

Planning for PPM-DOTS implementation in urban slums in Kenya: knowledge, attitude and practices of private health care providers in Kibera slum, Nairobi

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SUMMARY

SETTING: Kibera, the largest slum in Nairobi, Kenya.

OBJECTIVE: To determine the tuberculosis (TB) knowledge, attitude and practices (KAP) of private health care providers (PHCPs) to identify their training needs and willingness to participate in a National Leprosy and Tuberculosis Control Programme (NLTP) guided TB control effort in the slum.

DESIGN AND METHODOLOGY: A cross-sectional survey. The KAP of PHCPs was assessed using an interviewer administered questionnaire.

RESULTS: Of 75 PHCPs interviewed, the majority (96.0%) were paramedics; 51 (77.1%) did not consider sputum smear microscopy crucial in patients presenting with prolonged cough or when a chest X-ray was sug-

gestive of TB; of 29 (38.7%) who indicated familiarity with the drugs used in TB treatment, 20 (58.5%) would have chosen the NLTP-recommended regimens for the treatment of the various types of TB; 16 (21.3%) PHCPs indicated that they treated TB, six (37.5%) of whom were not familiar with anti-tuberculosis drug regimens. All the PHCPs referred TB suspects to the public sector for diagnosis.

CONCLUSION: This study reveals a significant gap in TB knowledge among the PHCPs in Kibera slum. However, given appropriate training and supervision, there is potential for public-private mix for DOTS implementation in this setting.

KEY WORDS: TB; slums; private health care; Kenya

KENYA HAS A LARGE and rising tuberculosis (TB) disease burden, and is ranked among the top 22 countries that contribute about 80% of the world's TB cases.¹ The TB case notification rate rose steadily, from about 51 to 371 per 100 000 population, between 1987 and 2001.² As in the rest of sub-Saharan Africa, this large increase in TB is attributed primarily to the human immunodeficiency virus (HIV).³⁻⁶ Other factors may, however, be contributing to the upsurge in TB in many African countries, Kenya included. Principle among these is the rising poverty and consequent social deprivation. In Kenya, all economic indicators have steadily declined over the last 10 to 15 years.⁷ It is known that poverty and TB are closely interrelated. It has been demonstrated that TB rates fell in the industrialised world long before the introduction of specific chemotherapy and bacille Calmette-Guérin (BCG) vaccination, a phenomenon attributed primarily to improved social conditions.^{8,9} A strong relationship between TB and social deprivation has

been demonstrated in several UK cities.¹⁰ However, case finding and specific chemotherapy are the only methods that have an important short-term impact on the transmission of TB.⁸

Kenya has adopted the World Health Organization (WHO) recommended DOTS strategy for the control of TB, and is currently reported to have 100% DOTS coverage.¹¹ However, the large TB disease burden in Kenya is making it difficult for the public health sector to continue delivering quality DOTS services: Several factors contribute to the sub-optimal DOTS services in the public sector; these include a high workload, multi-purpose diagnostic facilities, lack of refresher courses for technical staff and lack of quality assurance programmes. Smear microscopy may thus not be optimally performed. There is evidence that up to a quarter of sputum smears reported as negative in the routine TB diagnostic services are positive on re-examination at the research laboratory.¹² In addition, there may be difficulties with treatment

supervision and patient follow-up. In a review of the treatment outcomes of a cohort of patients on retreatment in 1996–1997 in the Nairobi public health services, it was found that 64.2% had no follow-up data, and that treatment outcomes could not be determined from the records available.¹³ There is therefore an urgent need to find ways to improve the diagnostic capability, treatment supervision and treatment outcomes in Kenya.

