caucasian males as compared to females with the average percentage of 34.6 and 15.6 respectively (10,13,14) The South African Stress and Health (SASH) study on patterns of substance use in South Africa shows the cumulative occurrence of substance use in the general population to be 38% for alcohol use, 30% for tobacco smoking, 8.4% for cannabis use, 2.0% for other drugs, and 19.3% for extra medical psychoactive drug use (15). In Tanzania, one of the studies done found that 24.0% and 33.7% of adults in Dar es Salaam had used tobacco and consumed alcohol respectively for the past 30 days (16).

Police officers among other few professional occupations such as military personnel, fire fighters and rescue personnel are referred to as first responders (6). Being first responders, Police Officers are at risk of experiencing severe consequences as a result of their occupational stressors and hence develop different kinds of coping mechanisms (17). A study done among 917 Swedish Police Officers showed that majority of the Police Officers employ avoidant coping approach which was related to worse well-being, and police officers reported greater consequence to well-being related to substance use than other first responders (6).

Literature suggests that more than one in every six police officers requires professional intervention related to their drinking, and further, one in every twenty has an untreated alcohol use disorder (1). A study done among urban Police officers in U.S.A found that 18.1% of males and 15.9% of females reported experiencing adverse consequences from alcohol use and 7.8 % of the sample met criteria for lifetime alcohol abuse or dependence. Female officers had patterns of alcohol use similar to male officers and substantially more than females in the general population (18). On the other hand, the prevalence of alcohol abuse among police officers who were assessed for mental health conditions in the urban police department in the U.S, was found to be 19% (19). Another study done among Vietnam Veterans estimated the lifetime prevalence of alcohol abuse or dependence among male veterans to be 11.2 percent with the corresponding estimates for lifetime and current drug abuse or dependence being 5.7 percent and 1.8 percent respectively. Male theatre veterans who had current PTSD were found to have two to six times likelihood of abusing alcohol or drugs than those without the disorder (20). The Department of Defence (DoD) 2008 survey of health-related issues among Military Personnel found that 2.3% of military officers had used illicit substances in the past one month as compared to 12% of civilians. The age group which is most likely to use drugs according to the 2018 United Nations Office on Drugs and Crime (UNODC) surveys is young people between 18 and 25 years; this group was found to have a prevalence of 3.9% use of substance among military personnel while the prevalence was 17.2% in the general population (11,21). Moreover, a study to assess patterns and predictors of alcohol use among male and female urban police officers in the U.S had 18.1% of males and 15.9% of females who reported to have adverse effects from alcohol use (22).

Among twenty-five police officers evaluated and followed up after 4 years of recruitment using Minnesota Multiphasic Personality Inventory (MMPI) scores showed significant changes over time, suggesting increasing somatic symptoms, anxiety, and alcohol vulnerability. Vulnerability to alcohol abuse was the strongest finding with mean MacAndrews Alcoholism Scale scores within the critical range (9).

A study done in Uganda to assess the burden of alcohol use among police officers in Kampala found that 73.1% of respondents had used alcohol in their lifetimes while 63.5% were currently consuming alcohol (23). Prevalence of alcohol consumption in most studies is found to be higher among male police officers as compared to female police officers (22).

In the assessment of the prevalence of substance use among police officers in the major barracks in Dar es Salaam, higher rates of alcohol consumption were found to be among males with the prevalence of 38.8% as compared to females who had a prevalence of 12.8%. However, among 59.6% of the married Police Officers in this study, 33.56% were found to be social drinkers while 34.44% of those who were single were found to consume alcohol (24).

Research Methodology

Study Area

This study was conducted in Dar es Salaam region, a major city and commercial port on Tanzania's Indian Ocean coast.

