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Original Article

TB/HIV Co-Infection Care in Conflict-Affected Settings: A Mapping of Health Facilities in the Goma Area, Democratic Republic of Congo

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ABSTRACT

Background: HIV/AIDS and Tuberculosis (TB) are major contributors to the burden of disease in sub-Saharan Africa. The two diseases have been described as a harmful synergy as they are biologically and epidemiologically linked. Control of TB/HIV co-infection is an integral and most challenging part of both national TB and national HIV control programmes, especially in contexts of instability where health systems are suffering from political and social strife. This study aimed at assessing the provision of HIV/TB co-infection services in health facilities in the conflict-ridden region of Goma in Democratic Republic of Congo.

Methods: A cross-sectional survey of health facilities that provide either HIV or TB services or both was carried out. A semi-structured questionnaire was used to collect the data which was analysed using descriptive statistics.

Results: Eighty facilities were identified, of which 64 facilities were publicly owned. TB care was more available than HIV care (in 61% vs. 9% of facilities). Twenty-three facilities (29%) offered services to co-infected patients. TB/HIV co-infection rates among patients were unknown in 82% of the facilities. Only 19 facilities (24%) reported some coordination with and support from concerned diseases' control programmes. HIV and TB services are largely fragmented, indicating imbalances and poor coordination by disease control programmes.

Conclusion: HIV and TB control appear not to be the focus of health interventions in this crisis affected region, despite the high risks of TB and HIV infection in the setting. Comprehensive public health response to this setting calls for reforms that promote joint TB/HIV co-infection control, including improved leadership by the HIV programmes that accuse weaknesses in this conflict-ridden region.

Background

HIV/AIDS and Tuberculosis (TB) are major contributors to the burden of disease in sub-Saharan Africa. The two diseases have been described as a harmful synergy as they are biologically and epidemiologically linked, each disease accelerating the other (1). TB is the number one cause of death in people living with HIV/AIDS (PLWHA). Between 1990 and 2005, the incidence of TB increased at an average rate of 7% per year in countries where there was a high prevalence of HIV infection among adults (>5%), but it increased at an average rate of only 1.3% per year in countries where the prevalence of HIV infection among adults was low (<5%) (2). Of the 8.7 million incident cases of TB reported in 2011, 1.1 million were HIV positive. Of these, 80% were in the African region (3).

Control of TB/HIV co-infection is an integral and most

challenging part of both national TB and national HIV control programmes. Lienhardt and colleagues state that control efforts depend on operational, epidemiological, economic and sociological grounds (4). In resource-poor countries, constraints along the lines of these factors abound and efforts to control co-infection with HIV/TB have been slow and uncoordinated (5).

These problems have been further compounded in post-conflict regions where there is a collapse of basic administrative structure and health services. Certain factors such as poverty, population displacement, increased sexual violence and breakdown of health infrastructure can be classified under the major factors previously mentioned. They are also common to conflict areas and have been linked to increased HIV prevalence, albeit not directly. However, some studies suggest that there

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may be other confounding factors that fuel the epidemic, while in some conflict areas, certain factors like immobility serve to stabilize HIV prevalence (6).

The Democratic Republic of Congo (DRC) is one of the 22 high TB burden countries (7) responsible for at least 80% of the global TB burden. DRC is ranked 11th out of the 22 countries. The country has been in crisis for the last 16 to 18 years. The national HIV prevalence is 1.3%. This prevalence is higher among women (1.6%) than men (0.9%), and varies regionally with higher rates in urban settings as compared to rural ones. Its highest prevalence of 1.9% is in the capital of Kinshasa and in the eastern region of the country (8). TB/HIV co-infection is a challenging issue in such a large country with run-down health structures and recent history of instability.

Aim

To assess HIV/AIDS and TB co-infection services through a mapping health facilities in three health zones in Goma, DRC.

Methods

Setting

Goma is a border town and is the capital of North Kivu province. The region has faced great humanitarian crisis since July 1994. It became the centre of the Great Lakes refugee crisis when a million Hutu refugees fleeing civil unrest in neighbouring Rwanda settled in the region. Acts of retaliation by the Rwandan tutsi-regime led to the military conflict dubbed the 'African World War' which continued for over a decade (9). This political and civil unrest led to outbreaks of infectious diseases, malnutrition and mass displacement of people. More than six million people died in 1996 which made the Congo wars as devastating as the holocaust (10). Some authors have referred to this war as the "forgotten" holocaust (11).

Goma and surrounding districts were the setting for this study and in particular. The Goma area in this context includes three health zones: Kirotshe, Karisimbi and Goma city health districts. The area was selected due to the likelihood of having a high HIV/AIDS and TB prevalence, given its history with conflict and migration of refugees to and from neighbouring countries with higher HIV prevalence, as well as a high frequency of sexual violence.

