

Mental Health and Healthcare Provision in Zambian Correctional Facilities

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Abstract

Objective: The aim was to determine the prevalence of Axis-1 mental disorders and healthcare provision in Zambian correctional facilities.

Purpose: To determine the prevalence rate of Axis-1 disorders, mental health problems and access to mental healthcare provision in Zambian correctional facilities.

Methods: 240 inmates from three different types of correctional facilities namely: Two maximum security facilities, one medium and minimum correction facilities respectively. 240 inmates were interviewed using the Mini Neuro-psychiatric Interview, Warwick-Edinburgh Mental Well-being scale and demographic questionnaire.

Results: The prevalence was 71% for current, past and lifetime Axis-1 disorders. However, for current Axis-1 disorders, the prevalence rate was 46.2%. Combined (current and past) Axis-1 disorders prevalence was 63.3%. Major depressive episode current was the most prevalent 47, 19.6%, psychotic disorder current 38, 15.8%, psychotic disorder lifetime 18, 7.5%. Major depressive episode past 17, 7%, substance dependency current and Post-traumatic disorder at (14) 5.8%, Manic episode current 5, 2.1% and the rest below 2% respectively. With WEMWBS mean at 50.7, when the mean scores from the three correctional facilities were statistically compared, results indicated that inmates from minimum (50.7) showed good and stable mental well-being compared to medium and maximum correctional facilities whose inmates recorded poor mental well-being.

Conclusion: There is high prevalence of Axis-1 disorders in Zambian correctional facilities. The majority of these inmates remain undiagnosed, untreated and stigmatised. Inmates in Zambian correctional facilities are not screened for mental health problems and disorders at point of entry, during incarceration and exit point. Mental healthcare provision is almost nonexistence across all the correctional facilities. There is urgent need for the line ministries and other stake holders to refocus their attention to greater awareness and provision of mental health services focusing on holistic interventions that address mental health and disorders in Zambian correctional facilities.

Keywords: Mental health; Mental disorder; Prevalence; Correctional facility; Inmate; Zambia

Introduction

Zambia's general population is rapidly growing with estimated figures at 17,816,270 [1]. Interestingly, correctional facility population is equally increasing. Correctional facility statistics indicate that total population (including pre-trial detainees/remand correctional facility is 20,000; correctional facility population rate is 125 per 100,000, pre-trial detainees/remand 23.2% of the correctional facility population [2]. The number of female inmates is at 2.5% of the total correctional facility population and 1.0% of the total correctional facility population accounting for juveniles. Foreign inmates accounted for 2.1% of the total percentage of correctional facility population. The report indicates that by 2013, Zambia had 54 standard correctional facilities, 33 open-air correctional facilities and 1 juvenile reformatory in Livingstone [3]. The official capacity of the Zambia correctional service is estimated at 8,100, however, the total number of incarcerated inmates currently stands at 20,000 [4]. Currently, there is no available data on the prevalence of mental disorders, mental health problems and healthcare provision among the 20,000 inmates.

International studies have demonstrated a high prevalence rate of mental health problems and disorders in correctional facilities compared to the general population globally. It is estimated that globally, mental disorders account for 12% of the burden of diseases and this is likely to keep on increasing every year especially in countries with limited resources like Zambia to 15% by 2020. The World Health Organisation (WHO) estimates that globally, about 25% of a country's population will suffer from a mental disorder at some point in their lives. It has also been indicated that at any point in time, it is estimated that 10% of

people suffer from a mental disorder with 1% suffering from a severe form of mental disorder [5]. Applying the WHO global estimates to Zambia both at national and correctional facility levels based on recent population census (17,816,270 and 20,000) respectively, suggest that 1,781,627 Zambians may have some form of mental disorders and about 2,000 inmates could be suffering from some form of mental disorders. For example, 66% of Zambian inmates are said to be suffering from psychological distress [6].

2005 data from USA showed that 56% approximately 1,255,500 state correctional facility inmates, 45% of 156,600 federal inmates and 64% of the 747,500 local jail inmates had histories or symptoms of mental health problems. The relationship between mental disorders and incarceration is not only unique to USA, but also similar with global trends. For example, among 189 inmates examined in Melbourne, Australia, 23% had current mood disorders and 3% had psychotic disorders; overall, 82% had at least 1 lifetime mental disorder, 26% had at least 2 lifetime disorders, and 69% had at least 1 lifetime substance

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use disorder [7]. Statistics from international studies suggest that more people with mental disorders are in correctional facilities rather than hospitalized. This situation is suggestive of correctional facility establishments becoming defacto mental health hospitals.

