ORIGINAL ARTICLE

Prison health services across ten central prisons in Cameroon

JÜRGEN NOESKE[1], NORBERT FRANCIS NDI[2], FABRICE HONORÉ MINKOA NGA[3], GÉRALD MELY[4] and CHRISTOPHER KUABAN[5]

[1]Independent Consultant, Yaoundé; [2]Focal Point for The Global Fund Grant for Prisons, Ministry of Justice, Yaoundé; [3]Office of Disease Control, Penitentiary Administration, Ministry of Justice, Yaoundé; [4]NGO JAPPSO, Yaoundé; [5]Faculty of Health Sciences, University of Bamenda, Cameroon

DOI: 10.4081/jphia.2023.2600

Abstract. In 2021, Cameroon held approximately 26,300 inmates in 84 prisons. The Ministry of Justice manages health services in prisons. Conclusive data concerning health care in prisons are lacking. Herein, we present the results of an assessment of health care provision and delivery in 10 central prisons. We adopted mixed methods, including document review, observations, interviews with the Ministry of Justice and prison facility officials, and inmate focus group discussions (FGDs). The 6 building blocks of the World Health Organization's health system framework guided the data collection. Moreover, we collected data on imprisonment conditions. Ministerial authorisation and verbal informed consent were obtained for all activities. There were a total of 17,126 inmates, with the prison populations ranging from 353 inmates to 4,576 inmates. The majority of prisons were characterised by huge overcrowding (mean 301%). The 10 central prisons operated infirmaries with insufficient space and equipment. Compared with the civilian health sector, the numeric ratio of paramedical personnel/inmates was favourable (1:3.4 vs. 1:0.5 p. 1,000 pop, respectively). Recent admissions were screened for the coronavirus disease 2019, tuberculosis (TB), and human immunodeficiency virus (HIV). Moreover, the inmates were diagnosed for current pathologies and lesions. For the treatment of chronic diseases and medical emergencies, the prison health services bridged service gaps on a case-by-case basis through informal arrangements with the civilian health sector. The service quality control was limited to those performed by the TB and HIV/acquired immune deficiency syndrome control programmes. Health data was collected and transmitted with a multitude of data collection tools, without standardisation and systematic verification. The primarily reported problems comprised the scarcity of resources and the absence of an effective oversight of resource management and service quality performance entailing governance problems. Participants in FDGs esteemed the quality of treatment as poor unless paid for in cash, and denounced severe difficulties for access to care outside the prisons when required. For meeting the standard minimum rules for the treatment of inmates, prison health care in Cameroon should fill the crucial gaps involving imprisonment conditions, access to health services, and accountability. Regarding chronic underfunding, intensifying collaboration with the civil health sector may partially address the problem.

Correspondence to: Jürgen Noeske, Yaoundé, Cameroon
E-mail: jurgen.noeske@gmail.com

Key words: Cameroon, prison, health services, assessment

Introduction

Prison inmates in sub-Saharan countries and the precarity of their survival conditions appeared on the international health agenda, with their status being declared as vulnerable populations for the human immunodeficiency virus (HIV) epidemics and the tuberculosis (TB) endemics at the turn of the century. In parallel, international organisations and associations, civil society activists, and scientists reinstated the request for delivering prison health care at least under similar standards as community health care (1-3). Since then, epidemiological studies have extensively documented the burden of HIV and TB in prison populations as well as the precarity of imprisonment conditions and related health problems (4-6). However, intervention programmes tend to predominantly focus on the two epidemics, often in a project or pilot study mode, with limited overall impact. Researchers have identified health disparities; a recent comment was as follows: 'Imprisoned people are however significantly underrepresented in health research, which underpins a lack of evidence-based interventions addressing their complex health needs or informing wider reform of the health service in prisons' (7).

Cameroon is a bilingual low-middle-income country, situated in central Africa with approximately 27.2 million inhabitants (2021). In 2019, the country's human development index was 0.563, thus positioning Cameroon at 153 of 189 countries and territories. Its life expectancy is 59.7 years (2019). The gross domestic product was 45.2 billion in 2021, with a growth rate of 3.5% (8). Its economy is based on agriculture and the export of agricultural products, raw materials, and semi-finished products, thereby rendering the country

substantially dependent on fluctuations in the world market. The imprisonment rate is approximately 120 per 100,000 population, one of the highest in the region.

For the period between 2021 and 2023, Cameroon has received a grant for the control of the three endemics from the Global Fund Against AIDS, Tuberculosis and Malaria (GFATM), with a part of it being allocated to TB and HIV/acquired immune deficiency syndrome (AIDS) control activities in prisons. The National Tuberculosis Programme (NTP) designated an international development organisation as the implementing agency. The implementer, together with the Ministry of Justice, decided to perform a rapid assessment of the prison health system anticipating that the results will likely facilitate designing strategies for improving the system's performance beyond the control of the targeted endemics. Owing to logistical and financial constraints, we purposively aimed to perform the assessment in 10 central prisons. We intended to assess health care across 10 central prisons of Cameroon, emphasising on its organisation and performance as well as the barriers and opportunities for delivering quality health care services.

