Expanding tuberculosis case notification among marginalized groups in Bangladesh through peer sputum collection

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Case notification rates of tuberculosis (TB) in Bangladesh remain poor despite a high burden of disease. Peer sputum collection among underserved populations was implemented to expand case notification and to provide socially empowering roles in society for often excluded members of marginalized populations. Over the 55 months of the evaluation, 32 587 members of key populations were screened for TB, with 1587 smear-positive TB cases detected. Broadening TB services at human immunodeficiency virus drop-in centers using peer sputum collection to target high-risk populations for TB may be an effective way to increase TB case notification among key populations in Bangladesh.

Tuberculosis (TB) remains a significant public health threat in Bangladesh, a densely populated country of 157 million people in South Asia. In 2013, Bangladesh had the seventh highest number of incident TB cases worldwide, with roughly 350 000 cases and 80 000 deaths.¹ TB prevalence rates were estimated at 402 cases per 100 000 population, with high prevalence among both urban and rural populations.^{1–3} While Bangladesh maintains a low human immunodeficiency virus (HIV) prevalence (<1%) in the general population, a steady increase in HIV cases among certain high-risk groups portends higher TB rates due to TB-HIV co-infection.⁴

Despite such a high TB burden in Bangladesh, case notification rates (the annual number of newly notified cases per 100 000 population) are poor, estimated at approximately 53% — among the lowest in the world.¹ TB services have been available to the general population since the Bangladesh National Tuberculosis Program (NTP) adopted the DOTS strategy in 1993, but the services are underutilized.^{2,5} In particular, certain marginalized populations do not access these health services due to the stigmatization and discrimination associated with their socio-economic status. Key populations at recognized risk for HIV/acquired immune-deficiency syndrome (AIDS) and sexually transmitted infections (STI) include female sex workers (FSW), male sex workers (MSW), transgenders, people who inject drugs (PWID), people living with HIV (PLHIV), and clients of sex workers (CSW). In Bangladesh, these groups are often excluded from health care due to social bias, and may have undiagnosed and untreated TB.^{4,6} While intensified case finding has been successful in increasing TB case notification in some countries, especially when partnered

with HIV services, these key populations remain elusive targets.^{7–10}

The non-profit organization FHI 360 has been providing HIV services and technical assistance in Bangladesh for over 10 years, with funding provided by the United States Agency for International Development (USAID). FHI 360 established branded drop-in sites, known as Modhumita centers, to reach high-risk populations for HIV; 40 Modhumita centers were operating in Bangladesh in 2012 (Figure). These centers offered testing, prevention, and treatment services for HIV and STI, but did not provide additional services such as TB screening, diagnosis, or treatment.

ASPECT OF INTEREST

In 2010, the Modhumita centers expanded services to include TB awareness education, sputum collection services, and linkage to TB treatment centers. This novel strategy for Bangladesh centered on using peers as sputum collectors in an attempt to reach key populations. Peer sputum collectors were chosen by the implementing agencies that managed the Modhumita centers, but training was provided by NTP partners. Training included education on TB epidemiology in Bangladesh, signs and symptoms of TB, screening presumptive TB cases with a questionnaire and collecting sputum specimens, establishing reporting requirements for sputum collectors, and maintaining patient confidentiality. Eligibility requirements for sputum collectors included being a community member and familiarity with the Modhumita centers; having a secondary school education was also preferred, except within the transgender community, as most of this group lack secondary education. Sputum collectors were given a small stipend for their work. All collection materials and testing were provided by the NTP.

Peer sputum collectors identified high-risk persons at the Modhumita centers or in the local community, such as sex worker hangouts and drug user hot spots, and screened them using a standard data collection questionnaire. Those with symptoms suggestive of TB were given three collection pots and taught how to collect their own sputum. Sputum collectors returned the following day to gather the three specimens and take them to the nearest testing center. Following testing, sputum collectors delivered the results to the presumptive patients. Individuals with positive test results were linked with DOTS providers and assisted with follow-up visits for the ensuing 6 months.

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HIV; transgenders; epidemiology

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FIGURE Distribution of FHI 360 Modhumita centers in Bangladesh, 2012.

Informed consent was not required, as this was a retrospective analysis of programmatic data.

Sixty-one peer sputum collectors were trained: 11 FSW, 11 MSW, 8 transgender, 9 PWID, 5 PLHIV, and 17 CSW. Although five HIV-positive clients received training as peer sputum collectors, they were subsequently excluded because of the increased risk of contracting TB. Peer sputum collectors were often the first point of contact for TB care. The total number of persons with presumptive TB who were screened, tested, and treated for TB during January 2010–July 2014 are listed in the Table. Over 32 000

members of key populations were identified with symptoms suggestive of TB and almost 25 000 underwent sputum smear testing. Over a period of 55 months, 1587 smear-positive TB cases were diagnosed among individuals at high risk for HIV. This represents a high burden of undetected disease in these marginalized populations who may otherwise not have sought care.