A study conducted in South African Durban prison, demonstrated that 55.4% of inmates had an Axis-I disorders. The commonest disorders being substance and alcohol use disorders (42.0%). 23.3% of inmates were diagnosed with current psychotic, bipolar, depressive and anxiety disorders. 46.1% were diagnosed with antisocial personality disorder. Majority of inmates diagnosed as having an Axis-1 disorder, were neither diagnosed nor treated in the correctional facilities [5]. The current study, like the South African, assessed for Axis-1 mental disorders using MINI from (DSM-IV-R and ICD-10). A similar study in Ethiopia, found the prevalence of psychological distress among inmates to be 83.4% (95% CI 80.6, 86.0%). Long duration of stay in the correctional facility (AOR=0.95; 95% CI 0.89–0.97), low to no satisfaction with correctional facility services (AOR=3.01; 95% CI 1.38–6.51), and place of correctional facility were factors significantly associated with psychological distress among inmates [8]. Mental disorders in both general and correctional facility populations have been stigmatised, abused, neglected and sometimes left untreated in most African countries

Mental health in Zambia is governed by an outdated legal framework; the Mental Act of 195 [9]. The Auditor General's report of July 2014 on rehabilitation and reintegration of inmates reiterated that the department of correction services operated under an outdated legislation; the prisons Act Cap 97 of the Laws of Zambia; which did not have adequate provisions to guide Zambia Correctional Service carrying out correctional services. Despite global recognition that inmates are a high risk and vulnerable population, little seem to have been done in Zambia to address mental health problems. In a study by Omar et al., results show that mental health policies in Ghana, South Africa and Zambia are weak, and are still at draft form. Mental health in Zambia has remained low on policy agenda due to social stigma and lack of information. Currently, no mental health policy framework to guide the Zambia Correctional Service in addressing the mental health needs of inmates is in place and effective. At National level, the mental health policy was finalized in 2005 and approved. Unfortunately, plans for implementation have not been developed to date. This situation leaves the Zambia Correctional Services with a nonexistent mental health policy framework. Anecdotal data show that there are no mental health services in all the 87 correctional facilities around the country coupled by non-availability of data concerning the prevalence of mental health disorders among Zambian inmates.

Mental healthcare is almost non-existent in Zambian correctional facilities, this fact combined with broad societal misconceptions and legal inadequacies surrounding mental disorder mean that a huge proportion of the correctional facility population suffer from mental disorder and receive no treatment. Outside the general population, mental health services are highly centralized with only eight (8) hospitals offering mental health services in Zambia [10]. This situation has left correctional facilities with no access to mental health services especially rural based.

Methods

Subjects

Participants were from three different correctional facility levels.

Inmates in Zambia are separated according to the levels of security risks. Thus, 240 inmates were enrolled, 96 from maximum, 104 from medium and 40 from minimum correctional facilities respectively.

Study design

This was a cross-section point prevalence study. This is study 1 which collected data from three types of correctional facilities (minimum, medium and maximum) based on correctional facility security levels. Study 2, developed specific interventions, implementation and evaluation of effectiveness of the intervention tools. Study 2 has just been completed and results are being analysed for publication.

Sample site

The sample sites were Kabwe and Lusaka based correctional facilities namely: Mukobeko and Mwembeshi (maximum-security) correctional facilities, Lusaka central correctional facility in Lusaka (Medium correctional facility) and Mwembeshi open air correctional facility (minimum correctional facility) in Lusaka respectively. Two maximum correctional facilities were selected in order to have equal representation of inmates because Mwembeshi maximum-security correctional facility does not house female, death row and life sentence inmates whilst Mukobeko maximum does. All the correctional facilities were selected based on the high numbers of incarcerated inmates with the help and approval of the Zambia correctional service headquarters.

Study sample

Sample size was calculated using the formula: $n = (z^2 \times p \times q / d^2)$ and increasing it by 10% to cater for participant's refusal. In the formula, n stands for the required sample size, " d " represents margin of error, which is set at 5%; " z " is set at 1.96 and p is the postulated prevalence of mental disorder in Zambian correctional facilities, which is at 63.1% [11], and q is $100 - p$. The study recruited 40 inmates from minimum correctional facility, 104 from medium correctional facility and 96 from both maximum correctional facilities (total 240).

Sampling frame

Inmates were classified according to age, gender, levels of education, length of prison stay, security level of the correctional facility, marital status before and whilst incarcerated, criminological characteristics: Violent crimes (e.g. Murder, burglary, assault, armed robbery, manslaughter, rape, defilement and indecent assault), Non-violent (e.g. fraud, theft, obtaining money by false pretence and housebreaking) and drug related crimes (e.g. possession of or dealing in illegal substances), first or repeat offenders, Axis-1 disorders. Stratified systematic random sampling was used in order to give equal chance to all inmates from different cells to participate.

Ethical considerations

The current study applied stringent ethical consideration rigorously because, WHO considers inmates to be a vulnerable population due to involuntarily institutionalisation and are thus prone to coercion and undue influence. Inmates have been subject and vulnerable to invasive research in the past, hence the need to be protected. WHO recommends that inmates should not be placed under pressure to participate in clinical trials, taking into account the principle that individuals deprived of their liberty may not be the subjects of medical research unless they freely consent to it and it is expected to produce direct and significant benefit to their health [12].