Materials and methods

Study design and setting. We conducted this cross-sectional mixed methods (quantitative and qualitative) study during the second half of 2021. The country has 84 prisons distributed across 10 administrative regions. The prisons are classified as central prisons and principal or secondary prisons if they are located in the regional capitals and other towns of the country, respectively. The Director of Penitentiary Administration (DAPEN) is responsible for all matters concerning these prisons, including health. The Regional Delegates of Penitentiary Administration (DRAP) are his regional representatives. In each central prison, health care is delivered by an infirmary staffed with health personnel employed and managed by the Ministry of Justice.

Study population. The study population for the qualitative research comprised the Regional Delegates of Penitentiary Administration, the regional heads of penitentiary health services (CSSSPs), Heads of prison infirmaries, and inmates. Factual information not identified in the documentation was collected during the interviews.

Study procedures. This cross-sectional study collected data on the prison health services using document reviews, and prepared interview guides and data collection tools. In parallel, we held focus group discussions (FGDs) with the prisoners focussing on the access to and the perceived quality of health services. For the quantitative research, the degree to which the prison health services offered the package of primary health care (PHC), as defined in the Cameroon Health Sector Strategy, served as the implicit measurement, i.e. the existence of preventive and curative care for current transmittable and non-transmittable diseases, the access to acceptable hygiene and nutritional conditions, the availability of essential medications, health education measures, and community participation (9). The qualitative research explored the organisational and management aspects on the regional level and perceptions about the health policies in prisons during in-depth interviews (IDIs) with regional delegates and the regional heads of penitentiary health services. We conceived data collection and interview manuals using the six building blocks of the World Health Organization's (WHO's) health system framework as the guide (10). Interviews and FGD guides are available in the *Supplementary File*. We prepared the manuals in English and French owing to Cameroon being a bilingual nation. The interviewers documented the responses during the interviews. Eventually, we organised five FGDs with the inmates for understanding their experiences regarding the access to care and opinions on the quality of health services across five purposively selected prisons (Yaoundé, Douala, Bamenda, Bertoua, and Maroua). Guides for conducting FGDs were conceived and prepared in French and recorded after verbal consent. To prevent possible language barriers in the Extreme North Region, a trained bilingual interviewer conducted the FGDs. All audio recordings were directly transcribed into French in Microsoft Word. The bilingual interviewer compared the transcripts with the audio recordings and assessed them for accuracy and completeness. Table I outlines the data sources sought in IDIs and FDGs.

Data analysis. The tables summarise quantifiable information on staffing and the range of services offered, gathered through document reviews and observations during IDIs. To explore the notes documented during IDIs and FGDs, we performed a reflexive thematic analysis as outlined by Braun and Clarke (11,12). The team of interviewers coded items of analytical interest in the data based on topic summary themes (such as 'Access to consultation' or 'Treatment availability') for each prison in a collaborative process. Recurrent central concepts or ideas and specific salient and common overarching were retained in the synoptic assessment. All methods were performed in accordance with the relevant guidelines and regulations.

Results

During the assessment, the 10 central prisons housed approximately 17,126 inmates (65%) of the total prison population of approximately 26,300. The number of inmates per prison ranged from 353 individuals to 4,576 individuals. Women and juvenile inmates represented approximately 3% of the prison population each, without major differences among the prisons. Approximately 69% of the inmates were in pre-trial detention. The mean occupation rate was 301% (98-477%), an outlier (98%) being the Bamenda Central Prison in the Northwest Region; the highest rates were observed in the populous Yaoundé and Douala Central Prisons. The annual turnover rates were estimated to vary between 60 and 70%. We present our findings according to the WHO's building block framework. The summarised factual information was completed by the targeted comments and appraisals of key factors.

Policy framework and the administrative organisation of the penitentiary health system. In 2012, the 'Decree Governing Organization of the Ministry of Justice' created the sub-directorate in charge of penitentiary health (SDSP), with all attributions of an independent management subsystem of the health sector (13). According to article 73 of the decree,

Table I. Data collection summary for the IDIs and focus group discussions (FDGs).

Study population	Activity	Inclusion criteria	The number of participants
Delegates of regional penitentiary administration	IDI	All 10 regions	10
Regional chief of penitentiary health services (CSSSP)	IDI	Eight of 10 regions[a]	8
Head of prison infirmary	IDI	In five regions identical with the CSSSP	5
Inmates	FGD	Purposely, seven per prison	27 men, 8 women

[a]Two officers absent on training.

