

**STRENGTHENING THE LINK BETWEEN
GOVERNMENT AND NON-GOVERNMENT ORGANIZATIONS
IN TUBERCULOSIS CONTROL IN THE URBAN POOR OF
METRO MANILA, PHILIPPINES:
A RETROSPECTIVE DESCRIPTIVE STUDY**

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Abstract [Objective] To assess the effects of engagement by GOs and NGOs in enhancing access to DOTS facilities and in increasing case finding of TB in the urban poor areas in the Philippines. [Methods] A retrospective descriptive study was conducted to analyze pre- and post-intervention data on DOTS access in two urban poor communities. Data from 2007 to 2012 were collected from participating GOs and NGO DOTS facilities and NGO referring facilities using the National TB Control Program (NTP) monitoring tool. [Results] Attendance rate of presumptive TB in total increased from 1.0% to 1.3% ($p < 0.01$). Likewise, the notification rate of new smear positive PTB increased from 152 to 167/100,000 ($p < 0.01$). Also, the notification rate of new smear negative /clinically diagnosed PTB increased from 103 to 316/100,000 ($p < 0.01$). The percent contribution of NGO DOTS facilities in the number of presumptive TB significantly increased from 25% to 30% ($p < 0.001$). It slightly decreased from 28% to 27% in new smear positive PTB ($p = 0.737$) and it declined from 46% to 35% in new smear negative/clinically diagnosed PTB ($p < 0.001$). CHVs notified 3% of the total TB cases. Treatment success rate of new smear positive PTB ranged from 82% to 92%. [Discussion] It is clear that the increase in the notification rate of new smear positive PTB with maintained high success rate is satisfactory result of the project obtained by enhanced collaboration of NGOs with GOs. However, considering high BCG vaccination coverage and presence of commonly observed symptoms and without chest x-ray examination, over-diagnosis of pediatric PTB remained highly possible in contact investigation. [Conclusion] The increase in the number of people with TB symptoms examined and TB notifications showed that GO–NGO intervention model was able to improve access to TB services in the urban poor areas in the Philippines. Thus, the engagement of NGOs has complemented the work of GOs in TB control activities to reach more people in the urban community.

Key words: Tuberculosis, Philippines, Urban poor areas, Case finding

BACKGROUND

The Philippine Plan of Action to Control TB was developed to systematically assess the burden of Tuberculosis (TB) disease and TB control efforts in the Philippines, where the prevalence of TB among the urban poor is estimated to be 1.7 times higher than that of the rest of the population.^{1,2)} The poor and vulnerable groups have limited access to health facilities to diagnose and treat TB or have longer care pathways to care than other social groups.^{3)–8)} In the Philippines, DOTS facility (Directly Observed Treatment, Short-Course) which identify a person with signs and/or symptoms suggestive of TB (hereafter referred to as presumptive TB), diag-

nose, treat and manage TB patients, is either managed by government organizations (GOs); i.e., health centers of local governments or non-governmental organizations (NGOs). To improve access to TB services, it has been recommended that intervention should focus on geographically delineated poor areas, and engage service providers used by the poor to reduce barriers to TB care substantially.³⁾⁹⁾

The Research Institute of Tuberculosis/Japan Anti-Tuberculosis Association Philippines, Inc. (RJPI) is an NGO in the Philippines whose mission is to improve access to quality TB services among the urban poor by strengthening the link between GOs and NGOs. Upon consultation with Manila Health Department (MHD) and Quezon City Health Depart-

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ment (QCHD) in 2007, District 1-Tondo (hereafter Tondo), Manila and Payatas, Quezon City, both in Metro Manila were selected as areas needing assistance in access to TB services. These areas were targeted for an intervention based on multiple risk factors for TB, such as population characteristics (e.g., urban residence in a densely populated area) and low income: defined as those living in informal settlements and earning < US\$ 2–3 per day per household (Table 1).