Description of the Study Area

The Republic of Tanzania is a developing country in East Africa. It is situated 4 degrees south of the equator and it covers approximately 945,000 square kilometers. Tanzania has frontiers to the following countries: North: Kenya and Uganda, West: Rwanda, Burundi, and Democratic Republic of Congo, South West: Zambia and Malawi, South: Mozambique and East: Indian Ocean. The United Republic of Tanzania, was formed in 1964, and is a union between the then Tanganyika and the Zanzibar Islands. Tanzania occupies 886,100 square kilometers with population estimated to be 34,444,000 people (25).

Dar es Salaam region lies on the eastern part of Tanzania. It is bounded by the Coast region on the North, West and South while the Indian Ocean occupies its Eastern border. Dar es Salaam is the smallest region in the country covering an area of 1,393 square kilometers. But it is the largest city in the country, with the biggest port, business capital and the largest population size of about 4,364,541 people, with annual population growth rate of 5.6 percent (26) . The region is subdivided into five administrative districts namely Temeke, Kinondoni, Kigamboni, Ubungo and Ilala. The main economic activity taking place at the region include trade, small businesses and manufacturing industrial activities, also government offices are more concentrated in this region.

Study Population

The study population included Police Officers who were residing in Dar es Salaam and were available at their respective Police stations at the time of study.

Eligibility Criteria

Participants were included into the study if they were: -

- Police officers residing in Dar es Salaam
- Consent for participation was obtained.

Exclusion Criteria

Participants were excluded from the study if they were;

- Police officers who were not available at the respective Police stations during the study
- Retired police officers.

Study Design

This was a descriptive, cross-sectional community-based study conducted among Police Officers using quantitative data collection method. The reason for selection of this study design is that it is useful for population-based surveys in which data on all variables is only collected once. It is simple to conduct, less time consuming and cost effective.

Study Duration

The study was conducted from April 2019 to December 2020.

Sample Size Estimation

The estimated sample size N was computed using Kish and Leslie formula below,

$$n = \frac{Z^2 P(100-P)}{\varepsilon^2}$$

- n= estimated sample size
- Z= percentage point of the normal distribution corresponding to the level of significance <5%, Z= 1.96
- P= proportion of police officers with common mental health problems, from the reviewed literatures the proportion of police officers with common mental health problems which gave the highest value of sample size was found to be 63.5%.
- ε= margin of error, which is approximately 5%

$$n = \frac{(1.96)^2 \times P \times (100-P)}{5^2}$$

$$N = \frac{(1.96)^2 \times 63.5 \times (100-63.5)}{5^2}$$

N=356

Adding 20% of possible non-response which is equal to 71

N=356+71=427

The sample size was approximately 430, However, as a way to compensate for incomplete and missing data, 120 more questionnaires were added making a total of 550 questionnaires.

Sampling Procedure and Data Collection

In this study, Multistage cluster sampling involving three stages was used to obtain the sampled Police Officers. Multistage cluster sampling is useful in obtaining participants in a complex population (27). In the first stage, all 3 clusters of Police Regions (Kinondoni, Temeke, and Ilala) in Dar es Salaam City were selected. The second stage involved random selection of two District Police Units from the three sampled regional Police Regions. The last stage, a convenient secondary sample of individual participants was obtained.

Data Collection Tools and Research Instruments

Data collections was conducted by trained research assistants in cooperation with some of the co-authors, two Police district stations in each Police region and 3 special Police Units (Field force unit-FFU, Police Band and Information and communication technology-ICT) were visited. Data collection was done consecutively involving all the consented Police Officers available at the time of recruitment. At the respective Police stations, the participants were gathered in one place and after consenting to participate, the participants were given the questionnaires and oriented on how to respond to the set of questions in the tool. A semi-structured self-administered questionnaire that incorporated socio-demographic characteristics (age, gender, education, rank, years served in Police force, promotion status, police section), social support, and substance use tools was used.

The questionnaires had a total of 33 questions, with 28 being close ended questions and 5 open ended questions. It was comprised of three main sections; Patients demographic information (13), social support questions (12) and questions on substance use (8). The questionnaires were prepared in English language and then translated into Kiswahili. The participants were provided with the questionnaires and they will answer the questions accordingly.