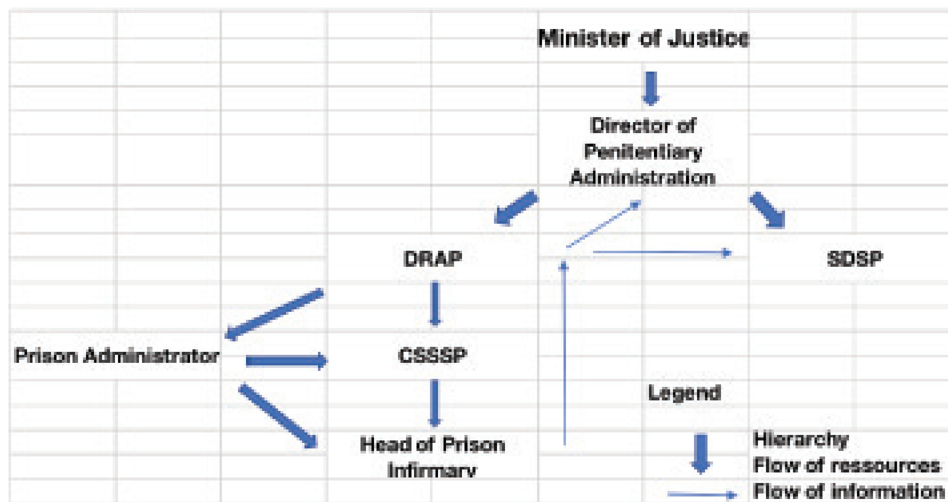

Figure 1. The administrative organisation of prison health management within the Ministry of Justice. CSSSP, regional head of penitentiary health services; DRAP, regional delegate of penitentiary administration; SDPS, sub-directory in charge of penitentiary health.

the sub-directorate is in charge of implementing the entire array of the national public health policy in prisons, in collaboration with the Ministry of Public Health (MPH). However, different areas of responsibilities of the two administrations are not set out, and the decree does not evoke the process of health service delivery in prisons.

Fig. 1 presents the administrative organisation of prison health management within the Ministry of Justice. The regional penitentiary health services are headed by the CSSSP, who simultaneously acts as the head of the prison health services (in five of the 10 central prisons). He is answerable for all matters concerning prison health to the prison administrator and to the DRAP, who in turn is answerable to the DAPEN. The DAPEN quotes technical files to the SDSP, if judged necessary. The decisional power of the SDSP remains limited in practice, restricted to the collection of data and the solution of minor current practical-technical problems. One DRAP stated the following:

Prisons, prison health are sensible for us and as such primarily political issues (DRAP, prison F).

Since the edition of the 2012-decree, no further regulatory or other key health sector documents have been edited by the Ministry of Justice; a National Strategic Plan for Prison Health is lacking, and no health indicator performance reviews have been realized. In the field, regulatory texts of the MPH are tacitly applied with minor adaption to the specificities of the prison situation, such as the national medicine policy or control strategies of the endemic diseases TB, HIV/AIDS, and Malaria (14).

For the central and intermediary level of penitentiary administration, the number of deaths in prisons (for avoiding criticism from human right organisations and activists) and the number of emergency evacuations (because of evasion risks) are the two crucial health indicators. Considering the wide gap between the generalities of the regulatory text and its application on the field, as described in international conventions, such as the Nelson-Mandela-Rules signed by Cameroon, one DRAP stated the following (15):

For providing health care in prisons, we have to aspire complying with national and international norms, we still aren't (doing so). (DRAP, prison H).

Infrastructure and equipment. The majority of the central prisons were constructed before or immediately after the country's independence. Continuous access to water for the inmates or services were not guaranteed in any prison. Furthermore,

Table II. The distribution of prison health personnel and paramedical personnel-to-detainee ratio across 10 central prisons in Cameroon in 2021.

Central prison		Personnel		Ratio
Lieu	Occupation (N)	MD	Paramed personnel	Paramed pers/detainee
N'Gaoundéré	1,205	1	7	6
Yaoundé	3,802	1[a]	17	4
Maroua	1,468	1	4	3
Bertoua	913	1	4	4
Douala	4,576	1	14	3
Garoua	1,685	1	8	5
Bamenda	702	1	7	10
Buea	1,374	1	3	2
Ebolowa	353	1	3	8
Bafoussam	1,050	2	7	7
Total	17,128	11	74	4.3

[a]Reported without details three additional part-time doctors. MD, medical doctor; N, number; Paramed., paramedical personnel; Pers., personnel.

the evacuation systems of wastewater were already decrepit, besides being completely overloaded.

All prisons had infirmaries; however, they were outdated and with particularly limited space, which lead to problems in ventilation and light. The consultation rooms disposed of the basic diagnostic equipment, habitually being the personal property of the person in charge. The laboratories were elementarily equipped, principally for the needs of the endemic disease control programmes. Moreover, the reagents were chronically lacking. X-ray machines were not installed in these prisons. On an average, one hospitalisation bed was available for 168 inmates per prison (range 47-350). All but three prisons (Garoua, Bertoua, and Bamenda) had opened an isolation ward following the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic. A particular space was envisaged for the patients with TB during the intensive phase of their treatment in all 10 prisons. Three central prisons (Maroua, Yaoundé, and Bafoussam) disposed of second recently erected infirmaries outside the prison space, serving as a health facility for the surrounding general population. However, the inmates reportedly had limited access because of security reasons. Considering the infrastructure and equipment, none of the central prison infirmaries complied with PHC services' standards, as defined in the Cameroon Health Sector Strategy (9).