Design

This research was a descriptive cross-sectional study.

Data collection

A semi-structured questionnaire was used for the primary data collection. The original questionnaire was in French which is the official language in Congo. The English language was used during the analysis and writing up of the research report. One staff member of the health facility—the head or the next available and willing clinician—was selected per facility to respond to the questionnaire. The respondents were health care providers working in facilities that offered HIV, TB services or both.

As to the content of the survey, beyond the details related to the background data regarding the health facility (e.g. health facility, nature of ownership, and profession of the health staff who responded on behalf of the facility), the questionnaire covered among other things the following topics:

- Availability of HIV and/or TB-related services in the

health facility: in case there were services available, the questions went on to ask which ones: screening, treatment, counselling, etc.

- Availability of TB/HIV co-infection services in facilities that reported provision of HIV or TB services.
- Numbers of HIV, TB and co-infected patients detected and currently under treatment per health facility.
- Existence of any kind of links or support from national HIV and national TB control programmes: additional questions probed into the scope and the nature of such linkages with the national disease specific programmes.
- Collaboration between the national HIV and the national TB control programmes with regard to addressing TB/HIV co-infection issues, as perceived and experienced by the health facilities' experiences.

The data collection was conducted by a multidisciplinary team working under the supervision of a principal investigator. The data were collected by research assistants recruited from the area. Most of them had formal training in health sciences (nurses, midwives and public health specialists). In addition, they had previous experience with field surveys conducted by the same Faculty of Health Sciences at the *Université Libres des Pays des Grands Lacs* (ULPGL). Before the research assistants were sent out to the health facilities, they underwent two days training in order to familiarise with the realities of the questionnaire.

Data analysis

The information was later translated into English for analysis. Data entry template was developed in SPSS 20 (SPSS Inc., Chicago, IL, USA) and the data was entered by a team from ULPGL, Goma for a week. The questionnaire had more than twenty questions and answers. Each response was coded. A univariate analysis was performed.

Results

Characteristics of respondents and health facilities

More than 49 (60%) of the respondents were nurses, followed by lab technicians (29; 36%). The remaining were physicians. A total of 80 facilities were identified in the area, involved in some kind of HIV services, TB services or both.

Sixteen facilities were hospitals and out of these, 8 offered services to co-infected patients. Sixty were health centres of which 15 offered integrated HIV/TB services. In total, 49 facilities offered TB services, 7 HIV services and 23 both HIV and TB services (Table 1).

Ownership is essentially public (64) with 17 of these offering integrated services. Out of the 15 that are run by Faith-Based Organizations (FBOs), 6 had integrated services. One health facility is run by an International Non-Governmental Organizations (NGO).

Mapping of available services

Health facilities were ranked according to the type of services they reported to be providing, HIV, TB or TB/HIV co-infection services. The majority (i.e. 49 facilities, 71%) were active in TB, 23 (29%) in TB/HIV, and 9% were engaged in HIV control.

TB care

Of the 49 health facilities dealing only with TB, 40 (82%) were involved in the diagnosis and treatment (DOT), 6 (12%) performed TB diagnosis only and the remainder were active in

Table 1. Mapping of health facilities

Type of facilities	N	With TB/HIV integrated services
Hospital	16	8
Health Centre	60	15
Medical Clinic	4	-
Total	80	23
Sector		
Public	64	17
Faith Based Organisation	15	6
International NGO	1	-
Total	80	23

education, mobilisation and other activities.

In order to determine the burden of TB services and its linkages with co-infection services, the facilities were asked about the average number of cases detected and treated monthly as well as to HIV prevention among TB patients.

An average of 14 and 8 TB cases were respectively detected and treated per month and per facility. As to HIV prevention, 29 facilities (59%) provided HIV counselling and 6 (12%) systematically referred TB patients for HIV screening. The referral institutions were primarily public facilities, followed by FBOs and NGOs.

HIV care

The same questions were asked to the respondents in 7 health facilities that offered HIV services only. Results indicated that on average, the health facilities tested about 22 suspected HIV cases with 7 positive results per month. Only 2 facilities out of the 7 offer antiretroviral therapy (ART). On average, 18 HIV positive patients were on ART at the time of the survey, per facility. Regarding testing for TB, 3 facilities offered counselling on TB, then referred their patients.

HIV/TB co-infection services and stewardship by TB and HIV control programmes

Of the 23 facilities, 17 facilities (74%) reported providing both TB and HIV screening and treatment services (DOT and ART). Knowledge about prevalence of co-infection was quite low: 72% of respondents did not know the TB prevalence among HIV positive patients. Those who knew reported an average rate of 14% TB prevalence among HIV positive. Likewise, 82% did not know the HIV prevalence among their TB patients. HIV prevalence among TB patients was on average 9% in the facilities (12) that knew about it.

