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EDITORIAL

Globally Celebrated Health Days

By ML Mazaba

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Globally dedicated days or periods are scheduled to promote important public health issues and create awareness to the general public and health practitioners. United Nations member states subscribe to celebrating health days recognized and mandated by the World Health assembly. In 2017, WHO recognized and celebrated nine (9) global health days including World Tuberculosis Day, 24th March; World Health Day, 7th April; World Immunization Week, 24th – 30th April; World Malaria Day, 25th April; World No Tobacco Day, 31st May; World Blood Donor Day, 14th June; World Hepatitis day, 28th July; World Antibiotic Awareness Week, 13th – 19th November and World AIDS Day, 1st December [1]. However, beyond this are more health days celebrated by many countries.

Generally, it is agreed that these days offer an opportunity to raise awareness and understanding of various health issues. These platforms may be used for advocacy, resource mobilization and policy information.

In our previous issues, we published articles including editorials, policy briefs and original articles relating to health days in commemoration, in particular, World Malaria day and No Tobacco Smoking day. You may visit our archives to refresh your memory. In this issue, The Health Press – Zambia team and its Editorial board, joins Zambia in celebrating the World Antibiotic Awareness Week that fell through the 13th to 19th November, 2017. We note the progress made in mitigating the Antimicrobial Resistance (AMR) issues challenging the country.

AMR is a global public health threat that needs an urgent multi-sectoral approach to tackle this major problem. Antimicrobials, most of which were discovered in the 20th Century played an effective role in reducing morbidity and mortality among most populations. However, according to a book publication by the World Health Organization (WHO), noted recently is the increasing numbers of Antimicrobial Resistant Organisms globally. The book review indicates the growing concerns surrounding the widespread resistance citing how common disease-causing bacteria are resistant to a variety of antibiotics [2].

Zambia responded to the call from WHO for all countries to take quick action in mitigating the problem of AMR. In this regard, a National Action Plan (NAP) on AMR has been developed, providing a 10-year framework that includes a multi-sectoral 'One Health' approach. Major players identified in Zambia include representatives from the approach embracing human, animal, agriculture and environment sectors. For details of the NAP please read Zambia Successfully Launches the First Multi-Sectoral National Action Plan on Antimicrobial Resistance (AMR) in this issue.

In this issue we also feature a paper on 'Prevalence and correlates of tobacco smoking among prisoners at Kamfisa correctional facility, Kitwe Zambia. The paper makes good reading and reveals the high prevalence rate of over 50%. This is more worrying even for those who do not smoke as they are exposed to second hand smoke. A study within another African country, Ethiopia had a lower prevalence rate of 21% among prisoners across 9 major prisons in the Northern region [3]. The paper in this article sites gender and knowledge of effects of passive smoking as being independently associated with smoking among prisoners. The paper also reports a prevalence of close to 9% among the general population in Kitwe where the prison is situated. This is not a surprise. Other studies have determined higher prevalence rates among prisoners than in the general population. A study comparing smoking between the incarcerated and non- incarcerated showed the incarcerated more than two times likely to smoke than the general population [4]. These figures are alarming especially that smoking is a known risk factor for poor health outcomes among prisoners [3]. What the paper did not determine was whether the habit was from before being incarcerated or not. I suppose that is a story for another day.

A Cholera outbreak was declared on 6th October in Lusaka, Zambia. The outbreak continues to propagate and the risk analysis indicates poor water and sanitation conditions as a major player in this outbreak. A multi-sectoral approach has been put in place to mitigate the outbreak: provision of free clean and safe water, solid waste management, desludging pit latrines, contact tracing and health promotion among other interventions. As at 20th December 2012, a cumulative of over 900 cases had been recorded. For a detailed report on the outbreak please read in the issues 'Summary report of cholera outbreak in Lusaka district as of 18th December 2017' and for updates on the situation, you may access the daily situational reports on our website.

Soon, we will be publishing a monthly IDSR bulletin on along out monthly issue. In the meantime, connect with our surveillance data informed weekly Integrated Disease Surveillance and Response (IDSR) weekly bulletin on our website.

This is our last issue of the year. It has been a pleasure journeying with you on this inaugural year. Of course, we have had challenges, more so with getting adequate people to review the submitted articles. May I take this opportunity to thank all those that have assisted in the review process and all the authors who saw it fit to publish with us. We look forward to a smoother process next year aiming at publishing a monthly issue.