Personnel in the infirmaries. A total of 85 full-time health personnel were in charge of the prison population, with at least one medical doctor in each prison. All prisons had at least of two nurses. The Yaoundé Central Prison reported additionally three part-time doctors, and the Bafoussam Central Prison comprised two social assistants without specifying their tasks and obligations.

The medical doctor-inmates ratio is on average five times greater than in the civilian sector and even in Douala, the most unfavourite site, the ratio is still twice more favourable. Likewise, the overall paramedical personnel-inmates ratio was more than twice the ratio in the civilian sector (mean 4.3:1,000 detainees vs. 1.8 p. 1,000 population) (Table II).

The distribution of personnel was extremely uneven (two doctors for approximately 1,050 inmates in Bafoussam; one doctor for approximately 4,576 inmates in Douala). The IDIs revealed that the appointed doctors were seldom present or totally absent in four prisons (enrolled in further specialist training or because of a conflict in one case). Eventually, according to the corroborative statements of all interviewees, the health personnel were regularly withdrawn for other tasks. Notwithstanding the relatively comfortable staffing, the majority of interlocutors stressed the need for higher qualified personnel without, however, detailing the task distributions, workload, and organisation, thus substantiating the expressed needs. By contrast, two DRAPs conjectured if greater efficient use of the health personnel may at least partially address their postulated shortage.

Health care delivery. Health care delivery begins at the entrance. Recently admitted inmates undergo medical screening before entering their cells. These screening supposedly considers their existing diseases or lesions and prevent the introduction of germs that can cause epidemics in the prison. There are no international recommendations on the conditions that require screening; therefore, screenings depend on the current epidemiological situation. Table III presents the health conditions of recent admissions who underwent clinical screenings and/or laboratory tests upon admission in the 10 prisons.

Screening for the coronavirus disease 2019 (COVID-19), TB, and HIV were performed in principle across all prisons. However, these screenings did not cover every recent entry, and, as reported, screening can get delayed by up to two days in at least two of the prisons assessed. Periodical supply chain break-downs for the reagents were the cause of uncomplete

Table III. Clinically screening/laboratory testing of recent admissions in 10 central prisons of Cameroon in 2021.

	Screening		Pathologies clinically screened or tested for									
Central Prison	Coverage (%)	Delay (in days)	Covid-19	TB	HIV	IST	Hep B/C	Diabetes	Blood pressure	Toxico-mania	Mental health	Dental health
N'Gaoundéré	100	<2	Y	P	Y	N	N	P	Y	N	P	P
Yaoundé	100	<2	Y	Y	Y	P	P	P	Y	N	Y	Y
Maroua	100	<2	Y	Y	Y	P	N	N	Y	N	Y	Y
Bertoua	100	<2	Y	Y	Y	N	P	N	N	N	Y	N
Douala	75-90	<2	Y	Y	Y	N	N	P	Y	N	P	Y
Garoua	75-90	<2	Y	Y	Y	N	N	N	Y	N	N	N
Bamenda	75-90	<2	Y	Y	Y	N	N	N	N	N	N	N
Buea	75-90	>2	Y	P	Y	N	N	N	N	N	N	N
Ebolowa	100	<2	Y	Y	Y	N	N	P	P	N	P	P
Bafoussam	75-90	>2	Y	Y	Y	N	N	P	Y	N	Y	Y

Hep B/C, hepatitis B and C; HIV, human immunodeficiency virus; STI, sexually transmittable infections; COVID-19, coronavirus disease 2019; TB, tuberculosis; Y, yes; N, no; P, partially, not systematically.

endemic diseases screening in two prisons. Care for other health conditions differed among the prisons. Interestingly, screenings were not routinely performed for sexually transmitted infections and hepatitis B and C, endemic in Cameroon, with its prevailing HIV endemic. Screening for diabetes or hypertension, which are of growing endemic importance in the country, was incomplete. In addition, there was no screening for milieu-specific toxicomania.

Within the prisons, the health personnel provided routine care of the prisoners in the infirmary. Except for emergencies, the access to consultation was permitted on demand. Reportedly, accessing health services was extremely challenging across all prisons. Routine care access requires a written demand ('voucher' requesting consultation); the voucher passes through different levels of the informal hierarchy (chiefs of the cell and quarter, ward security) before reaching the caregiver who decides the moment when to receive the applicant, if deemed necessary.

Consultations of lesions and current diseases are performed in the infirmaries Laboratory exams and drugs are free-of-charge, when available. Frequent pathologies are, according to a summary inspection of registers, severe malaria, respiratory infections, skin infections, fractures, mental troubles, and malnutrition to stroke, epilepsy, and hepatitis/cirrhose. Malnutrition is considered an endemic. In the majority of cases, adequate diagnostics and treatment depend on the payment ability of the patient and/or the relatives. Following payment, the samples may be transported to off-side laboratories, and necessary drugs bought by the relatives are sent to the prison.