WHO-ASSIST which stands for the Alcohol, Smoking and substance Involvement Screening Test (ASSIST) developed by the WHO version 3.0 was used in screening for substance use disorder. This tool was developed by an international group of substance abuse researchers to detect and manage substance use and related problems in primary and general medical care settings. It was composed of a total of 9 questions in which the first 7 questions will have 10 responses from i-j corresponding to tobacco products, alcoholic beverages, cannabis, stimulants, inhalants, sedatives, hallucinogens opioids and other substances respectively. The 8th and 9th questions will base on patterns of injecting drugs.

Ethical Issues and Research Clearance

Ethical clearance to conduct the study was sought from Muhimbili University of Health and Allied Sciences Ethical Review Board. Permission to do the study was obtained from the Inspector General of Police (IGP) and the respective Heads of Police Units in the police regions and districts from which the study sample was obtained. Consent to participate in the study was sought from the eligible study candidates.

Consent

The participants were informed about the purpose of the study and asked for their willingness to participate in the study. It was also made clear both orally and in the written consent form that, acceptance or refusal to participate in the study had no untoward consequences and that they were free not to participate in the study. They were also assured of confidentiality and the questionnaires will be kept anonymous with no participant's name, only numbers were used. They were informed of the benefits and risks of the study though generally no risks from this study were anticipated. In addition, candidates were informed that no financial gain could be obtained by participating in the study. They were provided with the address/ contacts of the principal investigator from MUHAS for communicating issues regarding the study if a need arose. Written informed consent was sought from all the study candidates.

Data Management

All data obtained is stored in a in a way that prevents unauthorized people from accessing the information. Data entry, data cleaning and data analysis was done subsequently using SPSS for Windows Version 20.

Data Analysis

Data was analyzed to answer the study objectives. Results were then be presented in tables, figures, and graphs in relation to the research objectives and variables. WHO-ASSIST version 3.0 was used in screening for substance use disorder. The score for each substance ranges from 0, which is the minimum score to 44 which is the maximum score. For each substance, a score ranging from 0-3 indicated a low risk level, a score ranging from 4-26 indicate a moderate risk level and a score from 27+ indicate a high-risk level of substance use.

Data from the police centers was combined and OR with 95% CI calculated to determine significant associations between socio-demographic characteristics and substance use Univariately significant factors as well as factors significantly different between the respondents were included in forward stepwise logistic regression and ORs produced. A significance level, p value of <0.05 was used.

Results

Demographic Characteristics of Study Participants

We enrolled a total of 550 participants, with a response rate of 90.4% (497/550), the remainder had incomplete information in questionnaires. Majority of the participants were males (76.6%, 376/491), 38.1% of participants were aged 41 years and above with median age (interquartile range) of the participants of 37.0 (17) years. About three-quarters (76.3%, 371/473) of participants were married and just about half (47.0%, 231/491) of the participants reported having attained secondary education and about half of the participants, 52.6% (249/473) reported to have worked in the Police force for 5-14 years An

overall majority 83.4% (412/494) of the participants were serving as the Rank and File Police. Just above half (54.8%, 268/489) of the participants reported to be working in the specialized duties and about three quarter (74.3%, 355/489) of the participants reported to engage in different operational activities (table 1).

Table 1: Socio-demographic characteristics of the study participants.