While there has been relatively little expansion of the public health sector in Kenya in recent years, the for-profit private health sector has continued to grow and is now a major player in the provision of health services in the country: 80% of Kenyan medical graduates are currently working in the private health sector, and while 52.5% of health facilities in Kenya are run by the government, 47.6% are managed by the private sector or non-governmental organisations.¹⁴ The precise number of solo private health care providers in Nairobi is unknown, but is suspected to be large. There are, however, almost twice as many nursing homes and hospitals in the private sector as in the public sector.¹⁵

The private health care sector has not been involved until recently in the provision of DOTS in Kenya. In 2002, the Kenya Association for the Prevention of Tuberculosis and Lung Diseases (KAPTLD), in collaboration with the National Leprosy and Tuberculosis Control Programme (NLTP), initiated a project to involve the private sector in DOTS in Nairobi. This project is currently sourcing its drugs directly from the private sector and uses a prepayment scheme, with patients paying about US\$60 for the drugs. The project has placed over 1500 patients on DOTS since its inception and has had a treatment success rate of about 84% (KAPTLD secretariat, manuscript in preparation). While the project has been relatively successful in introducing DOTS in the private health care sector in Nairobi, the use of the prepayment scheme may be alienating the most vulnerable groups, especially poor slum dwellers.

The aim of the present study was to generate data on the current TB knowledge, attitudes and practices (KAP) of private health care providers (PHCPs) in the Kibera slum, to: 1) identify the PHCPs' knowledge gaps and training needs for effective implementation of an NLTP-guided TB control effort in public-private mix (PPM), and 2) to assess the willingness of these providers to participate in the NLTP-led TB control effort in the slum.

METHODS

Study site

Kibera slum is located about 6 km south-west of Nairobi's city centre. It has an estimated population of 700 000, with a population density of 40 881/km². The predominant housing structure is mud-walled

houses roofed with iron sheeting. Eighty-six per cent of families live in single rooms, and the average family size is four (D Mathu, Kenya Medical Research Institute, personal communication). At the time of the study DOTS services were provided primarily by the public health care sector through one hospital and three health centres situated in the vicinity of the slum. The number of TB cases from the slum is large, but precise figures were not available.

Data collection

This cross-sectional study was carried out over a 4-week period from November to December 2001. A study team working with locals familiar with the slum searched the entire slum for private health service outlets operating as 'medical clinics'. All the private clinical outlets identified were visited and information on the qualifications of the clinical staff and their KAP as regards TB case management, including case detection, treatment and monitoring, was obtained using a structured interviewer-administered questionnaire.

RESULTS

A total of 75 PHCPs were identified and interviewed. No practitioners declined to be interviewed. The qualifications of those interviewed are shown in Table 1. In Kenya, persons holding a diploma in clinical medicine or a higher qualification and those with a certificate in nursing can obtain a licence to provide private health care services. Practitioners in Group C would normally not be licensed to provide medical services. Of the 75 PHCPs interviewed, only three had a medical degree, two of whom were radiologists by training; 32 (40.5%) were nurses, and 26 (32.9%) were medical assistants (clinical officers). However, seven (21.8%) of the 32 nurses may have received no formal nursing training.

Seventeen (21.5%) of the 75 PHCPs had a laboratory as part of their practice. Of these 17, 12 (70.5%) were able to carry out sputum smear examination.

Sixteen (21.3%) of the 75 PHCPs said they treated TB. The responses to questions relating to evaluation of TB suspects are summarised in Table 2. Twenty-seven (45.1%) of the PHCPs did not consider sputum examination for acid-fast bacilli (AFB) to be crucial in patients presenting with a cough of more than 3 weeks, and 24 (32%) did not think it was necessary

Table 1 Qualifications of private health care providers surveyed in Kibera slum

Group	Qualification	n (%)
A	Diploma in clinical medicine or higher	29 (38.7)
B	Nurse	32 (42.7)
C	Nurse aide, others	14 (18.7)
Total		75 (100)