Nineteen health facilities were in partnership with the NTP (National TB control programme) and NAP (National HIV/AIDS control programme) regional representatives (See Table 2) and twelve respondents (52%) established that these control programmes played a positive role through provision of technical support, drug and material supply and training. The respondents whose facilities had no coordination activities with the two control programmes cited lack of motivation and constant breakdown of the partnership as the main reasons for their lack of participation.

Discussion

The objective of this study was to assess the provision of HIV/TB co-infection services in Goma through a mapping of

Table 2. Co-infection services and relations with diseases control programmes

Questions*	Yes	No
Do you know the prevalence of HIV among the TB patients?	4	19
Do you screen for TB among the HIV patients?	13	10
Do you know the prevalence of TB among the HIV patients?	6	17
Is your establishment in contact with the NTP and the	19	4
Is isoniazid preventive treatment available in your institution?	12	11
Is there a national policy for this preventive treatment?	7	16
Is there continued support for HIV/TB patients?	17	6
*Continued support above refers to follow-up and monitoring of patients e. g. adherence to treatment plans		

health facilities in a conflict-ridden area in DRC. This objective included an exploration of district level interactions between health facilities and the National TB and HIV/AIDS control programme representatives.

It is striking that the majority of facilities are run by the public sector with a minority run by faith-based organisations. Against all expectations, international NGOs appear not to be so prominent in this area, which is a surprise, given the two decades old chronic situation of humanitarian emergency in the region (12). The DRC government has partnered with FBOs, NGOs, and various international donors. The latter not only provide financial aid, but studies have shown that the NGOs are able to access remote and unsafe areas in the East of this country that government agents cannot reach (13). The limited representation of NGOs in this survey is perhaps due to the reason that the area mapped is largely urban and semi-urban rather than rural. Another reason might be that, many present international organisations present in the area do not focus on provision of HIV and TB services. A likely explanation would be that in such a fragile setting, there are more pressing emergency needs and therefore most humanitarian interventions in this area are more concentrated on addressing other issues, such as malnutrition or sexual violence as opposed to HIV or TB (12). However, notwithstanding the public status of the majority of the facilities, it is highly probable that these facilities are essentially supported by aid funding, rather than public budget. Their public status might therefore be more nominal than intrinsic.

The fact that most facilities are dedicated towards provision of TB services solely is quite revealing. Reasons for this may be multiple including historical (TB has been there for decades), epidemiological (high burden) and organisational (stronger TB control programme). These reasons are translated operationally in better external funding and consequently, better incentives packages within the disease programme. In Congo, health facilities that treat TB patients have better salary packages due to the financial and technical support they receive (13,14).

It is disconcerting that HIV care services are largely unavailable: only about one out of four facilities offer co-infection services. It is unclear why. The poor organisation of the NAP might explain most of this problem. This affects TB/HIV co-infection services. As in most parts of sub-Saharan Africa (15), TB/HIV care might be still centred in hospitals. This centralisation of care is even more so in unstable settings. The hospitals are likely to have better resources than the smaller

health centres. This also explains why patients were referred primarily to hospitals, followed by other health centres.

The WHO policy for collaborative TB/HIV activities states that certain mechanisms have to be in place if control programmes are to succeed. These are: setting up coordinating bodies at all levels, carrying out surveillance to determine HIV prevalence among TB patients, carrying out joint activities and monitoring and evaluation of these collaborative activities (16). Furthermore, in order to decrease the burden of TB among HIV patients, the Tree-Is approach has been suggested, namely. Intensive case finding, isoniazid preventive treatment (IPT) and Infection control in health facilities (2,17). On the other hand, in order to decrease HIV burden among TB patients, the suggested measures include HIV counselling and testing, co-trimoxazole preventive therapy, ART and continued support and care for co-infected patients (18).

Following these guidelines, there is a framework, for collaboration of control activities in the DRC, but obviously, efforts have been hampered by great disparities between the NTP and the NAP. The NTP has developed strong partnerships with international organizations and has experienced better governance. It has also developed reasonable strategies, and currently covers all 515 health zones in the country for the Directly Observed Treatment Short-Course (DOTS) strategy (14). As a result, the NTP is better funded. The NAP on the other hand has been dogged by decades of bad governance and HIV/AIDS programmes were poorly neglected and poorly funded for some time.

The fragmentation of services in such an unstable setting is clearly at disadvantage to the control of HIV/TB co-infection. The current system involves testing in one facility and treatment in another and this leads to patients dropping out of treatment plans. In an area that is severely poverty-stricken, that still faces political unrest and experiences population mobility, an integrated treatment strategy for co-infected patients is critical to improve control of both diseases.