From *The Health Press - Zambia* Team and its Editorial Board we wish you all a MERRY CHRISTMAS and BLESSED NEW YEAR. We look forward to giving you more reads in 2018

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PERSPECTIVES

Zambia successfully launches the first multi-sectoral national action plan on antimicrobial resistance (AMR)

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Zambia has adopted the "One Health" approach in the fight against Antimicrobial resistance (AMR) and has through a consultative process of all line Ministries and cooperating partners, successfully formulated a ten (10) year national action plan (Multi-sectoral AMR National Action Plan 2017) that will guide the country's response to combating AMR. The multi-sectoral AMR NAP is intended to institute strategic interventions in all key sectors relevant to this fight, that is, the human, animal, plant, and environment sectors.

The main objective of the multi-sectoral Antimicrobial Resistance National Action Plan is to provide a coherent framework for combating AMR using the "One Health" approach embracing human, animal, agriculture and environment sectors in Zambia from 2017 to 2027.

The AMR-NAP outlines the status quo and acknowledges challenges of antimicrobial resistance (AMR) in Zambia among its population estimated at about 16,500,000 people in 2016. Excessive or inappropriate use, among other problems that can lead to the emergence of microbial resistance, have been documented.

Furthermore, the plan outlines the Country response in which various stakeholders have been identified and also provides for a governance and leadership structure; strategic plan; operational plan and

"The government under the able leadership of the President of the Republic of Zambia, His excellency Mr. Edgar Chagwa Lungu has resolved to act decisively to combat Antimicrobial Resistance using the one health approach" – Dr Chitalu Chilufya, MP

budget estimated at US$ 17,893,100 and, monitoring and evaluation plan.

The focus areas that have been addressed in this plan include; awareness and education, surveillance and research, regulation, infection prevention, sanitation and hygiene, optimising drug use and investment in research and development.

The multi-sectoral AMR NAP which was earlier this year, presented to the World Health Assembly (WHA) of May 2017, by the Honourable Minister of Health, Dr Chitalu Chilufya, MP was officially launched on 14th November,2017 at hotel intercontinental in Lusaka. Speaking during the launch, Dr Chilufya said Government, has resolved to act decisively to combat antimicrobial resistance.

In the spirit of 'one health', the launch was attended by two other honourable Ministers, the honourable Minister of Fisheries and Livestock, Mr Micheal Zondani Jay Katambo, Mp and the honourable Minister of

Water development, Sanitation and Environmental protection, Mr Lloyd Mulenga Kaziya, MP who pledged total commitment to the implementation of the Zambian Multi-sectoral AMR NAP in order to ensure that the environment, every human, animal and crop life is protected from infections caused by resistant organisms.

Figure 1 the honourable Minister Health Dr Chitalu Chilufy MP (Centre), flanked by the honourable minister of Fisheries and Livestock, Mr Micheal Zondani Jay Katambo, Mp (right) and the honorable Minister of Water development, Sanitation and Environmental protection, Mr Lloyd Mulenga Kaziya, MP (left), jointly cut the ribbon at the launch while The National AMR focal point, Ms Otridah Kapona looks on.

Also present during the launch were their excellencies World Health Organisation country representative Dr Morkor Newman Owiredu and Food and Agriculture Organisation of the United Nations Country representative, Dr George Okechi. And speaking on behalf of the tripartite and other cooperating partners, FAO county representative reiterated the need to develop at a national level, a One Health National Action Plan (NAP) – as required under the Global Action Plan as key to addressing AMR in Zambia.

He further restated FAO's commitment to support implementation of the food and agriculture components of the National Action Plan in partnership with the Ministry of Fisheries and Livestock, the Ministry of Agriculture as well as the Ministry of Health and in close collaboration with the WHO, OIE and other national stakeholders. This will include support for AMR surveillance in the food and agriculture sectors, the review of relevant national policies and legislation and promotion of good practices in food and agriculture in order to minimize the threat of AMR. Antimicrobial resistance (AMR), the ability of a microorganism to withstand treatment with an antimicrobial drug to which it was previously sensitive, has for several decades been a growing threat to the effective treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi. The magnitude of the problem, the impact of AMR on human health, the costs for the health-care sector and the wider societal impact are potentially immense.