Inmates were randomly selected and counselled regarding their

ability to choose whether to willingly participate in the current study or not. They were informed that any information they would provide and disclose during the research would remain confidential and that they will remain anonymous. Information leaflets with all the relevant details were provided and each individual retained the right to withdraw from the study at any point in time without notice. The study was not physically invasive, as it involved interviews with the principal researcher only. Written Informed consent was obtained. The current study commenced after ethical approval from the University of Zambia Biomedical Research Ethics Committee (UNZABREC) and Ministry of Home Affairs through the Zambia Correction Service Headquarters in Lusaka. The information from the participants shall only be used for the purpose of the study and after the study; all sample materials shall be discarded (incinerated). The researcher was responsible for ancillary care but linkage and referral to appropriate care was made as necessary.

Instruments

Mini International Neuro-psychiatric interview (MINI) was used to screen inmates for the presence or absence of Axis-1 disorders. The MINI is designed as a brief structured diagnostic interview for major Axis-1 psychiatric disorders for DSM-IV-TR and ICD-10 assessing for 17 major mental disorders. Validity and reliability studies done indicate that it has acceptably high validation and reliability scores and can be administered within a short period. MINI was used because it has sections examining 17 major mental disorders: psychotic, Affective mood, anxiety, substance use, personality and eating disorders, which seem to be common mental disorders in correctional facilities and has been used in similar African correctional facilities (South Africa) like Zambia. There is also a brief screen for suicidality [13].

The Warwick-Edinburgh Mental Well-being scale (WEMWBS) was used to screen for general mental wellbeing among inmates. WEMWBS developed to enable the monitoring of mental wellbeing in the general population and the evaluation of projects, programmes and policies, which aim to improve mental wellbeing. WEMWBS is a 14-item scale with five response categories, summed to provide a single score ranging from 14-70. The cut-off point is 50.7, below indicates poor mental wellbeing and above means improved or stable mental wellbeing. The items are all worded positively and cover both feeling and functioning aspects of mental wellbeing. A socio-demographic survey was used to collected demographic and mental healthcare data.

Interviewing and enrolment process

The enrolment and interview process comprised four sections namely: demographic questionnaire, administration of MINI, administration of WEMWBS and signing of informed consent. The process started with the Principle Investigator (PI) giving a brief talk about the study to correctional facility authorities at the correctional health facility. PI was then given access to inmates (cell captains), cell

captains are in-charge of health matters in the cells. Cell captains went into their respective cells to disseminate and distribute information sheets to their cellmates. Inmates who volunteered to participate in the study registered at the correctional health facility for debrief with the PI. Volunteers were asked to sign a written informed consent and enrolled. Those who enrolled were screened for mental health problems and disorders. All inmates diagnosed with Axis-1 disorders and health problems were immediately initiated on psychotropic medication and mindfulness practice depending on the type of mental health problem and disorder. After initiation of psychotropic medication, inmates were then linked to psychiatric healthcare to the nearest facility.

Statistical analysis

Statistical analysis was done using Statistical Package for the Social Sciences (SPSS) version 16.0. Frequency table, bar and pie charts were used to describe categorical variables. Pearson's Chi-Square test was used to confirm the relationship between mental disorders and drug use. The confidence level was at 95% and a p value <0.05 was considered as statistically significant.

Results

Participant's socio-demographic characteristics

Majority of participants were married 54%, males, with highest level of education attained being primary school 50% (5-7 years), 20% reached senior secondary (10-12 years) and 10% post-secondary level of education (13 years and above). 61% of participants' occupation before incarceration was unskilled labour. Out of 240, 129 participants (majority) age range was between 20 and 35 years and came from medium correctional facility (Table 1).

Participant's criminological characteristics

Majority, 158 of inmates were incarcerated due to violent crimes (e.g. Murder, burglary, assault, armed robbery, manslaughter, rape, defilement and indecent assault), followed by non-violent crimes 66 (e.g. fraud, theft, obtaining money by false pretence and housebreaking), and drug-related crimes 15 (e.g. possession of or dealing in illegal substances). 8.3 percent were repeat offenders. Of the three types of crime, violent had many repeat offenders 12, compared to 4 inmates non-violent and drug related crimes respectively. There is a positive and significant relationship between violent crimes and recidivism. Inmates who committed violent crimes were more likely to reoffend than those who committed non-violent and drug-related crimes as confirmed by Chi-square $\chi^2 = 7.60$, $df = 2$, $p = 0.028$.