Characteristic	N	%
Sex (n=491)		
Male	376	76.6
Female	115	23.4
Age groups (n=397)		
21-30	105	26.4
31-40	141	35.5
41 and above	151	38.1
Marital status (n=473)		
Single	92	19.4
Married	371	76.3
Separated and widowed	20	4.3
Education (n=491)		
Primary	53	10.8
Secondary	231	47
Higher education	207	42.2
Years served in Police Force (n=473)		
5-14	249	52.6
15 and above	224	47.4
Last year of promotion (n=479)		
<5 years	344	71.8
5-10 years	97	20.3
>5 years	38	7.9
Rank at work (n=494)		
Gazette Officer a	22	4.5
Inspector b	60	12.1
Rank and file c	412	83.4
Police Sections (n=489)		
General duty	130	26.6
Specialized sections d	359	73.4
Years served in Police Section (n=474)		
One year and below	45	9.5
More than a year	114	24
More than five years	315	66.5
Operational activities (n=478)		
Yes	355	74.3
No	123	25.7
Perceived Social Support (n=426)		
High	163	38.3
Fair	215	50.4
Low	48	11.3
Police Regions (n=497)		
Ilala	126	25.4
Kinondoni	127	25.6
Temeke	86	17.3
FFU	76	15.3
Police Band	44	8.9
Main Store	38	7.6

aGazette Officers (Inspector General of Police-IGP, Commissioner of Police-CP, Deputy commissioner of Police-DCP, Senior Assistant Commissioner of Police-SACP, Assistant Commissioner of Police-ACP, Senior Superintendent of Police-SSP); b Inspectors (Superintendent of Police-SP, Assistant Superintendent of Police-ASP). c Regimental Sergeant Majors/ Sergeant majors (RSM/SM), Station Sergeant (SSG), Sergeant (SGT), Corporal Police (CPL) and Police Constable (PC). d Field Force Unit (FFU), Information and Communication Technology (ICT), Medical Unit, Criminal Investigation Department (CID), Main Police Depot, Traffic Department, Police Band, Police Colleges, Dogs and horse section, Mechanical department, Anti-drugs Unit, Construction and building department.

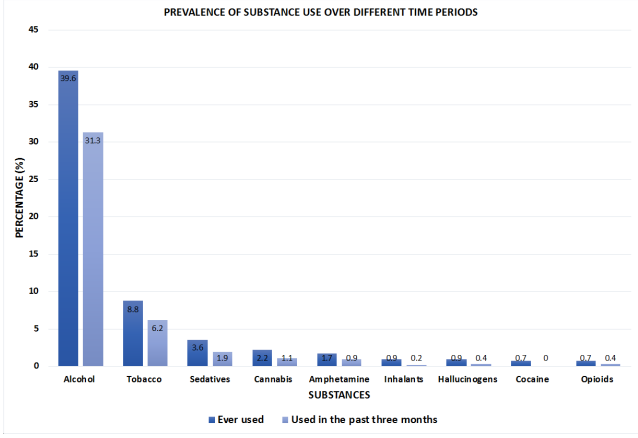
Prevalence of Substance Use; Ever and in the Past Three Months

About 40.2% (200/497) of the participants were reported to ever used one or more substances whereas about a third (31.4%, 156/497) of participants reported to use one or more substances in the past three months. The commonest substances used in the past three months were alcohol (31.3%, 147/469) and tobacco (6.2%, 29/469). However, very small number of participants (n=10) reported use of cannabis, cocaine, amphetamine, inhalants, sedatives, hallucinogens and opioids in the past three months.

Figure 2 illustrates the proportions of ever and recent use of substances among sampled Police Officers in Dar es salaam. Ever and past three months alcohol use were reported in 39.6% (186/469) and 31.3% (147/469) of participants respectively. For tobacco, ever and recent (past three months) use were reported to be 8.8% (41/469) and 6.2% (29/469) respectively. Ever and

recent use of sedatives among participants were found to be 3.6% (17/468) and 1.9 (9/468), respectively.

Figure 2: Prevalence of substance use in life time and in the past three months.