Table 2 Responses of PHCPs in Kibera to questions relating to TB diagnosis

Question	Yes response by professional group*			
	A (n = 29) n (%)	B (n = 32) n (%)	C (n = 14) n (%)	Total (n = 75) n (%)
Sputum smear critical for those with cough >3 weeks	11 (37.9)	11 (34.3)	1 (7.1)	23 (30.6)
Sputum smear and CXR critical for those with cough >3 weeks	11 (37.9)	10 (31.2)	4 (36.3)	24 (32.0)
Necessity of sputum smear when CXR suggests TB	23 (79.3)	20 (62.5)	8 (57.1)	51 (68.0)
Knowledge of NLTP case definition for smear-negative PTB	20 (70.0)	18 (56.2)	6 (42.8)	34 (45.3)

* Group A = Diploma in clinical medicine or a higher qualification; Group B = Nurse; Group C = Nurse aide and others (including herbalists).
PHCP = private health care providers; TB = tuberculosis; CXR = chest X-ray; NLTP = National Leprosy and Tuberculosis Control Programme; PTB = pulmonary tuberculosis.

to examine sputum for AFB when a chest X-ray was suggestive of TB.

The responses to questions related to drug management and monitoring of TB patients on treatment are summarised in Table 3. Twenty-nine (38.7%) of the 75 PHCPs said they were familiar with the drugs and drug regimens used in the treatment of TB. Of the 29 PHCPs who claimed to be familiar with anti-tuberculosis drugs and drug regimens, respectively 6 (20.7%), 9 (31.0%) and 5 (17.2%) would have chosen the NLTP recommended regimen for the treatment of smear-positive pulmonary TB (PTB), smear-

Table 3 Responses of PHCPs in Kibera to questions relating to TB treatment

Question	Yes response by professional group*			
	A (n = 29) n (%)	B (n = 32) n (%)	C (n = 14) n (%)	Total (n = 75) n (%)
Familiarity with TB drugs and regimens	17 (58.6)	10 (31.2)	2 (14.3)	29 (38.7)
Conformity with NLTP drug regimen for smear-positive PTB	4 (13.8)	2 (6.25)	0 (0.0)	6 (8)
Conformity with NLTP drug regimen for smear-negative PTB	8 (27.6)	2 (6.2)	0 (0.0)	10 (13.3)
Conformity with NLTP guidelines for schedule of clinical review of TB patients	22 (75.9)	28 (87.5)	1 (7.1)	51 (68.0)
Conformity with NLTP guidelines for schedule of follow-up sputum smears	15 (51.7)	15 (46.9)	3 (21.4)	33 (44.0)

* Group A = Diploma in clinical medicine or a higher qualification; Group B = Nurse; Group C = Nurse aide and others (including herbalists).
PHCP = private health care providers; TB = tuberculosis; NLTP = National Leprosy and Tuberculosis Control Programme; PTB = pulmonary tuberculosis.

negative PTB and extra-pulmonary TB. Of 16 PHCPs who indicated they treated TB, six (37.5%) were not familiar with the drugs and drug regimens used in the treatment of the disease. Almost all (74/75) of the PHCPs referred TB suspects primarily to the public sector for TB screening. A link between the private and the public sector thus already exists in the Kibera slum.

Of the 75 PHCPs, 45 (60.0%) felt TB patients on treatment should be reviewed weekly for the first 2 months and monthly thereafter, while 60 (81.1%) felt prescriptions for TB drugs should be renewed either weekly (31, 41.9%) or monthly (29, 39.2%), and 33 (44.6%) would monitor smear-positive PTB patients on treatment with the recommended schedule of sputum smear examination.¹⁶

Twenty-six (34.7%) of the PHCPs said they always discussed HIV testing with patients they suspected of having TB, while respectively 36 (48.0%), 8 (10.7%) and 5 (6.7%) said they sometimes, rarely or never discussed HIV testing with TB suspects. Almost all (74/75) the PHCPs surveyed thought it was worthwhile treating TB in HIV-infected individuals. Sixty-two (82.7%) felt they were at a high risk of being infected with TB from their patients. A small percentage (4%) of the PHCPs said they were unwilling or would decide later about participation in an NLTP-based TB treatment programme in the slum.