This screening strategy can be an empowering experience for members of key populations who are often socially excluded from mainstream society. The community outreach aspect of this technique provides a unique opportunity to engage marginalized groups not only in their own health, but also in the direct care of peers. It helps address the underlying segregation among key populations and appears to be a positive step toward more inclusive attitudes and behaviors towards high-risk groups in Bangladesh and elsewhere, while also providing some income for the sputum collectors.

DISCUSSION

Case notification rates in Bangladesh are hampered by numerous factors, including limited national resources and passive case-detection strategies that often exclude marginalized populations at highest risk for TB. We found that intensified case finding and community outreach using peer sputum collection identified a large number of TB cases who might not have been detected among key populations with poor health-seeking behavior. Despite the program's success, almost 8000 patients screened with chronic cough did not provide sputum for testing and only 85% of the smear-positive patients identified completed a full course of treatment compared to the national average of 92%, likely due to challenges related to the highly mobile nature of this population.¹ Despite these disparities, this study demonstrates that expanding TB services at HIV drop-in centers using peer sputum collection to target high-risk populations for TB may be an effective way to bolster TB case notification among these groups. Peer sputum collection has the added benefit of offering key populations self-empowerment, and can play an important role in improving the health of their community.

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TABLE Total number of persons tested and treated for TB among those with symptoms of TB identified through peer sputum collection among key populations in Bangladesh, January 2010–July 2014

	FSW <i>n</i> = 6918 <i>n</i> (%)	MSW <i>n</i> = 4699 <i>n</i> (%)	TG <i>n</i> = 3201 <i>n</i> (%)	PWID <i>n</i> = 3288 <i>n</i> (%)	PLHIV <i>n</i> = 3433 <i>n</i> (%)	CSW <i>n</i> = 11 048 <i>n</i> (%)	Total <i>N</i> = 32 587 <i>n</i> (%)
Sputum tested for TB	5 050 (73)	2 885 (61)	2 477 (77)	2 788 (85)	2 280 (66)	9 299 (84)	24 779 (76)
Smear-positive for TB among tested	346 (6.9)	134 (4.6)	51 (2.1)	170 (6.1)	89 (3.9)	797 (8.6)	1 587 (6.4)
Completed treatment among smear-positive persons	274 (79)	82 (61)	49 (96)	126 (74)	52 (58)	763 (96)	1 346 (85)

TB = tuberculosis; FSW = female sex workers; MSW = male sex workers; TG = transgender; PWID = people who inject drugs; PLHIV = people living with the human immunodeficiency virus; CSW = clients of sex workers.

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Le taux de déclaration des cas de tuberculose (TB) au Bangladesh reste médiocre en dépit du lourd fardeau de la maladie. Le recueil de crachats par les pairs au sein des populations vulnérables a été mis en œuvre pour augmenter la déclaration des cas et également fournir des rôles socialement valorisants à des membres des populations marginales souvent exclus. Pendant 55 mois d'évaluation, 32 587 membres de ces populations ont bénéficié

d'un dépistage de la TB, qui a permis de détecter 1587 cas de TB à frottis positif. L'expansion des services de TB dans les centres pour le virus d'immunodéficience humaine sans rendez-vous, utilisant le recueil de crachats par les pairs pour cibler les populations à haut risque de TB, peut être une façon efficace d'augmenter la déclaration des cas de TB parmi les populations les plus touchées au Bangladesh.

Las tasas de notificación de la tuberculosis (TB) en Bangladesh siguen siendo bajas pese a la alta carga de morbilidad por esta enfermedad. Se introdujo una medida de recogida de esputo por los pares en las poblaciones desatendidas, con el objeto de aumentar la notificación de casos y al mismo tiempo crear funciones de empoderamiento social en poblaciones marginadas, dirigidas a miembros de la comunidad que con frecuencia están excluidos. Durante los 55 meses de la evaluación, se investigó la TB en 32 587 miembros de

poblaciones clave y se detectaron 1587 casos de TB con baciloscopia positiva. Una ampliación de los servicios de atención de la TB a los centros de encuentro y consulta de la infección por el virus de la inmunodeficiencia humana con aplicación de una estrategia de recogida de esputo por los pares y destinada a llegar a las poblaciones de alto riesgo de contraer la TB, sería una medida efectiva en aras de mejorar la notificación de los casos en las poblaciones clave de Bangladesh.