Predictors of Aalcohol Use among Police Officers

On bivariate and multivariate analysis, it was found that gender, age groups, marital status and last year of promotion were statistically significant in predicting alcohol use among police officers. Male Police Officers had about twice the odds of using alcohol (cOR: 1.708, 95% CI; 1.04-2.80, p<0.033) compared to their female counterparts. Additionally, participants with older age groups (31-40 years) (cOR: 2.824, 95% CI; 1.531 – 5.208, p=0.001) and (41 years and above) (cOR: 2.769, 95% CI; 1.510 – 5.077, p=0.001) had about three times odds of using alcohol compared to the younger age group (21-30 years). Married Police Officers had about two times odds of consuming alcohol (cOR: 2.115, 95% CI; 1.195 – 3.744, p=0.010) as compared to those who were single. Moreover, participants who were promoted between 5 to 10 years had two times odds of using alcohol (cOR: 1.823, 95% CI; 1.090-3.050, p<0.022) compared to those promoted in less than five years and more than ten years (Table 2). Level of education, rank and duration of work, engagement in operational activities and perceived social support did not show significant association with alcohol use.

Table 2: Bivariate and Multivariate Analysis of factors associated with Alcohol Use among Police Officers in Dar Es Salaam.

Characteristic/ variables	Alcohol (n, %)	cOR (95% CI)	p-value	aOR (95% CI)
Sex (n=481)				
Male	121 (32.2)	1.708 (1.043 - 2.797)	*0.033**	1
Female	25 (21.7)	1		0.568 (0.30 – 1.09)
Age groups (n=388)				
21-30	18 (17.1)	1		1
31-40	52 (36.9)	2.824 (1.531 – 5.208)	*0.001**	1.847 (0.86 – 3.96)
41 and above	55 (36.4)	2.769 (1.510 - 5.077)	*0.001**	1.408 (0.49 – 4.08)
Marital status (n=464)				
Single	17 (18.5)	1		1
Married	117 (32.4)	2.115 (1.195 – 3.744)	*0.010**	1.184 (0.54 – 2.59)
Others	9 (45.0)	3.610 (1.293 - 10.073)	*0.014**	2.371 (0.60 – 9.45)
Education (n=481)				
Primary education	11 (20.8)	1		1
Secondary education	65 (28.1)	1.495 (0.725 – 3.081)	*0.276*	1.482 (0.51 – 4.28)
Higher education	70 (33.8)	1.951 (0.951 – 4.022)	*0.07*	1.526 (0.50 – 4.68)
Ranks (n=484)				
Officers	9 (40.9)	1		1
Inspectors	26 (43.3)	1.105 (0.410 – 2.977)	*0.844*	1.285 (0.37 – 4.47)
File	111 (26.9)	0.533 (0.222 - 1.281)	*0.692*	0.835 (0.24 – 2.91)
Years at work (n=464)				
5-14	67 (26.9)	1		1
15 and above	79 (35.3)	1.480 (1.000 - 2.190)	*0.05*	1.351 (0.61 – 3.01)
Years last promoted (n=469)				
Less than 5years	104 (28.3)	1		1
5-10 years	31 (41.9)	1.823 (1.090 – 3.050)	*0.022**	1.889 (0.92 – 3.87)
More than 10 years	11 (28.9)	1.030 (0.493 - 2.153)	*0.937*	1.222 (0.47 – 3.21)
Operational activities (n=470)				
Yes	106 (29.9)	1		1
No	34 (27.6)	0.897 (0.416 - 1.416)	*0.642*	0.914 (0.50 – 1.67)
Police section (n=456)				
General duty	43 (33.1)	1		1

Specialized sections	102 (28.4)	0.803 (0.522 - 1.236)	*0.319*	1.412 (0.84 – 2.38)
Perceived Social Support (N=426)				
High	48 (29.4)	1		1
Fair	72 (33.5)	1.206 (0.777 – 1.873)	*0.404*	1.875 (0.73 – 4.79)
Low	16 (33.3)	1.198 (0.602 – 2.384)	*0.607*	0.829 (0.46 – 1.50)

- *factors that were statistically significant (p<0.05)
- cOR: crude odds ratio
- aOR: adjusted odds ratio

Predictors of Tobacco Use among Police Officers

On bivariate and multivariate analysis, only perceived social support was found to be significantly associated with tobacco use. Police Officers with low social support were found to have about three times odds of using tobacco (cOR: 3.308, 95% CI; 1.13 – 9.66, p=0.029) as compared to those with high and fair social support. None of the socio-demographic characteristics such as sex, age groups, marital status, education, duration and rank at work, promotion status, engagement in operational activities or sections in which Police Officers work was statistically significant in predicting tobacco use (Table 3).