"Once again as the tripartite partnership on AMR, we wish to reiterate our continued support to the Government of Zambia for the implementation of the National Action Plan (NAP), which is being launched today."

In Zambia, like in many other countries, there is emerging evidence of antimicrobial resistance (AMR) in several pathogens. The University Teaching Hospital, the highest-level hospital in Zambia has been detecting multi-drug resistant pathogens, resistant to the first, second and third line antimicrobial agents which has left very limited options for antimicrobial therapy for infectious diseases. Superbugs, which are difficult to treat have been detected, these include pathogens such as Methicillin Resistant Staphylococci (MRSA), Extended Spectrum Beta-lactamase producing *Klebsiella pneumoniae*, and other multidrug resistant enterobacteria. High resistance to most antibiotics used to treat serious conditions such as blood stream infections have been reported. Resistance as high as 80% ciprofloxacin, ceftriaxone 90%, and Gentamicin 70%,

has been reported in some blood stream strains with very limited expensive options for therapy [1].

Join the fight against AMR and let us together, work towards a world free from fear of untreatable Infections

Globally, it is estimated that AMR will be responsible for up to 10 million deaths annually by 2050 if nothing is done to contain and prevent its spread [2], with about 4,150,000 deaths occurring in Africa. Therefore, AMR is currently a major emerging international public health concern with potential to slow down human development (SDG-3).

Antimicrobial Resistance has also affected Global Gross Domestic Products (GDP) and is expected to decrease by US$ 100 Trillion (3.5 %) by 2050. The cost will be more than 50 times the expected economic output of sub-Saharan Africa.

The use of antimicrobials in all sectors, has come along with the rise in Antimicrobial Resistance and if we fail to act, we will go back into the dark ages of medicine where the treatable infections and injuries will kill once again, and scarcity of food will haunt us.

Because antimicrobial resistant organisms have the potential to move between food producing animals and humans by direct exposure or through the food chain or the environment, AMR is therefore, a multi-sectoral problem encompassing the interface between humans, animals and the environment (FAO,2015). The fact that human and veterinary health, food and feed production systems and agro-ecological environments all contribute to and are affected by AMR, indicates the need for multi-sectoral and multi-dimensional "One Health" approach to curb its occurrence. The FAO/OIE/WHO tripartite, together with public and private organizations, share responsibilities for addressing global activities regarding AMR at the animal-human-ecosystem interfaces.

It is therefore important that, as the country moves into implementation, all stakeholder Ministries and Institutions key to the fight against AMR come on board to ensure successful implementation of the multi-sectoral AMR NAP.

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OUTBREAK REPORT

Summary report of cholera outbreak in Lusaka district as of 18th December 2017

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Introduction

The following is an epidemiological summary of data extracted from the Ministry of Health's integrated disease surveillance and response (IDSR) system for the period 4th October 2017 to December 2017. The Zambian ministry of health declared a cholera outbreak in Lusaka on 4th October 2017.

Methods

The data used was extracted from the Ministry of Health's integrated disease surveillance and response (IDSR) system at the Zambia National Public Health Institute (ZNPHI), covering the period 4th October to 18th December 2017. An epidemic curve by week of alert was constructed for immediate notifications received in R statistical software using the *epitools* package. Only immediate notifications were included to determine the temporal pattern of cholera outbreaks during this period. To determine the spatial distribution of cholera cases, point location of cholera alerts over the period of interest were plotted in quantum GIS (QGIS). Descriptive statistics of the other variables
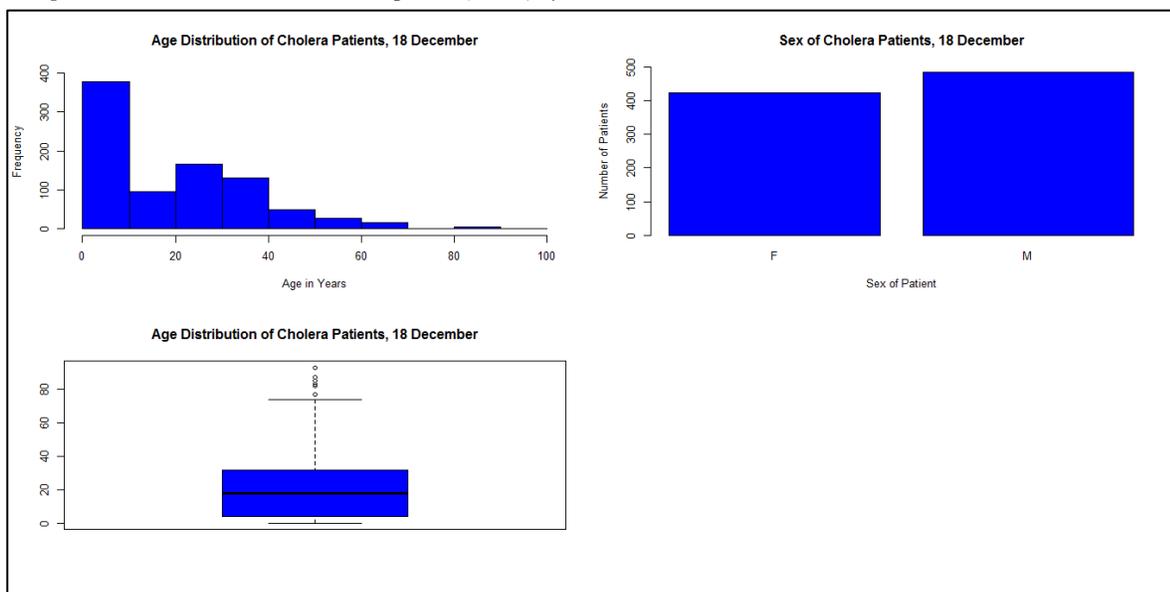
Figure 1 Age and Sex distribution of cholera patients, 18th December 2017