Inmates suffering from chronic diseases encounter particular difficulties in seeking care. For all speciality health services and emergencies, including obstetrics, the personnel have to seek help from diagnostic and treatment services located outside. Informal agreements relate different prisons to one or several health facilities in the public or private (-not-for-profit) health sector, with appropriate technical equipment and expertise. For each evacuation, transport means, security imperatives, and particularly the cost coverage constitute almost insurmountable hurdles for the overwhelmingly impoverished inmates.

Preventive care, such as health education and promoting activities by peer-educators (PE), are performed only periodically, dependent on specific and time-bound donor funding. During the assessment, three of the 10 prisons comprised a PE team conducting monthly health education sessions (Yaoundé, Maroua, and Bafoussam). Likewise, all CSSSP unanimously reported that the prison populations benefited exceptionally only from regular vaccination campaigns organised for the civilian population, for example, during cholera epidemics or the during the recent SARS-CoV-2 epidemic.

We identified a considerable problem concerning nutrition and hygiene conditions in all prisons. Despite being an essential part of health care, both conditions are not components of the competence of prison health services. The management of the corresponding budget pertains to the exclusive task domains of the prison administrators. Habitually, a single meal of poor nutritional value is served each day. Establishing small business activities within the prison or appealing outside resources are ways to supplement the diet. Likewise, means for sanitation and personal hygiene are scarce, supplied irregularly, and have to be bought by the prisoners themselves.

Supervision and quality control of health activities are limited to the irregularly executed activities by the vertical disease control programmes (TB, HIV/AIDS, and, exceptionally, malaria).

Supply of essential medicines and medical consumables. All 10 prisons provided access to essential drugs and medical consumables via the supply system of the MPH. However, the prison administrators, the exclusive managers of the corresponding budget, tended to buy drugs and medical consumables from the private market. Thus, the supplied drugs tended to be not only insufficient and without quality assurance but also did

not correspond to the prevailing pathologies. All interviewed health personnel complained about the shortage of drugs, such as current antibiotics, cotrimoxazole preventing opportunistic infections in people living with HIV/AIDS, anti-malaria drugs, medication against mycosis, or scabicides. It was challenging to determine to the degree of shortages owing to the lack of resources or inappropriate management.

The medical consumables were scarce; a regular and sufficient supply was assured only by the major endemic diseases programmes, namely TB and HIV. Tests for other pathologies, such as diabetes, hepatitis, or malaria, were not routinely available or unavailable.

Health information system. All 10 prisons maintained consultation and hospitalisation registers; these registers were incomplete in the Yaoundé and Douala Central Prisons. Moreover, they managed multiple tools for the needs of the endemic disease control programmes. Data from the registers and patient files were aggregated by a nurse on ad-hoc conceived paper or Excel sheets and subsequently on standardised hard-copy report forms periodically transmitted to the SDSP and the endemic diseases control programmes, respectively. Four prisons (Maroua, Bafoussam, Bertoua, and Yaoundé) were introducing the District Health Information System, version 2-based health information system of the MPH.

At least 10 different reports are to produced monthly. Evaluating the time spent for the collection and transfer of data amounted to at least one person/week per month. Apart from the workload, the data-management nurses cited multiple challenges as follows: the pertinence of certain indicators; the lack of standardised tool for collecting and completing the report forms; the redundancy of data sets to be collected several times in different formats to inform different administrations; the lack of resources for communication (computer, tablets, smart-phones, internet access, and communication fees) compelling the personnel to invest their own devices; and neglectable feedback on the collected data. Notwithstanding the invested resources and efforts spent, reliable data about prison health care are unavailable in the official ministerial documents. A CSSSP resumed a concurrent opinion among his colleagues as follows:

We need a designated data manager even part-time, availability of resources, and consequent electronic data management… We have to find mechanisms and tools to generate exact and reliable data. (*CSSSP, prison C*).

Financing of the penitentiary health system. Penitentiary health services in Cameroon have four sources of financing as follows: public, donors, civil society [non-governmental organisations (NGOs), caritative associations], and out-of-pocket payment. The public budget for prison health is mobilised by the Ministry of Justice, and covers drugs, medical consumables, and small medical equipment, besides the salaries of personnel, the purchase of nutrition-related and of hygiene products. It is challenging to procure exact data on the available budget for nutrition, drugs, and medical consumables. All interlocutors reported on a low budget, and differences between planned budgets, released funds, and subsequent expenditures are the rule across all administrations in Cameroon. In 2021, the released budgets for nutrition and health were approximately 410 XFA or USD 0.75/day/detainee and 3,000 XFA or USD 6.0/month/detainee, respectively. The health budget was expected to cover all health and health product expenses of the infirmary, except hygiene products (16). The corresponding resources are directly allocated to and managed by the prison administrator, thus highlighting the complexity of the efficient use of resources in the prison context. Most interlocutors-not wishing to be cited-agreed upon that available resources can serve as a source of enrichment by the budget manager. Nevertheless, the diagnostics and care for TB, HIV/AIDS, and COVID-19 via the epidemic disease control programmes' budgets of the MPH are free-of-charge.