DISCUSSION

There has been an average annual increase of 16% in the number of TB cases notified to the Kenyan NLTP over the last 10 or so years.² It is becoming apparent that urban areas are contributing an increasingly larger proportion of the TB cases notified to the NLTP. In 2001, Nairobi alone notified about 14 000 (20%) of the total 73 000 cases registered with the NLTP throughout the country.² Within Nairobi, the majority of TB cases notified to the NLTP are residents of slums (D Muthama, NLTP, Nairobi, personal communication). The slums, defined as unplanned human settlements where the majority of the population is poor, present optimal conditions for TB transmission. Housing is poor, overcrowding is rife, there may be significant under/malnutrition, substance abuse may be common, access to health care is poor, the quality of health care accessed is dismal, and there may be more intense transmission and probably more rapid progression of HIV disease. Thus the classic relationship between TB and poverty⁹ can be seen in the slums.

It has been suspected that public sector DOTS services may not be reaching all TB suspects in the slums or that they may be reaching these persons late after the onset of symptoms. Some TB suspects may access care initially from the PHCPs in the slum, as has been demonstrated elsewhere.¹⁷ Furthermore, PHCPs in the slums may be contributing to suboptimal TB case

management, including provider-related diagnostic delays and inadequate drug treatment. Prior to this study, no information existed on the TB management practices of PHCPs in Kenya. Experience elsewhere has shown that the TB management practices of PHCPs are often poor. In Maharashtra, India, it has been demonstrated that although the first source of help for 86% of TB patients was a private health provider, there were major diagnostic and therapy inadequacies and treatment adherence was low.¹⁸ In Nepal, a survey of private laboratories revealed poor quality among smear microscopy services.¹⁹ Other reports indicate that PHCPs are often associated with poor TB case management practices, including provider-related diagnostic delay, inadequate therapy and inadequate case recording and reporting.^{20–27} The consequences of delay in treating TB include increased period of infectivity, risk of late sequelae (including post TB lung fibrosis and bronchiectasis) and mortality, and increased cost of the disease.^{28,29} Inadequate drug therapy is a strong promoter of the development of drug resistance.³⁰ Even though private health care providers are increasingly taking a bigger share of health service provision in many developing countries, the quality of the services may be sub-optimal. The challenge for TB control programmes in many countries is how to encourage PHCPs to follow NTP guidelines in diagnosis, therapy and monitoring of TB patients.

Despite these concerns about PHCPs and TB control, the NLTP in Kenya has for some time recognised that TB control targets, which are to detect 70% of infectious cases and successfully treat 85% of detected cases, may not be achieved quickly if the private health sector remains uninvolved. The involvement of the private sector in TB control, known as private-public mix for DOTS implementation (PPM-DOTS), is becoming a new key approach for accelerating DOTS implementation to achieve TB control targets by 2005.³¹

A strong presence of PHCPs in Kibera slum was suspected, but their number, type, distribution, and most importantly their TB KAP, were not known. The planning and development of formal collaboration between the NLTP and the PHCPs in the slum has allowed this information to become available. Using personnel familiar with the slum we tried to identify as many PHCPs as possible, and believe that we had almost 100% coverage of the whole slum. These results are therefore likely to be valid and representative.

This study found that the majority of PHCPs working in Kibera slum did not have a medical degree. Only three of the PHCPs identified and interviewed had this qualification. This finding reinforces the suspicion that, in Kenyan urban slums and among the poor, private medical care is provided primarily by paramedics, especially nurses and clinical officers. Training programmes for PPM-DOTS in Kenyan slums need to take account of the basic training of these cadres of health care personnel.