Table 1 Distribution of cholera cases in Lusaka sub-districts as of 18th December 2017

SUB-DISTRICT	BAULENI	CHAWAMA	CHELSTONE	CHILENJE	CHIPATA	KANYAMA	MATERO	TOTAL
CASES RECORDED	6	15	1	1	548	256	81	**908**

Figure 2 Spatial pattern of cholera cases for the period October to December 2018 (Provincial boundaries also shown).

Figure 3 Epidemic curve of Cholera cases provided by MoH Lusaka sub-districts through the IDSR for the period 4th October to 18th December 2017 (weekly notifications).

were carried out, and results have been reported in this analysis.

Results

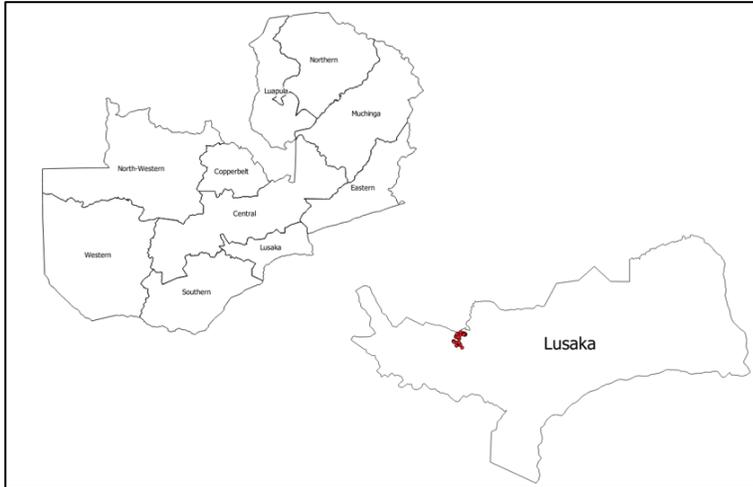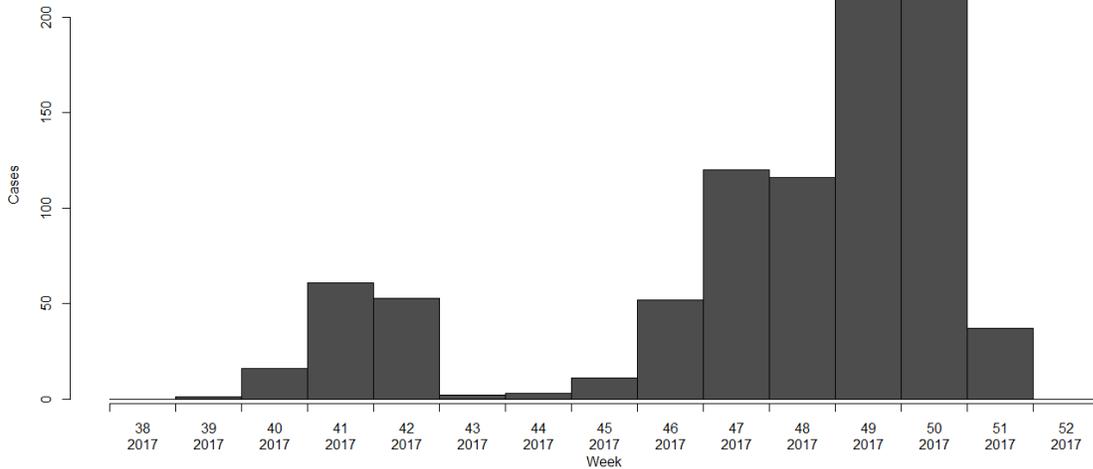A total of 908 notifications were received during this period. Table 1 shows the distribution of cases recorded by sub-district in Lusaka district. Figure 1 shows the demographic characteristics of cholera patients in Lusaka district. The average age of patients was 20 years. There were 423 female patients and 485 male patients. Figure 2 shows the spatial distribution of cholera cases in Lusaka province. Majority of cases fall in Chipata sub-district of Lusaka district. The analysis further showed two epidemic waves of cholera with the second wave still rising (Figure 3). Among the country alerts, the highest were from Chipata sub-districts with 548 cases.