There is limited information on the weight of financing sources other than the public budget. In 2021, the GFATM provided external funding. This financing was earmarked and time-bound, with a questionable sustainable impact on the penitentiary health sector's performance (7). Furthermore, NGOs and charitable (religious) organisations intervened periodically and on a small scale in all 10 prisons, thus habitually targeting the most vulnerable inmates, without being committed to financial (or technical) accountability.

Out-of-pocket payment remains the most important funding resource to cover the basic health needs. An overwhelming majority of inmates appealed to family members or other outside-prison resources to finance their health.

Health care delivery as perceived by the inmates. Recurring testimonials from the FGD participants disclosed areas where the prison health services were considerably short of the expectations and justified claims. Their testimonials covered different aspects of health care delivery, such as access to and the quality of services and the availability of prevention measures, such as water supply or sanitation as well as the nearly unsurmountable financial hurdles in case of quality care (Table IV).

Discussion

This novel assessment provided an overview of the health care services offered across major prisons in Cameroon. The prison health system in Cameroon is conceived, organised, and managed by the Ministry of Justice as a comprehensive and substantially self-reliant subsystem within the health sector. It comprises all six building blocks constituting a health system, according to the WHO. However, the system neither complies with its legal dispositions nor with the self-conception of its actors or the international standards of health care for the prison inmates (16-21). The following key characteristics of acceptable service delivery are absent: accessibility, coverage, continuity and comprehensiveness, coordination, and accountability. 'Governance and leadership', including strategic planning and oversight, and chronically severe underfunding are the most deficient building blocks. Researchers may analyse the root causes in a systemic approach, which are beyond the frame of this assessment as follows: the colonial past of Cameroon, socio-cultural factors as the perception of the persons accused or judged for crime, an authoritarian political structure, the functioning of the country's political institutions with an above

Table IV. Statements of the inmates in central prisons reflecting their perceptions of and experiences with health services.

Aspects of health care delivery	Inmates' statements
Access to health services-inside the prison	*'You may even write your vouchers three or four times like that before they are calling you'. (Detainee 5, Prison C)*
	'And the doctor told me if I really want to treat my body, my illness, what I have to do is first to give something…And did he even really talk to me? He turned his back before addressing me'. (Detainee 8, prison E)
Access to health services-outside the prison	*'Before I came in here there are treatments I used to take outside.to leave from here and go to the hospital is a process. You need to follow the process before you go to the hospital even in emergency cases'. (Detainee 4, prison C)*
	'It's only when you are running definitely out of breath that they can allow it (i.e. evacuation)'. (Detainee 2, prison B)
Prevention of diseases	*'With the water situation, throughout the dry season, it is difficult to have a litre of … water a day. It is really difficult'. (Detainee 3, Prison A)*
	'Well, to get water when needed it's no question of organisation. The strongest (guys) are at the tap. They give water to whom they want'. (Detainee 2, Prison B)
	'We buy ourselves our Javel (i.e. bleach water)'. (Detainee 7, prison H)
Perceived quality of care	*'Most often when you consult, you get but paracetamol and it (i.e. the prison) cannot cater for all the diseases. The doctors are there but the drugs and machines are not there'. (Detainee 5, prison D)*
	'I am a diabetic patient. They don't treat diabetes here in the prison and (I) am a high blood patient'. (Detainee 2, Prison A)
	'You tell you have scabies, one still gives you para(cetamol). The only pill they give you here it's para'. (Detainee 6, prison G)
	'The most important thing is not adding the number of doctors. The most important thing we are facing here are the drugs and the lab'. (Inmate 4, prison A)
Financing of care	*'The doctor makes a prescription which I send to the outside from where they are send to me. My family paid'. (Detainee 9, prison I)*
	'Except small tablets which one might give you, the real drugs you are asking from your family'. (Detainee 7, prison B)

average rate of incarceration, or Cameroon's status as a low middle-income country, which prohibits the appropriate allocation of funds to the penitentiary system.

The inmates are deprived of their liberty, and thus of the possibility to acquire resources for satisfying their basic needs as nutrition, hygiene, and health by the incarcerating authority. Particularly startling results of this assessment are the precarious and health detrimental imprisonment conditions and the fact of having to pay cash money for (quality) health care. Even where available from outside the prison, maintaining a cash-flow system in an environment known for its notorious corruption is precarious (22).

Results of the assessment, i.e. the precarity of prison health services, confirmed findings from other prison settings in sub-Saharan Africa, generally those by Ukor *et al* particularly regarding the prevention, diagnosis, and care of TB, HIV or the COVID-19 disease (23-25).