Table 3: Bivariate and Multivariate Analysis of Factors associated with Tobacco Use among Police Officers in Dar es Salaam.

Characteristics/ variables	Tobacco (n, %)	COR (95% CI)	p-value	aOR (95% CI)
Sex (n=483)				
Male	29 (7.7)	1		1
Female	0 (0.0)	0.000 (0.00)	0.996	0.000(0.00)
Age group (n=390)				
21-30	5 (4.8)	1		1
31-40	10 (7.1)	1.527 (0.51-4.61)	0.453	1.284 (0.30 – 5.47)
41 and above	10 (6.6)	1.418 (0.47-4.28)	0.535	0.658 (0.08 – 5.13)
Marital status (n=466)				
Single	4 (4.3)	1		1
Married	24 (6.6)	1.567 (0.53 – 4.63)	0.417	3.984 (0.44 – 35.71)
Others	1 (5.0)	1.158 (0.12 – 10.95)	0.898	6.166 (2.10 – 183.10)
Education (n=483)				
Primary education	2 (3.8)	1		1
Secondary education	17 (7.4)	2.026 (0.45 – 9.05)	0.355	119993153 (0.00)
Higher education	10 (4.8)	1.294 (0.26 - 6.09)	0.744	66380082.6 (0.00)
Police ranks (n=486)				
Officers	3 (13.6)	1		1
Inspectors	4 (6.7)	0.452 (0.09 – 2.21)	0.327	0.455 (0.58 - 3.55)
File	22 (5.3)	0.357 (0.10 – 1.23)	0.118	0.336 (0.04 - 2.60)
Years at work (n=465)				
15 and above	15 (6.0)	1		1
Years last promoted (n=469)	13 (5.8)	0.961 (0.45 – 2.07)	0.919	1.796 (0.37 – 8.84)
Less than 5years	23 (6.3)	1	1	1
5-10 years	5 (6.8)	1.084 (0.40 – 2.95)	0.875	0.760 (0.14 – 4.07)
More than 10 years	1 (2.6)	0.404 (0.05 – 3.08)	0.382	0.387 (0.36 – 4.22)
Operational activities (n=471)				
Yes	22 (6.2)	1		1
No	6 (4.9)	0.776 (0.31 – 1.96)	0.592	0.516 (0.12 – 2.18)
Police section (n=456)				
General duty	4 (3.1)	1		1
Specialized sections	25 (7.0)	2.358 (0.81 – 6.91)	0.118	1.126 (0.37 – 3.41)
Perceived Social Support (n=426)				
High	8 (4.9)	1		1
Fair	11 (5.1)	1.045 (0.41 – 2.66)	0.927	4.07 (0.77 – 21.54)
Low	7 (14.6)	3.308 (1.13 – 9.66)	0.029*	5.146 (0.56 –41.35)

Discussion

This study is aimed at determining the prevalence of substance use and associated factors among Police Officers in

Dar es salaam region, Tanzania. The large proportion of participants 76.6% were males reflecting the functionality and enrollment of males among police officers as compared to females, male predominance in police work is also found in other studies done among Police Officers (28,29).

Prevalence of Substance Use among Study Participants

The overall prevalence of ever use of one or more substances in this study is found to be higher (40.2%) compared to the prevalence of recent use of substance (31.4%). The prevalence of recent use of alcohol and tobacco are 31.3% and 6.2% respectively which are found to be the most commonly used substances among Police Officers in Dar es Salaam. The findings for alcohol use in this study is about two times higher compared to the study done by Mushumbusi et al at the major barracks in Kilwa Road Dar es Salaam which found the prevalence of alcohol use to be 14.8% (24). However, the prevalence is lower compared to another study done Uganda which found that 73.1% of Police Officers reported to ever used alcohol while 63.5% were current users (23). Moreover, a study done in U.S found a lower prevalence of 19% for alcohol use among urban Police Officers (19).