Summary

The cholera outbreak in Lusaka is still on going. At the time of authoring this report, there were a total of 50 new cases (Figure 3, week 51) and 75 cases under treatment. Statistics further indicate that 2.63% of cholera cases result in death. The main driver of the outbreak is the use of water drawn
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from shallow wells for everyday household use and drinking. Microbiological analysis of this water has found that it is contaminated with cholera causing germs. Control measures put in place include the provision of clean and safe water to affected communities for free, distribution of chlorine to households, burying of shallow wells, health information through print and electronic media as well as the setting up of an information management system IMS both centrally (ZNPHI) and in the affected sub-districts. The national public health emergency operation system (PHEOC) at ZNPHI is in partial activation mode in view of the current outbreak. While cases outside Lusaka district have been recorded, these have all been epidemiologically linked to the Lusaka outbreak. All cases outside Lusaka have been contained and there is no evidence of further outbreak propagation

Further Resources

The Zambia National Public Health Institute will be publishing daily situation reports (SitReps) on the ongoing outbreak. The SitReps can be accessed online on The Health Press Zambia website.

RESEARCH REPORT

Prevalence and correlates of tobacco smoking among prisoners at Kamfinsa correctional facility, Kitwe, Zambia

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Smoking tobacco is an integral part of prison life. Although, tobacco consumption is a major risk factor for mortality, little has been done to prevent smoking in prisons. There is a high prevalence of tobacco use in prisons, which may be associated with several factors such as stress, anxiety about the case and sentence etc. In Zambia, the prevalence of tobacco consumption has increased over the past decade from 13.7% to 23.8% among men and 0.5% to 0.7% among women (7). Hence, the aim of the study was to determine the prevalence and correlates of smoking among prisoners at Kamfinsa Prison in order to assess the magnitude of the problem and identify possible targets for interventions.

The study used a modified WHO STEPwise approach for chronic disease risk factors surveillance with a target sample size of 384 with 89.3% males. Overall, 50.8% of the participants reported using some form of tobacco in the past six months (cigarettes 46.9%, pipe 0.3%, smokeless tobacco [snuff] 3.6%). Among men, 51.6% reported using tobacco and among women, 43.9% reported using tobacco. Among male tobacco users, 99.4% smoked cigarettes, whereas among female tobacco users, only 22.2% smoked cigarettes. Males were 16 (95% CI [5.1-53.0]) times more likely to smoke compared with females, and participants who knew that second hand smoke is harmful were 3.4 (95% CI [1.1-10.0]) times more likely to smoke than those who didn't know. Prevalence of cigarette smoking is high among prisoners at Kamfinsa correctional facility. There is a need for additional studies in this area to inform efforts targeted at preventing smoking in prisons.

Introduction

Universally, tobacco consumption is a major risk factor for mortality [28] with an estimate of five million people killed yearly worldwide [4]. Smoking is generally known to cause death from cancer, cardiovascular diseases, and respiratory conditions [3]. The World Health Organization (WHO) reports that smoking is the second leading cause of death not only in developed countries but also in developing nations [5]. This is because tobacco smoking is increasing in developing countries [6], and Zambia is no exception, as the prevalence of smoking has increased over the past decade from 13.7% to 23.8% among men and 0.5% to 0.7% among women [7].