The 2012-decree proposed a strategy for the persistently fragmentary and sub-standard penitentiary health system as follows: a formal collaboration with the civil health sector. The penitentiary health services have an existing recourse to support by the public health sector for emergencies, referrals, endemic disease control, and access to essential drug supply. First, the prison infirmaries could be recognised as part of the civil health service pyramid, which would offer evident advantages; the MPH would have to guarantee the equal treatment of prison inmates and civilians; penitentiary health services would completely participate in all ongoing initiatives in the civil sector, thus levering the financial hurdles for access; assuring managerial and technical oversight with quality monitoring; and the collected data would be quality-controlled and used for planning. Standardised and comprehensive entry screening should be assured during a transitional period for the prevailing transmittable and non-transmittable diseases, besides developing coherent prevention and surveillance strategies and editing the continuously monitored surveillance, preventive, and standardised diagnostic and care protocols. However, an uninterrupted supply of the resources is a basic requirement.

This assessment had several limitations. First, we did not perform a comprehensive assessment of the capacity of prison health facilities to provide general health services, for example the SARA approach of the WHO (26). Second, the WHO building block framework used as the guide for data collection has been criticised for not considering the community's role; we tried to address this limitation by organising FDGs with the prisoners (27). Third, the assessment covered health care across 10 of 84 prisons comprising 65% of the country's prison population. However, the situation may be worse in peripherical prisons with >25% of the remaining prison health personnel. Because of financial constraints, we did not interview key players such as security personnel and, particularly, prison administrators, the principal health budget managers. Moreover, we had to generalise several findings neglecting the particularities of individual prisons. In addition, the thematic analysis approach, combining inductive and deductive procedures, did not guarantee the reliability of the coding and conception of themes, and may be prone to analytic foreclosure.

Conclusions

The penitentiary health system in Cameroon remains a construction site with poor access to services, major service delivery gaps, and services of questionable quality. Despite the presence of essential elements of a health system, nutrition and hygiene, crucial for the prevention of diseases, require substantial improvement. Principally, the absence of appropriate governance with planning and accountability, as well as the absence of suitable financing hamper the development of quality prison health services in meeting the standard minimum rules for the treatment of inmates. A progressive integration in the civil health sector may partially address the issue.

Acknowledgments

The authors would like to thank the interviewed personnel of penitentiary administration and the prison inmates who shared truthful information and expressed without hesitation their opinions about the items and themes of data collection. Furthermore, we would like to thank Editage (www.editage.com) for English language editing.

Funding

The assessment was financed by the Health Programme of the German Technical Cooperation (GIZ) in Cameroon (GIZ, AGG N0004_2021_09_09).

Ethics approval and consent to participate

The current study was non-experimental. The Secretary of State of the Ministry of Justice approved the protocol for this study, a rapid assessment of the penitentiary health system, on the advice of the commission of senior medical staff of the Ministry, serving as the Institutional Review Board. The need for ethical clearance was waived with the argument that this assessment was performed as part of routine penitentiary health system assessments, aiming to improve prison health system's performance.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available owing to confidentiality stipulations under the commission of senior medical staff of the Ministry of Justice serving as the IRB, but shall be made available from the corresponding author upon reasonable request.

Informed consent

Oral informed consent was obtained from all subjects and/or their legal guardian(s) to participate in the assessment was sufficient. This decision was taken to guarantee the anonymity of respondents working in a military-like hierarchy, and/or highly dependent from this hierarchy, and those afraid of negative sanctions following eventual critical comments. Subsequently, all information originating from the interviewed individuals was anonymised.

Contributions

JN, conceived the study design, analysed the data, and drafted the manuscript; NFN, HFM, GM contributed to the conception, the organisation of the research project, and the supervision of data collection; CK, contributed to the conception of the study and performed a critical revision of the manuscript. All authors have approved the final version of the manuscript.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Accepted: 15, June 2023; Submitted: 09, March 2023

References

1. Council of Europe. Committee of ministers. Recommendation no. R (98) 71 of the committee of ministers to member states concerning the ethical and organisational aspects of health care in prison (adopted by the committee of ministers on 8 April 1998 at the 627th meeting of the ministers' deputies). Available from: https://rm.coe.int/09000016804fb13c. Accessed 2022 Aug 27.
2. Human Rights Watch Prison Project. Ending the abusive treatment of inmates. Sept 1999. Available from: https//:www.hrw.org/legacy/advocacy/prisons/index.htm. Accessed 2022 Aug 28.
3. World Health Organisation. Health in prisons. A WHO guide to the essentials in prison health. Copenhagen 2007 (EUR/07/5063925). Available from: https://apps.who.int/iris/handle/10665/107829. Accessed 2022 Aug 28.
4. Cords O, Martinez L, Warren JL, O'Marr JM, Walter KS, Cohen T, Zheng J, Ko AI, Croda J and Andrews JR: Incidence and prevalence of tuberculosis in incarcerated populations: A systematic review and meta-analysis. Lancet Public Health 6: e300-e308, 2021.
5. Telisinghe L, Charalambous S, Topp SM, Herce ME, Hoffmann CJ, Barron P, Schouten EJ, Jahn A, Zachariah R, Harries AD, *et al*: HIV and tuberculosis in prisons in sub-Saharan Africa. Lancet 388: 1215-1227, 2016.
6. Topp SM, Sharma A, Moonga CN, Chileshe C, Magwende G and Henostroza G: Evaluation of a health system strengthening initiative in the Zambian prison system. BMJ Glob Health 3: e000614, 2018.