Prevalence rates

Overall, the prevalence rate was 71% for current, past and lifetime Axis-1 disorders. However, for current Axis-1 disorders, the prevalence rate was 46.2%. Combined (current and past) Axis-1 disorders

Age Range	Gender per correctional facility level					
	Minimum	Medium		Maximum		Total
	Male	Male	Female	Male	Female	
20-35	30 (75%)	47 (45%)	2 (2%)	49 (51%)	1 (1%)	129
36-45	7 (17.5%)	29 (28%)		26 (27%)	3 (3%)	65
46-65	3 (7.5%)	24 (23%)		14 (15%)		41
65+	0 (00%)	2 (2%)		3 (3%)		5
Total	40	102	2	92	4	240

(Minimum, Medium and Maximum=Levels of security correctional facilities)

Table 1: Age range and gender per correctional facility.

prevalence was 63.3%. Major depressive episode current was the most prevalent 47, 19.6%, psychotic disorder current 38, 15.8%, psychotic disorder lifetime 18, 7.5%, major depressive episode past 17, 7%, substance dependency current and post-traumatic disorder at (14) 5.8%, manic episode current 5, 2.1% and the rest below 2% respectively (Table 2).

Figure 1, shows the most prevalent Axis-1 disorders including suicidality across facilities. The most prevalent was major depressive disorder (current & past) 27%, suicidality (low, moderate & high) 21%, psychotic disorder current 16%, Psychotic disorder lifetime 8%, Substance dependency current and post-traumatic stress disorder current 6% respectively.

Table 3, indicates the prevalence of individual Axis-1 mental disorders across the three correctional facilities. Medium correctional facility had the highest prevalence of Axis-1 disorders with major depressive disorder current (29.8%) being the highest, psychotic disorder current (12%), Psychotic disorder lifetime (11%), substance dependency current (11%), post-traumatic stress disorder current (10%), major depressive episode past (8.7%), substance abuse current (2%) with panic disorder without agoraphobia current, obsessive-compulsive disorder current alcohol dependency current and anti-social personality disorder lifetime at (1%) each respectively. Maximum-security correctional facility had the second highest prevalence with (22%) psychotic disorder current, major depressive episode current (15.6%), psychotic disorder lifetime (7%), post-traumatic stress disorder current (4%), substance dependency current (3%), major depressive episode past (3%), anti-social personality disorder lifetime (2%) and substance abuse current (2%) respectively. Minimum correctional facility had the least prevalence with major depressive episode past (12.5%) and major depressive episode current (2.5%) respectively.

Suicidality prevalence rate

Table 4, shows suicidality prevalence rate across three levels of correctional facility. Total number of inmates with suicide risks was

AXIS 1- Disorders (DSM-IV-TR) and (ICD-10)	Prevalence rate
Major Depressive Episode Current	47 (19.6%)
Major Depressive Episode Past	17 (7%)
Manic Episode Current	5 (2.1%)
Panic Disorder without Agoraphobia Current	1 (0.4%)
Obsessive-Compulsive Disorder Current	1 (0.4%)
Posttraumatic Stress Disorder Current	14 (5.8%)
Alcohol Dependency Current	1 (0.4%)
Alcohol abuse Current	1 (0.4%)
Substance Dependency Current	14 (5.8%)
Substance abuse Current	4 (1.7%)
Mood Disorder with psychotic Features Lifetime	1 (0.4%)
Mood Disorders with psychotic features Current	3 (1.3%)
Psychotic Disorder Current	38 (15.8%)
Psychotic Disorder Lifetime	18 (7.5%)
Bulimia Nervosa Current	1 (0.4%)
Generalized anxiety disorder Current	1 (0.4%)
Anti-social personality disorder Lifetime	3 (1.3%)
	Total=170 (71%)

Table 2: Overall prevalence rate of Axis-1 disorders.

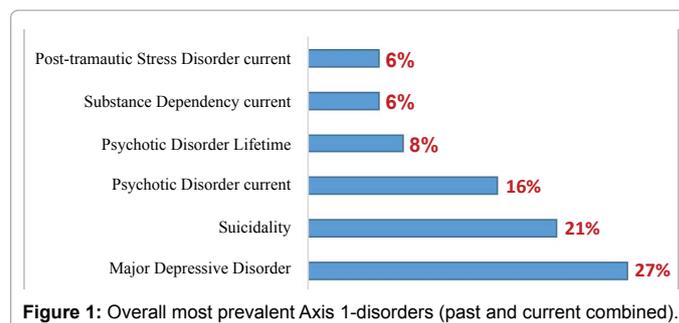


Figure 1: Overall most prevalent Axis 1-disorders (past and current combined).

AXIS-1 Disorders	Prevalence rate per correctional facility		
	Minimum	Medium	Maximum
Panic disorder without Agoraphobia current	0 (00%)	1 (1%)	0 (00%)
Obsessive-compulsive disorder current	0 (00%)	1 (1%)	0 (00%)
Posttraumatic stress disorder current	0 (00%)	10 (10%)	4 (4%)
Alcohol dependency current	0 (00%)	1 (1%)	0 (00%)
Alcohol abuse current	0 (00%)	1 (1%)	0 (00%)
Substance dependency current	0 (00%)	11 (11%)	3 (3%)
Substance abuse current	0 (00%)	2 (2%)	2 (2%)
Psychotic disorder current	0 (00%)	16 (12%)	22 (22%)
Psychotic disorder lifetime	0 (00%)	11 (11%)	7 (7%)
Anti-social personality disorder lifetime	0 (00%)	1 (1%)	2 (2%)
Major depressive episode past	5 (12.5%)	9 (8.7%)	3 (3.1%)
Major depressive episode current	1 (2.5%)	31 (29.8%)	15 (15.6%)
Manic Episode current	0 (00%)	5 (5%)	0 (00%)

Note: Minimum (n=40), Medium (n=104) and Maximum (n= 96) correctional facilities.