Our study revealed that a significant proportion of the PHCPs (14/75) were not qualified to provide any form of health care services on their own and would not be formally licensed by the regulatory authorities. Thus 14 PHCPs (8 nurse aides, 3 herbalists and 3 others) may have been practising 'formal' medicine illegally. The three herbalists had in fact indicated on their doors that their practices were 'medical clinics' rather than herbal clinics, which is why they were included in the study. We did not specifically request practitioners to provide their private practice licences and cannot state how many were practising illegally. The finding that a significant proportion of PHCPs (18.6%) were non-qualified is important. Planning of PPM-DOTS in the slums will need to include decisions on the type of PHCPs, i.e., qualified/licensed vs. non-qualified/unlicensed practitioners, to be included in the programme.

The study revealed significant TB knowledge gaps among PHCPs in the slum. It is unclear how much of this is due to poor basic training in the medical schools and medical colleges. It is presumed that the nurses, clinical officers and doctors receive basic training in TB, but the NTP is yet to review the TB curriculum of either of the two medical schools or the medical college in Kenya to understand what is actually taught. Only 45 of the 75 providers considered sputum smear microscopy a key initial investigation in patients presenting with a cough of more than 3 weeks, implying that these practitioners would contribute to provider-related diagnostic delays and their consequences.^{29,30} The fact that 24 of the providers would not perform sputum smears because a chest X-ray is suggestive of TB, and that only 34 providers knew the correct case definition of smear-negative PTB, may contribute to the overdiagnosis of smear-negative PTB. Most of the PHCPs were unfamiliar with anti-tuberculosis drugs and drug regimens. These included the 16 who indicated that they regularly treated the disease. As the PHCPs were not involved by the NLTP in the provision of DOTS services, it has to be assumed that the 16 practitioners who regularly treated TB were using non-NLTP drugs. The potential for prescribing errors would be the norm rather than the exception in this group of providers. With the current liberalisation of the private health care sector in Kenya, including the availability in private pharmacies of a variety of anti-tuberculosis drugs, the fact that some of these PHCPs may be prescribing such drugs regularly is worrying. Prescribing errors could lead to the emergence of multidrug-resistant TB (MDR-TB, defined as resistance to at least isoniazid and rifampicin), which Kenya has little capacity to deal with. There is therefore an urgent need to bring these providers into the NLTP-led DOTS effort, not only to improve access to DOTS but also to minimise TB case management errors that may be occurring.

It was, however, reassuring to find that the major-

ity of the PHCPs in the Kibera slum already referred their TB suspects to the NLTP for diagnosis and treatment. Although 16 private medical laboratories were identified in the slum, it emerged from focus group discussions with TB patients and opinion leaders from the slum that those living in Kibera were doubtful about the quality of these services and did not routinely use them (manuscript in preparation). We did not ask providers how long it took them to refer TB suspects for smear microscopy in the public sector.

We did find a weak link between the PHCPs and the NLTP that needs to be formalised and strengthened. It was also reassuring that most (71/75) PHCPs were eager to participate in an NLTP-led DOTS effort in the slum. It appears therefore that the major activity of PPM-DOTS in the slum will not be convincing PHCPs to join the programme, but improving their KAP through training and supervision. Following the results of this study, the NTP plans to involve the licensed or licensable private health sector in the provision of DOTS services by supporting and promoting the use of existing private medical laboratories in the slum to improve access to smear microscopy services. Clinicians (groups A and B) will be trained to recognise TB, refer TB suspects for smear microscopy at the NTP-supported private medical laboratories in the slum or to the nearest public sector smear microscopy centres, and to provide directly observed treatment. Overall, the NTP believes this will improve TB control in the slum by reducing provider-related diagnostic delay and enhancing adherence to treatment. Case detection may also be increased.