7. Mhlanga-Gunda R, Motsomi-Moshoeshoe N and Plugge E: Challenges in ensuring robust research and reporting of health outcomes in sub-Saharan African prisons. Lancet Glob Health 8: e25-e26, 2020.
8. The World Bank. GDP (current US$)-Cameroon. Available from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=CM. Accessed 2022 Aug 24.
9. Republic of Cameroon. Ministry of Public Health. Health Sector Strategy 2016-2027. Yaoundé 2016 (ed. Ministry of Health). Available from: https://www.minsante.cm/site/?q=fr/content/strat%C3%A9gie-sectorielle-de-sant%C3%A9-2016-2027-1. Accessed 2022 Aug 26.
10. World Health Organization. Monitoring the building blocks of health systems: A handbook of indicators and their measurement strategies. Geneva 2010. (WHO-MBhSS_2010-full-web.pdf). Available from: https://apps.who.int/iris/bitstream/handle/10665/258734/9789241564052-eng.pdf. Accessed 2022 Aug 22.
11. Braun V and Clarke V: Using thematic analysis in psychology. Qual Res Psychol 3: 77-101, 2006.
12. Braun V and Clarke V: Thematic analysis. In: Cooper H, Camic PM, Long DL, Panter AT, Rindskopf D and Sher KJ: (eds.), APA handbook of research methods in psychology, Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological, pp57-71, 2012. American Psychological Association. doi:10.1037/13620-004.
13. Présidence de la République. Décret N 2012/389 du 18 Sept. 2012 portant organisation de Ministère de la Justice. Yaoundé, 2012.
14. Noeske J, Ndi NF and Mbondi Mfondih S: Controlling TB in prisons against confinement conditions-a lost case? An experience from Cameroon. Int J Tuberc Lung Dis 15: 223-237, 2011.
15. United Nations Standard Minimum Rules for the Treatment of Inmates. Available from: http://www.undoc.org/documents/commissions/CCPCJ/CCCCJ_Session/CCCPC_24/resolutions/L6_Rev1/ECN152015_L&Rev1_e_V1503585.pdf. Accessed 2022 Aug 25.
16. Loh C: Infrastrucural Dev't Impress human rights team. Cameroon Tribune 48: 6, 2021.
17. Beng Elingui MT: Les enjeux de la coopération internationale en milieu carcéral au Cameroun dans un contexte de développement durable. Master thesis. International Relations Institute of Cameroon. The University of Yaoundé II. Yaoundé (polycopy), 2020.
18. Demoures B, Nkodo-Nkodo E and Mbam-Mbam L: Primary health in a prison environment, the Cameroonian experience. Sante 8: 212-216, 1998.
19. Bounoungou RN: La réforme du système pénitentiaire camerounais: Entre héritage colonial et traditions culturelles. Droit. Université de Grenoble, 2012. Available from: https://www.editions-harmattan.fr/index.asp?navig=catalogue&sr=7. Accessed 2022 Aug 31.
20. Sando H: Derrière les murs, l'enfer : l'univers carcéral en question. Douala 2005 (ed. Catholic Relief Services).
21. Voufo GR: Les pouvoirs publics Camerounais et la sante des detenus: Le cas des prisons de Dschang et de Mantoum, 1960-1992. Master thesis. Univ. of Dschang, (polycopy), 2010.
22. World Justice Project. Cameroon_2021 WJP Rule of Law Index Country Press Release.pdf. Available from: https://worldjusticeproject.org/sites/default/files/documents/Cameroon_2021%20WJP%20Rule%20of%20Law%20Index%20Country%20Press%20Release.pdf. Accessed 2022 Aug 28.
23. Ukor N, Adebayo Adebesi Y, Alaran A and Alumuku IM: Healthcare in the prisons: The Case of Sub-Saharan Africa. June 2021. In book: Casebook on Advocacy in Public Health (pp183-193). Publisher: World Federation of Public Health Associations, ISBN: 978-84-09-27984-5. Accessed 2022 Sep 02.
24. Van Hout MC and Mhlanga-Gunda R: Contemporary women prisoners health experiences, unique prison health care needs and health care outcomes in sub Saharan Africa: A scoping review of extant literature. BMC Int Health Hum Rights 18: 31, 2018.
25. Nweze VN, Anosike UG, Ogunwusi JF, Adebisi YA and Lucero-Prisno DF III: Prison health during the COVID-19 era in Africa. Public Health in Practice 2: 100083, 2021.
26. World Health Organisation. Service availability and readiness assessment. Available from: https://www.who.int/data/data-collection-tools/service-availability-and-readiness-assessment-(sara) Accessed 2022 Sep 02.
27. Sacks E, Morrow M, Story WT, Shelley KD, Shanklin D, Rahimtoola M, Rosales A, Ibe O and Sarriot E: Beyond the building blocks: Integrating community roles into health systems frameworks to achieve health for all. BMJ Global Health 3: e001384, 2019.