Table 3: Prevalence of individual Axis-1 disorders per correctional facility.

Suicidality	Suicidality risk levels		Prevalence rate	
	Suicidality (Low)		21 (8.8%)	
	Suicidality (Moderate)		8 (3.3%)	
	Suicidality (High)		22 (9.2%)	

Table 4: Overall Suicidality risk Scale.

51 out of 240 (21.3%). Out of 51, 22 (9.2%) inmates had high-risk suicidality levels, 8 (3.3%) had moderate suicidality risk-levels and 21 (8.8%) had low suicidality risk- levels respectively (Figure 1).

Figure 2, shows the most abused substance was marijuana. Cocaine, heroin and codeine were also some of the substances commonly abused. 2% abused more than one substance (4).

Table 5, indicated that inmates with Major depressive disorder abused drugs 12(18.8%) followed by those with suicidality risk 8 (15.7%) respectively. Results showed a positive and significant relationship between mental disorders (Major depressive episode and suicidality) and substance use disorders. Inmates with major depressive disorder and have suicidal risks, were likely to have substance use disorders as further confirmed by Chi-square $\chi^2 = 73.865$, $df = 6$, $p = 0.000$

Mental well-being

The mental wellbeing of inmates from the three correctional facilities was assessed using the Warwick-Edinburg Mental Well-being Scale (WEMWBS cut-off point of 50.7) with fourteen (14) statements about positive feelings and thoughts. Below are results compared to

Medium and Maximum correctional facilities whose inmates recorded poor mental Well-being (below cut-off point) (Table 6).

Mental healthcare service provision for inmates

Overall 234, 98% of inmates reported never screened for any mental and psychological problem at the point of entry in the correctional facility: 40,100% minimum, medium 101, 97% & and maximum 93, 97%. 231, 96% reported that there was no any referral system of mental disorders to psychiatric hospitals: Minimum 38, 95%, medium 100, 9% and maximum 93, 97%. 232, 97% reported that they had never had any visit by psychologist or psychiatrist to the correction facility: minimum 39, 97%, medium 101, 97% and maximum 92, 96%.231,96%

had reported that there was no continuity of care for those diagnosed with mental disorders before incarceration in this correctional facility: Minimum 39, 98%, medium 100, 96% and maximum 92, 96%. 222, 93% reported that there was no linkage with mental health services in the community and correctional facilities: 38, 95% from minimum, 91, 87% medium and 93, and 97% from maximum respectively. Results show that there is inadequate (almost nonexistence) provision of mental health services to inmates (Table 7).

Discussion

Prevalence rates

This was the first ever study undertaken in Zambia to determine the prevalence of Axis-1 disorders and health problems amongst inmates in multi-centre correctional facilities. Overall, the prevalence rate of current, past and lifetime Axis-1 disorders was 71 percent. Combined current and past Axis-1 disorders prevalence was 63.3 percent. The prevalence rate for current Axis-1 disorders was 46.2 percent. However, in keeping with international studies, high prevalence (46.2%) of current mental disorders was found among inmates. Results show that there is high current substance dependency in medium correctional facility with 11% distribution and Maximum 3%. Current substance abuse was 2% for both Maximum and Medium respectively. Results show only 1% in Medium had current alcohol and current alcohol abuse dependency. In addition, there is significant substance abuse in both the medium and maximum correctional facilities with each facility sharing a distribution of 2% apiece. There is insignificant abuse and dependency of alcohol. Significantly, inmates reported having access to marijuana, cocaine, heroin and codeine while in the correctional facility; however, they reported not having access to alcohol in the correctional facility. For prevalence of substance abuse, the current study found high current substance dependency in medium correctional facility with 11% distribution.

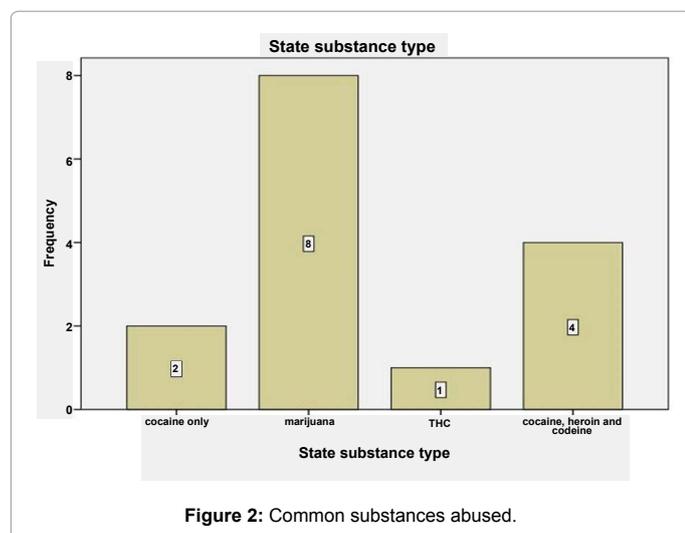


Figure 2: Common substances abused.