Recent alcohol use in this study is found to be about two times higher while tobacco use is slightly lower among Police Officers in comparison to the general population in Dar es Salaam, 17.2% and 8.7%, respectively (30). However, another study found that prevalence for alcohol use among Police Officers was four times higher than the prevalence of alcohol drinking in the general population in urban Dar es Salaam (24). These findings are also comparative with the study done among Police Officers in the NSW which however, found a considerably higher prevalence of alcohol consumption, 48 % and 40 % among males and female Police Officers than those of the general Australian population (31). Another study conducted among UK Armed Forces also found significantly higher prevalence of alcohol drinking as compared to that of the general population (32).

The differences in prevalence of substance use among Police Officers and that of the general population could be explained by the fact that substance abuse has particularly alcohol is being used by Police Officers to de-stress and relax to the extent that it has been socially acceptable amongst them with the reason that policing is a high-stress job (5). Additionally, alcohol drinking among Police Officers has been considered as a way of reinforcing their own values and fitting into the policing work (28,33). Further alcohol and tobacco use among Police Officers is reported to be a primary method of coping with workplace stress as well as de-briefing with colleagues following critical incidents (29).

Prevalence of Alcohol Use by Gender

Results of the study shows that there is a statistically significant association between alcohol use and gender ($p<0.033$) in which male Police Officers had higher prevalence of alcohol consumption as compared with their female counterparts, 32.2% and 21.7% respectively. These results could be explained by the reason that policemen are assigned to more stressful jobs such as arresting dangerous criminals or guarding banks compared to women Police Officers thus at an increased risk of alcohol use. Prevalence of alcohol use among male and female Police Officers in this study are lower compared to that done by Mushumbushi et al, (2012) which found a prevalence of 67.6% and 32.4% respectively with a statistically significant association between alcohol consumption and gender (p value < 0.01) (24). These findings are comparatively lower compared to a study done among UK armed forces using AUDIT score which found a prevalence of alcohol use among men and women to be 67% and 49% respectively, however, men have higher proportions of alcohol use than females (32).

Similarly, a study done by Violanti et al using AUDIT scores showed that male officers had a higher total mean AUDIT score than female officers and a significantly higher mean hazardous alcohol use score ($p=0.002$) than women ($p=0.031$) (28). Results from the South African Stress and Health (SASH) study on patterns of substance use in South Africa found that there was a statistically significant association between male gender and alcohol, tobacco, cannabis and other drugs use (13). A survey conducted in NSW also found higher prevalence of alcohol consumption among males as compared to the female Police Officers, 48 % and 40 % respectively (31). A study done in the US showed that female officers have significantly higher prevalence of alcohol use compared to females in the general population (22). The findings are also consistent with the National Household Survey data and a study done in Northern Tanzania which shows that males drink more frequently than females in the general population (34,35).

Prevalence of Alcohol Use by Age

The study results indicate that participants in older age groups have higher proportions of using alcohol as compared to those in the younger age groups. Thus, there is a statistically significant association between alcohol use and age groups; ($p = 0.001$) for Police Officers with 31 years and above. These findings are probably because most of the Police Officers with older age have attained financial stability and hence easily capable to afford alcohol which is easily available in police welfare canteens at subsidized price. The stress associated with police work as they are exposed more to various police works with age may be part of the explanation. Literature elsewhere shows a high association between post-traumatic stress disorder (PTSD) and police drinking with age (24). These findings are similar to the findings of a study done among Australian Police Officers which found higher prevalence of alcohol consumption among older age groups than younger age group ($p < 0.001$) (34). However, these findings are in contrast to a study done among UK armed forces which found higher proportions of alcohol consumption among participant with a young age (32). Another study done found that younger Police Officers were at increased prevalence of alcohol consumption as compared to older Police Officers (21,28). Additionally, a study done by Mushumbushi et at, 2012 found that a high proportion of Police Officers aged below 45 years in Dar es Salaam were using alcohol (24). A study done by Mbatia et al among adults in the

general population in Dar es Salaam found a higher prevalence of both lifetime and recent alcohol among older aged groups which is consistent with findings from this study (30).