CONCLUSION

We conclude that there are significant TB knowledge gaps in the majority of PHCPs in Kibera slum, most of whom do not hold a medical degree and some of whom are unqualified and probably unlicensed to offer formal private medical services. Despite these observations, the potential exists for the development and implementation of PPM-DOTS in the Kibera slum. The implementation of PPM-DOTS will be most effective with the improvement of KAP among PHCPs, through adequate and appropriate training and supervision.

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R É S U M É

CONTEXTE : Kibera, le quartier pauvre le plus étendu de Nairobi, Kenya.

OBJECTIF : Déterminer les connaissances, attitudes et pratiques (KAP) en matière de tuberculose (TB) chez les pourvoyeurs de soins de santé privés (PHCP) afin d'identifier leurs besoins en matière de formation et leur ouverture à l'égard d'une participation à un effort de lutte antituberculeuse guidée par le programme national antituberculeux (NLTP) au sein du quartier.

SCHEMA ET METHODOLOGIE : Enquête transversale. On a évalué par un questionnaire administré par un intervieweur les KAP des PHCP.

RESULTATS : On a interviewé au total 75 PHCP. La majorité d'entre eux (96,0%) étaient des paramédicaux ; 51 (77,1%) ne considéraient pas que l'examen microscopique des frottis d'expectoration était essentiel chez les patients se présentant avec une toux prolongée ou lor-

squ'un cliché du thorax était suggestif de TB ; 29 (38,7%) connaissaient les médicaments utilisés dans les traitements de la TB, dont 20 (58,5%) auraient choisi les régimes recommandés par le NLTP pour le traitement des différents types de TB. Seize des PHCP (21,3%) ont signalé qu'ils traitaient la TB, dont six (37,5%) ne connaissaient pas bien le régime des médicaments antituberculeux. Tous les PHCP réfèrent les cas suspects de TB vers le secteur public pour diagnostic.

CONCLUSION : Cette étude révèle des déficiences significatives en matière de connaissance de la TB parmi les PHCP dans le quartier de taudis de Kibera. Toutefois, moyennant une formation et une supervision appropriées, les potentialités d'une approche mixte publique-privée de la mise en œuvre du DOTS existent dans ce contexte.

R E S U M E N

MARCO DE REFERENCIA : Kibera, el suburbio pobre más grande de Nairobi, Kenia.

OBJETIVO : Evaluar los conocimientos, la actitud y las prácticas (CAP) sobre la tuberculosis de los proveedores de asistencia en salud (PHCP), con el fin de identificar sus necesidades de adiestramiento y su disposición para participar en una operación de control de la tuberculosis dirigida por el Programa Nacional de Lucha contra la Tuberculosis y la Lepra (PNTL), en el suburbio.

DISEÑO Y MÉTODOS : Fue esta una encuesta transversal en la cual se evaluaron las CAP de los PHCP, mediante un cuestionario administrado por un entrevistador.

RESULTADOS : Se entrevistó un total de 75 PHCP. La mayoría (96%) fue personal paramédico : 51 (77,1%) no consideraron decisiva la baciloscopia del esputo en pacientes con tos prolongada, ni en aquellos cuya radiografía de tórax presentaba anomalías indicadoras de

tuberculosis ; 29 (38,7%) refirieron tener algún conocimiento de los medicamentos utilizados para el tratamiento de la tuberculosis, de quienes 20 (58,5%) habrían escogido las pautas terapéuticas recomendadas por el PNTL para el tratamiento de los diversos tipos de tuberculosis ; 16 proveedores (21,3%) indicaron que administraban tratamiento para la tuberculosis, seis de los cuales (37,5%) no conocían los tratamientos antituberculosos. Todos los proveedores remitían los pacientes con sospecha de tuberculosis al sector público para diagnóstico.

CONCLUSIÓN : Este estudio reveló una deficiencia considerable en conocimientos sobre la tuberculosis de los PHCP en el suburbio de Kibera. Sin embargo, si se proveen capacitación y supervisión adecuadas, existe la posibilidad de una interacción de los sectores privado y público para la introducción de DOTS en este medio.