Axis-1 disorders	Number	SUD	Prevalence
Major depressive episode	64	12	18.80%
Suicidality	51	8	15.70%

Table 5: Relationship between Axis-1 disorders and Substance Use Disorders (SUD).

Score/Facility	Minimum Correctional Facility	Medium Correctional Facility	Maximum Correctional Facility
Mean	50.7	36.2	37.4
Min.	33	12	36
Max.	65	67	59
Range	32	55	23

Table 6: Overall mental well-being.

Substance abuse should be a major focus of rehabilitative intervention in order to prevent predisposition to mental disorder as well as to ensure that inmates are drug-free on release. Inmates should be given information on the dangers and effects of substance use. Releasing inmates who are still using substances back into the community will put them at higher risk of recidivism. However, excluding past, lifetime, suicidality, substance and alcohol use Axis-1 disorders, only 46.2% had current Axis-1 disorders which included: major depressive episode (19.6%), manic episode (2.1%), panic disorder without Agoraphobia (0.4%), mood disorders with psychotic features (0.4%), psychotic disorder (15.8%).The MINI however does not distinguish between schizophrenia, schizophreniform and brief psychotic disorder), Bulimia Nervosa and Generalized anxiety disorder (0.4% each) respectively.

MENTAL HEALTHCARE SERVICES IN CORRECTIONAL FACILITIES												
	Where you screened for mental disorder at point of entry?		Is prevention, care and support for inmates with mental problems available?		Is there a referral system of mental disorders to psychiatric hospitals?		Any visit by psychologist and psychiatric to your correctional facility?		Is there continuity of care for those diagnosed mental disorder before incarceration in this correctional facility?		Is there linkage with health services in the community and this correctional facility?	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total (All)	6 (2.5%)	234 (98%)	9 (3.8%)	231 (96%)	15 (6%)	225 (94%)	8 (3%)	232 (97%)	9 (4%)	231 (96%)	18 (8%)	222 (93%)
Minimum	0 (00%)	40 (100%)	2 (5%)	38 (95%)	1 (2.5%)	39 (98%)	1 (3%)	39 (97%)	1 (3%)	39 (98%)	2 (5%)	38 (95%)
Medium	3 (3%)	101 (97%)	4 (4%)	100 (96%)	9 (9%)	95 (91%)	3 (3%)	101 (97%)	4 (4%)	100 (96%)	13 (13%)	91 (87%)
Maximum	3 (3%)	93 (97%)	3 (3%)	93 (97%)	5 (5%)	91 (95%)	4 (4%)	92 (96%)	4 (4%)	92 (96%)	3 (3%)	93 (97%)

Note: absolute value (percentage). Minimum (n=40), Medium (n=104) and Maximum (n=96) correctional facilities

Table 7: Mental healthcare services.

Although the reported prevalence of Post-Traumatic Stress Disorder current (PTSD) was 14 (5.8%), many inmates reported subsyndromal PTSD. Many had witnessed violent crimes for e.g. murder of friends or family in their communities as well as having been witness to murder or traumatic event before incarceration. They thus displayed some but not the full syndrome of PTSD symptomatology.

This attenuated anxiety response could possibly be accounted for because of resilience or habituation since many of these inmates were raised in communities where violence, crime was rife and from criminological characteristics. 158, 66% (majority) were incarcerated for violent crimes (e.g. Murder, burglary, assault, armed robbery, manslaughter, rape, defilement and indecent assault crimes). Ironically, the wider community perceives inmates as traumatizers, but as we found in our study, they are also a traumatized group. A large proportion of inmates 47 (19.6%) were diagnosed with current major depressive episode followed by psychotic disorder current 38 (15.8%). Major depressive episode coupled with high prevalence of suicidality risks may show that, despite being traumatizers, inmates may also be traumatized and develop mental health problems. It is therefore important that once incarcerated, inmates be provided with remedial therapy to improve their mental well-being.

All inmates suffering from current major depressive disorder except one were not diagnosed or treated. Only one inmate who was transferred from maximum to medium with current major depressive disorder was on anti-depressants (Amitriptyline). All 38 inmates diagnosed with current psychotic disorder by the study were not diagnosed nor commenced on treatment. All 14 inmates diagnosed with PTSD by the study were not diagnosed nor treated. However, the current study commenced them on medication depending on the availability of drugs sourced outside the correction facility. For Medium and Mwembeshi maximum, medication was sourced from University Teaching Hospital psychiatric clinic (Clinic 6) and Mukobeko, medication was sourced from Kabwe General Hospital.