In addition, there is a general perception that RDC is not a high burden HIV country, as per national prevalence data. This might be a mistake to consider the Goma area as a low HIV setting as in the rest of the country. Indeed, conflict in this area resulted in mass migration across borders to and from countries like Uganda and Rwanda that had higher HIV prevalence well prior to crises in the region. There is little data on HIV and TB prevalence pre-war but a study conducted in 2004 estimated the HIV prevalence in Goma (5.4%) to be lower than that in surrounding sentinel sites like Gisenyi, Rwanda (7.1%). In 2002, DRC refugees in Gihembe camp had 1.5% HIV prevalence compared to 6.7% in the host population of Byumba, Rwanda (19).

Recent events in this region are prone to result in increased HIV transmission. One of the weapons used in this war has always been sexual violence, a phenomenon called 'the war within the war', which potentially can fuel HIV (20). According to estimates, up to 60% of soldiers and other fighters in the region are infected with HIV (21). The military forces in the region have one of the highest rates of sexually transmitted infections of any military groups in the world.

National disease control programmes need therefore, to be more attentive and proactive and ensuring health facilities are equally sensitive to co-infection issues. Unfortunately, health information system was poor in facilities. Most respondents

did not know the level of co-infection rates among their cohorts of patients. In fact, record keeping was poor with missing data, data duplication and delays in relaying information, as reported elsewhere (14). Data on TB flows more efficiently to the central level than data on HIV/AIDS, perhaps due to better efficiency of the NTP. The Demographic and Health Survey (DHS) 2007 also reported about the absence of data on HIV/AIDS (8). NAP needs to strengthen its health information systems, and collect appropriately and share the data within, between and beyond both control programmes.

Interaction between the facilities and the NTP and NAP has been viewed in a positive light, although they take place in a limited scale. The NTP and NAP provide for drugs supplies, laboratory reagents, medical equipment and other supplies. The NTP has a clearly documented supply chain where the NTP supplies the provincial representatives bi-annually, which in turn supply the health zones quarterly and the health zones supply the health facilities monthly (14). The NAP also supplies health facilities with material and equipment. The two programmes also train health staff and play a supervisory role for HIV and TB activities in the region. But clearly, the NAP lies significantly behind.

The study might have some limitations that are important to mention. The sampling procedure of the health facilities has not been random, but rather purposive. Some facilities might therefore have been missed, or underestimated. Accessibility was another criterion. Facilities in hard-to-reach locations around these sub-urban areas might have been overlooked. But such risks are minimal since the research assistants were selected from the local population very familiar to the milieu. Moreover, the participation of the Provincial Health Inspectorate guaranteed that the up-to-date list of health facilities would constitute the departing point. The structure of the questionnaire may have led to some information being inadvertently omitted e. g. availability of Common Proficiency Test (CPT). Nevertheless these limitations; it can be argued that the study has contributed to raise the current issues in relation to TB/HIV co-infection in this very complex and unstable setting.

Conclusion

This survey has demonstrated that provision of HIV and TB integrated services in a post-conflict region is possible, albeit slow. It takes a strong commitment from the government and other stakeholders to ensure implementation of the set goals. The public sector remains key pillar in the provision of HIV and TB services in the Goma region, but this can be nominal than intrinsic, given the influence of international humanitarian agencies. Integration of care for TB/HIV co-infected patients remain scattered. There is need for increased stewardship, particularly by the HIV programme. Discrepancies in organisational structures between the NTP and the NAP are an obstacle to a well-integrated TB/HIV policy. Faster progresses on the HIV control side are called for. This is an emergency because the area is likely to suffer more from high HIV incidence than national incidence due to chronic political and humanitarian turbulences in the region.

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Ethical issues

The ethical clearance was obtained from the ethical committee at ULPGL in DRC. During the survey, the purpose and importance of the study were explained to respondents before the interview process. Given the social context, this study was done in complete confidentiality, and the survey participants were reassured that their names will not be disclosed or used for other purposes. Anonymity was therefore adopted as a strategy for interviewing respondents. The survey was based on voluntary participation.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

BBK was key author in defining the research problem, designed the study and led the writing up of the manuscript. BAO conducted the data analysis and initiated the discussion section in the manuscript. ENN designed the data collection instrument, supervised the data collection process and initiated the data analysis work. NM and DKK contributed to the data collection process through the training of research assistants on data collection techniques and by co-leading the research assistants in the field. KK provided an overall supervision to the research team, ensured the methods were adequate, the ethical permission was obtained, and that all public authorities were aware of the research.

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