Tobacco is a psychotropic substance widely used by prisoners; reported rates of use range from 64 to over 90% depending on the country and the setting [8]. The factors that prompt cigarette smoking within prisons are several: boredom, lack of freedom, lack of activities, the missing of family and friends, long hours indoors, also anxiety about the case and sentence, and prevalence of stress was 77% in Poland [2] [9], [10].

A study in India reported a prevalence of tobacco smoking among the prisoners of 93% [1]. In addition, a study in Poland showed a prevalence of cigarette smoking among Polish prisoners of 81% [2].

In Zambia the prevalence of tobacco smoking has increased [7]. Studies from two big cities; Kitwe and

Table 1 Distribution of age by gender for the sampled population

Factor		Total n (%)	Male n (%)	Female n (%)	P Value
Age (yrs)	<30	136 (35.5)	119 (34.8)	17 (41.5)	0.40
	30+	247 (64.5)	223 (65.2)	24 (58.5)	

Table 2 Tobacco use stratified by gender

Factor	Total	Male	Female	P values
	n (%)	n (%)	n (%)	
Tobacco Use				0.35
Yes	195 (50.8)	177 (51.6)	18 (43.9)	
No	189 (49.2)	166 (48.4)	23 (56.1)	

Table 3 Attitudes towards tobacco use among the sampled population

Factor		Total n (%)	Male n (%)	Female n (%)	P Value
Worries	Yes	106(54.6)	97(55.1)	9(50.0)	0.81
	No	88(45.4)	79(44.9)	9(50.0)	
Relax	Yes	105(53.8)	97(54.8)	8(44.4)	0.40
	No	90(46.2)	80(45.2)	10(55.6)	
Stress	Yes	126(64.9)	120(68.2)	6(33.3)	0.003
	No	68(35.1)	56(31.8)	12(66.7)	
Enjoyable	Yes	122(62.6)	112(63.3)	10(55.6)	0.52
	No	73(37.4)	65(36.7)	8(44.4)	
Tough	Yes	72(36.9)	66(37.3)	6(33.3)	0.74
	No	123(63.1)	111(62.7)	12(66.7)	

Table 4 Frequency of cigarette smoking

Factor		Frequency
Cigarette Smoking index	10 or fewer	71.3%
	11 to 20	15.5%
	21 to 30	7.2%
	31 or more	6.1%
	31 or more	2.9
When started smoking	Before imprisonment	169(86.7%)
	After imprisonment	26(13.3%)
How often smoked	Rarely	23(11.8%)
	Occasionally	39(20.0%)
	Daily	133(68.2%)
Smoking inside the cell	Yes	9(4.6%)
	No	185(94.9%)

Lusaka, have shown an increase in tobacco smoking, with Kitwe city having a prevalence of 8.7% overall (18.1% among males and 1.8% among females), and with the capital with an overall prevalence of 6.8% (17.5% among males and 1.5% among females) [11]. These findings were in the general population, but there is also a need to conduct similar studies in prisons because the worldwide findings on tobacco smoking are that prevalence rates are higher among prisoners than the general population and are increasing [8, 12]. This is because prisoners use tobacco due to its biological effects such as feelings of well-being and reduced anxiety, depression, and stress [13]. But the continual use of tobacco by prisoners has been reported to contribute to violence, antisocial personality disorder, psychotic illness [14] and increased effects of licit and illicit drug use [15]. This may disturb the prison atmosphere. Hence, tobacco use is contrary to the motto of the Zambian prisons, "Correction to service" i.e., to provide quality correctional services.

Zambia has a population of 13 884 000, and the prevalence of tobacco use among male youths is 24.9%, female youths 25.8, and among adult males 24.3% and adult females 1.8% [17]. Zambia has listed public places with smoke-free legislation and nothing is said about prison areas. Yet, in May 2008, Zambia issued statutory Instrument #39, 2008 [18], making all public places smoke-free, "public place" means any building, premises, conveyance or other place to which the public has access. "Many jurisdictions worldwide have implemented smoke-free laws that apply to indoor public places and workplaces", [5]. However, prisons are often exempt. "Prisons are public places, workplaces both for prisoners and prison staff and homes of the inmates". Therefore, all smoke-free policies and action taken to lessen the exposure to environmental tobacco smoke should also take these areas into account, [16].