These inmates were all at the mercy of fellow inmates in terms of nursing care. All inmates diagnosed with Axis-1 disorders by the study were mixed together with other inmates. A cell chairperson assigns fellow inmates to wash clothes, feed and look after inmates with severe Axis-1 disorders. Among the reported factors for depression included separation from the family, constant thoughts about the spouse and children for married inmates. Others reported constant worry about the court verdict for inmates awaiting trial and the lengthy of incarceration for the sentenced. It was our duty together with medical correction facility officers to source for drugs from outside. The main challenge was continued supply of drugs especially considering that some psychotic disorders require long periods of treatment (6 months or more). Among the diagnosed Axis-1 disorders, current psychotic disorders was second highest and most debilitating disabling disorder (Thought disorder that impairs judgment, behaviour & ability to interpret reality and chronicity), which required immediate intervention.

Inmates classified as being suicidal (Low, moderate or high), had in the last month experienced suicidal ideations or attempts. The 22 inmates with high suicidality risk levels were found to be at high risk whilst 8 with moderate and 21 with low suicide risk levels were not actively suicidal. Only 22, 9.2% of inmates interviewed had ever made a past suicide attempt. In both medium and maximum correctional facilities, suicidal attempts included overdosing with ARVs for the HIV positive and on HAART, hanging, touching naked electrical cables and cutting of blood vessels. Most of the inmates reported that it was difficult to commit suicide because of overcrowding and lack of tools

to use. There was only one reported case of completed suicide of an inmate with a mental disorder from Mwembeshi maximum security correctional facility.

Canadian study, results revealed that 22, 8% of inmates had at some point made a suicide attempt. Contrary to the study, the current study found a high rate of suicidality amongst Zambian inmates as opposed to the study by Bland et al in which the majority of inmates were Caucasian. Suicide rates have been noted to be higher amongst Caucasians compare to black Africans. Suicidality risk has been identified as a mental health problem in both medium and maximum correctional facilities in Zambian correctional facilities.

Relationship between Axis-1 disorders and substance abuse

Results found that inmates with Major depressive disorder abused drugs 64, 18.8% followed by those with suicidal ideations 51, 15.7%. This is in line with Major depressive disorder. Even in the general outside population, data indicates that people who are depressed tend to abuse drugs and suicidal ideation is a key clinical feature in the diagnosis of the disorder.

Mental well-being

When the WEMWBS score is below cut-off point of 50.7, it indicates poor mental well-being and above the score, good mental well-being. With WEMWBS mean at 50.7 (cut off point), when the mean scores from the three correctional facilities are statistically compared, results indicate that inmates from minimum (50.7) show good and stable mental. Well-being compared to medium and maximum whose inmates record poor mental well-being 36.2 and 37.4 respectively. This may mean that inmates in medium and maximum have mental health problems compared to their counter-parts in the minimum correctional facility.

This is true because even other results indicate high prevalence of Axis-1 disorders in medium and maximum compared to minimum correctional facilities. One contributing factor could be overcrowding and lengthy of incarceration. Inmates in medium and maximum have longer prison sentences compared to minimum correction facilities where inmates are remaining with few months before being released. Besides that, inmates in minimum correctional facility have more interaction with the outside world, freedom of movement, less prison authority supervision and few hours of lock-down.

Comparison to Western inmate populations

Limited comparisons have been made with western studies, as their findings are unlikely to reflect the unique challenges that face correctional facilities in low-income countries like Zambia. A systematic review of 23000 inmates in Western countries by Fazel and Danesh in 2002 revealed the following: 4% psychotic illnesses, 10% major depression, 47% had antisocial personality disorders in men with women showing similar prevalence rates except for decreased rate of antisocial personality disorder among females. The current study on the other found current Axis-1 disorders at 46.2%, 19.6% major depression, 15.8% psychotic disorder current 7.5% psychotic disorder lifetime, 5.8% substance dependency current and post-traumatic disorder 7% major depressive episode past, 2.1% manic episode current and the rest below 2% respectively.

Comparison to non-Western studies

A recent relevant study conducted in Iran, by Assadi et al. and one by Naidoo & Mkize, 2012 in South Africa were selected for comparative

analysis since they share Zambia's low-income status and challenges especially the South African study. The major difference between the two studies was the fact that the Iranian study included only sentenced inmates whilst the current study included sentenced and awaiting trial inmates. The Iranian study found that 57, 2% of inmates had a current Axis-I disorder. Three (3), 1% of inmates had a current psychotic disorder; 29, 1% had a current major depressive disorder and none were diagnosed with bipolar mood disorder. The principal substance of abuse was opioids. Current opioid abuse and dependence were diagnosed in nine, 5% of participants. Other substances currently misused included cannabis (0, 8%) and sedative, hypnotic, anxiolytic drugs (0, 7%). The lifetime prevalence for opioid dependence was 72, 7% which, according to the authors, is probably a more accurate reflection of the magnitude of the problem. Lower rates were found for PTSD (0, 7%) but higher rates for generalized anxiety disorder (5, 7%) were found as compared to this study. 2 of inmates with current Axis 1 disorders were receiving treatment while the majority did not receive any psychiatric intervention, similar findings to our study.