Prevalence of Alcohol Use by Marital Status

Results of this study shows that being single is a protective factor for alcohol use among police officers. It shows that there is a statistically significant association between alcohol use and marital status in which police officers who were single showed a low prevalence of alcohol use as compared to those who had partners. This study shows similar results to a study done among Police Officers at the major Barracks in Dar es Salaam which showed a prevalence of alcohol consumption among married police officers to be higher as compared to the prevalence among participants who were single, 15.4% and 11.49% respectively (24). However, the results are in contrast to other two studies which found higher rates of alcohol consumption among single Police Officers (p=0.026) (32,36). Moreover, a study conducted among the general population in the Northern Tanzania showed high prevalence of alcohol consumption among individuals without partners (35).

Prevalence of Alcohol Use by Year of Last Promotion

Findings of this study shows a statistically significant association between alcohol use and duration of the last promotion (p = 0.022). Police Officers with early promotion status, that is between 5 to 10 years had increased risks of using alcohol as compared to those with late promotion status. These findings could be explained by the fact that early promotion status is accompanied with a sudden increase in work responsibilities and hence predisposing these police officers to engage into alcohol as a mechanism of coping with a high work load. However, these findings are different from another study done using AUDIT score which showed no statistically significant association between alcohol use and duration of promotion (36).

Prevalence of Tobacco use by Perceived Social Support

Perceived social support was found to be significantly associated with tobacco use (p=0.029). Police Officers with low social support were found to have higher prevalence of tobacco use as compared to those with good social support. This is clearly explained by the reason that good social support influences better coping mechanisms and is as well protective to maladaptive behaviors such as substance use involvement. These findings are somehow similar to a study done in Szeged, Hungary which found that a low level of perceived social support increased the chance of all types of substance use among adolescents in the general population, however, this was not statistically significant (37).

Conclusion and Recommendations

From this study it can be concluded that there is a high prevalence of substance use among police officers in Dar es Salaam as compared to the general population with about half of the police officers shown to have used one or more substances in their life time and about one third found to be recent users. Alcohol, tobacco and sedatives have been found to be the most commonly used substances. It is evident that, among these three substances, alcohol is the most commonly used substance and shows a significant association with marital status and the sections in which police officers work.

Further research that will involve tools such as in-depth interviews should be conducted so as to look with more detail into the magnitude of substance use among police officers, the associated factors and the effects in the long term, as well as analyzing substance use across enlistees by branch of service, pay grade, or other important characteristics of service. Overall, my research contributes to the literature by providing an overview on the magnitude of substance use among police officers. There is a need for conducting screening of substance use among police officers frequently and provide help to those with problematic substance use. This could go hand in hand with the establishment of training programs for medical and social worker staff among the police officers who can identify and provide the necessary counseling and advice to police officers who engage in substance abuse.

Study Limitations

The following are some limitations from my study: - There are no previous studies done in Tanzania to assess the prevalence of substance use other than alcohol among Police Officers. For this reason, there was no information and relevant experience to build on in conducting the study and formulating the implications of the findings.

Use of self-administered questionnaires lead to low response rate (90.4%) as the remaining percentage of the respondents (9.6%) did not complete questionnaires hence led to a significant number of missing data, this might have affected the quality of the results. As a way to compensate for this, 120 more questionnaires were added to the original sample size (430) and hence made a total of 550 questionnaires.

Some participants provided socially desirable responses because alcohol and illicit substance use are against police code of conduct. The study was done among Police Officers in Urban setting making it challenging to generalize for all Police Officers in Tanzania. In addition, there could be recall bias because some information necessitated the participants to recall events of the past in which case, they might not be that accurate in recalling hence give unreliable information

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