Prisoners need good public health as much as the general population needs it. Good prison health is good public health [19].

Table 5 Bivariate analysis of Factors associated with tobacco smoking

Factor		Tobacco smoking			P Value
		Total n (%)	YES n (%)	NO n (%)	
Sex	Male	343(89.3)	176(97.8)	167(81.9)	<0.01
	Female	41(10.7)	4(2.2)	37(18.1)	
Age (years)	<30	136(35.5)	71(39.4)	65(32.0)	0.13
	30+	247(64.5)	109(60.6)	138(68.0)	
Worries	Yes	106(54.6)	99(55.3)	7(46.7)	0.52
	No	88(45.4)	80(44.7)	8(53.3)	
Relax	Ye	105(53.8)	100(55.6)	5(33.3)	0.10
	No	90(46.2)	80(44.4)	10(66.7)	
Stress	Yes	126(64.9)	122(68.2)	4(26.7)	<0.01
	No	68(35.1)	57(31.8)	11(73.3)	
Enjoyable	Yes	122(62.6)	115(63.9)	7(46.7)	0.19
	No	73(37.4)	65(36.1)	8(53.3)	
Knowledge of harm on active smoking	Yes	171(87.7)	159(88.3)	12(80.0)	0.40
	No	24(12.3)	21(11.7)	3(20.0)	
Knowledge of harm on passive smoking	Yes	159(81.5)	157(87.2)	2(13.3)	<0.01
	No	36(18.5)	23(12.8)	13(86.7)	

Hence, the objective of the study was to determine the prevalence and correlates of tobacco smoking among prisoners at Kamfinsa State correctional facility in order to assess the magnitude of the problem and identify possible targets for interventions.

Table 6 Factors associated with tobacco smoking. Adjusted odds ratios

Factor		AOR (95% C.I.)
Knowledge of harm	Yes	3.4 (1.1-10.0)
about passive smoking	No	1
Sex	Male	16.4 (5.6-53.0)
	Female	1

Methods

A cross sectional study was conducted at Kamfinsa state correctional facility. The study used a modified WHO STEPwise approach for chronic diseases risk factor surveillance [29] giving a sample size of 384 prisoners.

Kamfinsa state correctional facility was strategically picked as the site of the study because it is the largest correctional facility in Copperbelt Province having both male and female wings and inmates are from different parts of the country. A systematic sampling technique was used to select participants, as all elements had the same probability of selection. Sampling was irrespective of sex.

A structured questionnaire was used to collect data. The questionnaire was divided into the following sections: tobacco use, pattern and forms, smoking environment, source and accessibility of tobacco, attitudes towards tobacco use, and knowledge of adverse health effects. The questionnaire was self-administered under guidance of the officer in charge.

Data was entered in Epi Info version 7.0. Then the validated data were analysed using SPSS version 20. The analysis included running frequencies, cross-tabulations, bivariate analysis, and logistic regression. We also obtained adjusted odds ratios (AOR) and their 95% CIs after considering only the factors in the model that were significantly associated with the outcome in the bivariate analyses.

The research proposal was reviewed and approved by Tropical Disease Research Center Ethics Committee at Ndola Teaching Hospital. Authorization was obtained from the headquarters of Zambia prisons service in Kabwe. Only persons who consented were enrolled into the study and further information was given to participants after consenting that participating in the study was purely voluntary and participants were free to withdraw at any time without having to give an explanation. All questionnaires were strictly confidential documents. No one, except those who organized the research, was able to view the documents.

Results
Demographics

A total of 384 individuals participated in the survey, of which 89.3% were males. Age was not associated with gender (p=0.40) as shown in Table 1.
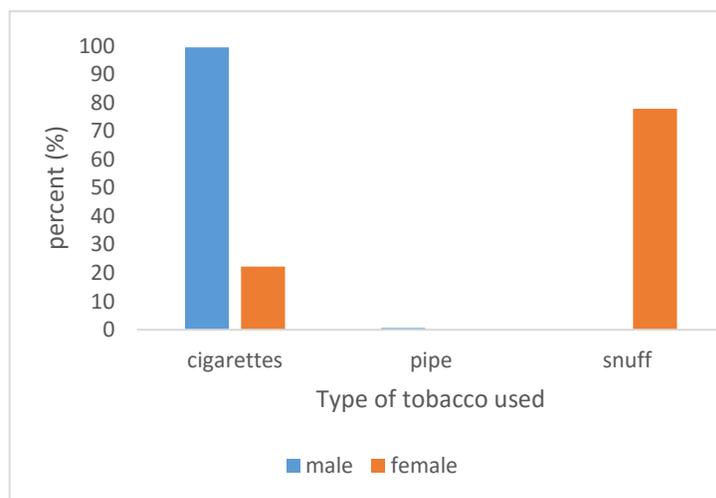