Another recent study to be compared to with similar settings is a study conducted in South Africa by Naidoo & Mkize in 2012. The South African study found a high prevalence (55.4%) of Axis-1 disorders compared to 46.2% for our current study (the comparison is for current Axis-1 disorders only); however, the current study's overall prevalence was 71% for all Axis-1 disorders. The South African study 23, 3% had current psychosis, bipolar, depressive and anxiety disorders respectively. The most common Axis-1 disorder diagnosed was substance (including alcohol) use disorders with 42, 0%. The most common substance misused was cannabis. 13, 16 % had current Axis-1 disorders and substance (including alcohol) use disorders. 10.4% of inmates were diagnosed with a major depressive disorder, while 14.5% had experienced a major depressive episode in the past. The lifetime prevalence of depression was 9%. Current psychotic disorders were diagnosed in 4.7%, with a slightly higher lifetime prevalence of 7.3%. 89 out of the 193 inmates (46.1%) were diagnosed with antisocial personality disorder (ASPD). A significant proportion of those diagnosed with current Axis-1 disorders had comorbid ASPD. The South African study had similar results except for high rates of ASPD and drug abuse. The differences could be attributed to the fact the study was conducted in one correctional facility type compared to the current study, which was a multi-Centre study. The other difference is that the South African study assessed for Axis-1 disorders only, compared to the current study that included assessment of mental wellbeing.

Comparison to Zambian studies

The study conducted at Mukobeko maximum security correctional facility by Nseluke, Siziya in 2016 was selected for comparative analysis because the current study conducted the research in the same correctional facility. The prevalence rate of mental disorder in their study was 29.2%. Male participants were less likely to have mental disorder compared to females. This prevalence rate of 29.9% was lower than 63.1% obtained in the medium security correctional facility in Zambia. There are differences with the current study because of the different methodology and instruments. Nseluke and Siziya's study used a self-reported questionnaire, which is not a diagnostic and comprehensive tool compared to the MINI used in current study used. The current study used the MINI International Neuropsychiatric Interview, a short diagnostic tool designed as a brief structured interview for the major Axis- I psychiatric disorders in DSM-IV and ICD-IO. Nseluke's study was conducted in one correctional facility only compared to the current study, which involved three different security levels of correctional

facilities (multi-Centre). Apart from Axis-1 disorders, the current study included assessment of mental Well-being among inmates.

Benefits of this study

Being the first ever study measuring the mental health and psychiatric morbidity in a multi-site correctional facility population, this study has successfully provided an evidence base from which further studies can be done and compared, not just at these correctional facilities but also from other correctional facilities around Zambia. It has demonstrated a high prevalence of both mental health problems and serious psychiatric disorders amongst inmates and subsequent decision-making regarding mental health initiatives can be derived from this data. Future studies concerning mental disorders in Zambian correctional facilities may refer to the current study's findings as a baseline data.

Limitations

The limitation of the study was the fact that the MINI, although it screens for the major Axis-1 disorders, it is not comprehensive as it does not include diagnoses e.g. dysthymia, somatoform, impulse control disorders, adjustment disorders, etc. The MINI also only screens for antisocial personality disorder and no other personality disorders. It also does not screen for mental retardation and seizure disorders. Another major limitation is the fact that correctional facility records did not confirm inmates' reports of past or present psychiatric diagnoses. Only six females enrolled for this study due to proportional demographic representation, however future studies should increase the number of female participants to increase the likelihood of any statistically significant gender differences.

Conclusion

The high prevalence of mental disorders and mental health problems found in the current study, is in keeping with the significant high rates internationally, Africa and in the sub-region. Of great concern is the large number of inmates who have mental disorders but remain undetected, undiagnosed and not on treatment in the system. These findings present a cogent argument for greater mental health services at correctional centres. Specific attention should be focused on screening procedures and staff training programmes to detect mental disorders, as this will facilitate appropriate identification and intervention, whether psychological or pharmacological.

It is highly recommended that a brief screening instrument be completed (eg. MINI) on inmates possibly at reception. Many inmates with mental disorders do not necessarily require urgent psychiatric attention but they do need some form of assistance by health care services. One such help is the practice of mindfulness, which has proved to be helpful. It is the recommendation of this study that further research be undertaken at correctional centres around the country to determine the prevalence rates of mental health problems amongst inmates so that findings may be compared and generalized.

Further, research detailing the mental health care services currently available for inmates should be undertaken and any disparity between mental health care needs and services should be investigated. The current study further suggest that interventions to be developed in to include pharmacotherapy, non-pharmacotherapy (cyclic medication, regulated breathing techniques), psychoeducation (group

psychotherapy) in a follow up for a period of six weeks in medium and maximum correctional facilities. The interventions in phase II should aim to ameliorate the general health among inmates with psychiatric disorders, HIV infection and mental health problems.

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