Figure 1 Types of tobacco used by gender among persons reporting tobacco use

Tobacco Use Prevalence

Overall, (Table 2) 50.8% (cigarettes 46.9%, pipe 0.3%, smokeless tobacco [snuff] 3.6%) of the participants reported using some form of tobacco with no gender difference (51.6% among males, and 43.9% among females; p=0.35). Among tobacco users, current use of cigarettes was estimated at 92.3%, and 7.2% used smokeless tobacco, and 0.5% used a pipe. Males tended to smoke cigarettes

while females used snuff (Figure 1). However, further analysis is based on cigarette smoking. Among those who smoked cigarettes (Table 4), most (71.3%) smoked fewer than 11 cigarettes per day; 86.7% started smoking before imprisonment; 68.2% were daily smokers, and only 4.6% smoked inside the cell.

Males and females had similar attitudes towards tobacco use (Table 3) except for stress; more males than females indicated that smokers are often stressed (p<0.01).

In bivariate analysis (Table 5), gender, knowledge that passive smoking is harmful, and stress were significantly associated with tobacco smoking.

Correlates for Current Tobacco Smoking

Independent factors associated with smoking were gender and knowledge about second hand smoking (SHS) effects (Table 6). Male respondents were 16.4 times more likely to smoke compared with female respondents. Comparing with respondents who didn't have knowledge about passive smoking, those who had knowledge were 3.4 times more likely to smoke.

Discussion

We found a current smoking prevalence of 50.8% (51.6% among males and 43.9% among females) i.e. 46.9% smoked cigarettes, 0.3% pipe and 3.6% used smokeless tobacco (snuff). Comparing our finding with those from the general population [11] that used the same WHO STEPwise approach for chronic disease risk factor surveillance, we note that our findings were higher than those from Kitwe (8.7% overall, 18.1% males, 1.8% females), and Lusaka (6.8% overall,17.5% males, 1.5% females). The findings are in conformity with the worldwide findings on tobacco smoking that the prevalence rates are higher among prisoners than the general population [8], [12].

The current study also found that the prevalence of smoking was higher among males than females. Such results have been reported in the United States [20], [21], Greece [22], France [23] and Italy [24]. Though, scanty

data are available for the prevalence of smoking among women in prisons, a study in Australian prisons reported a high prevalence of smoking among females [13]. Values are similarly high in the United Kingdom [25], and Lithuania [26]. Interestingly, our study further found that, women used much more snuff (smokeless tobacco) than cigarettes.

We also found that males were 16.4 times more likely to smoke cigarettes than females, and those who knew about the harmful effects of passive smoke were 3.4 times more likely to smoke than those who had no knowledge of SHS effects. There is a high prevalence of exposure to SHS inside prisons, which is two to four times higher or to magnitudes that tally with the proportion of non-smokers outside prison [27].

This study has several limitations. The study was done at Kamfinsa State correctional facility; hence, the results can only be generalized to the sampled population. Furthermore, the study didn't probe on why women use snuff more than cigarettes in prisons. Factors associated with women using snuff were not determined in this study. In addition, because of the small number of female respondents [41], the confidence limits for the proportions of women who used various types of tobacco products and for the proportions of women with various attitudes toward tobacco use are large.

The prevalence could have been underestimated due to the following factors. The sample selection was purposive which does not eliminate selection bias. It was noted that prisoners who were incarcerated because of trading tobacco refused to take part in the study, and these were likely to be smokers. Therefore, the prevalence of smokers could have been underestimated.

Conclusion

Prevalence of tobacco use is high at Kamfinsa State correctional facility, especially among males. Considering

the emerging threat of non-communicable disease burden, the government of Zambia should seriously consider strict enforcement of tobacco control in state correctional facilities. Further research on epidemiology of tobacco use and monitoring of its use in prisons might help in curbing smoking.

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