In 2007, a baseline survey was conducted to better understand how NGOs in the Philippines could contribute to improving patients' access to DOTS facilities. The results suggested the following key interventions: (1) engaging existing NGOs in the intervention sites; (2) building capacity of health care workers (HCWs) of GOs and NGOs, and community health volunteers (CHVs) who voluntarily assist referring facilities and conduct community visits supported by NGOs; (3) establishing referral mechanism of presumptive TB to DOTS facility for diagnosis and management; (4) developing a standardized recording form as a registry for presumptive TB and household contacts of TB patients; (5) conducting advocacy, communication, and social mobilization (ACSM) activities; (6) conducting quarterly monitoring and evaluation visits with representatives from the National Capital Regional Office (NCRO), MHD or QCHD; and (7) developing a guide to improve access to TB services in the urban poor areas (Table 2).

The objective of the study is to assess the effects of engagement by GOs and NGOs in enhancing access to DOTS facilities in case finding of TB in the urban poor areas in

the Philippines.

MATERIALS AND METHODS

A retrospective descriptive study was conducted to analyze the trend of intervention data on access to DOTS facilities in the urban poor communities of Tondo in Manila and Payatas in Quezon City. There are two types of NGO facilities; NGO DOTS facilities (defined above) and NGO referring facilities which function mainly to identify presumptive TB and refer them to DOTS facilities, either GO or NGO. Thus, data were collected using the modified National TB Control Program (NTP) monitoring tool, a checklist consisting of NTP indicators to monitor program implementation and to assess the performance of NGO facilities in assisting GOs for TB control activities. GOs and NGOs' reports were also reviewed. All relevant GO facilities and engaged NGO facilities in Tondo and Payatas were monitored for the study since they serve as DOTS facilities.

During the project, the number of GO facilities increased from 10 to 13. NGO DOTS facilities increased from 4 to 5. In addition, 11 NGO referring facilities were selected for this study in 2010 and the number of facilities increased to 14 in 2012 (Table 3). From DOTS facilities, data on the number of presumptive TB examined, registered and treated as TB cases from 2007 to 2012 were collected through the review of NTP Register, NTP Laboratory Register and treatment cards. Master-list of presumptive TB identified by CHVs and described in referral forms from 2010 to 2012 were compared with the aforementioned reports from DOTS facilities

Table 1 Profile of the two government organizations in Tondo & Payatas, Metro Manila in 2007 and 2012

	District 1- Tondo, Manila		Payatas, Quezon City	
	2007	2012	2007	2012
Total population	320,916	405,125	128,736	120,070
Land area where the project is situated	5.6 km ²	5.6 km ²	28.2 km ²	28.2 km ²
Population density	57,306/km ²	72,344/km ²	4,565/km ²	4,258/km ²
% urban poor*	48%	—	90%	—
Number of smear positive pulmonary TB patients registered (initiated treatment)	407	512	85	125
Case notification rate of new smear positive per 100,000 population	126.8	126.3	66	104

TB: tuberculosis

% urban poor*: proportion of urban poor population living in informal settlements and earning < 2–3 US dollars per household per day. Average size of household is 4.6 in Metro Manila.

Source: Reports from Manila Health Department and Quezon City Health Department in 2008, 2013

Table 3 Number of health facilities monitored during project period
Tondo, Manila & Payatas, Quezon City

	2007	2008	2009	2010	2011	2012
GO DOTS facility	10	11	11	12	13	13
NGO DOTS facility	4	4	4	5	5	5
NGO referring facility	0	0	0	11	10	14

DOTS: Directly Observed Treatment, Short-Course

GO DOTS facility: Health Center of Local Government, to diagnose and treat TB patients

NGO DOTS facility: NGO facility to diagnose and treat TB patients

NGO referring facility: NGO facility that refers presumptive TB patients to DOTS facility

to validate accuracy of data regarding accomplishments of CHVs.

In order to assess case finding activities of GOs and NGOs, the following indicators from 2007 to 2012 were analyzed: (1) the number of presumptive TB examined under microscopy for sputum smear specimen at DOTS facilities; (2) the number of new smear positive pulmonary TB (PTB), positive for acid fast bacilli (AFB) obtaining anti-TB treatment without previous treatment for more than a month; (3) the number of new smear negative/clinically diagnosed PTB, negative for AFB but with chest x-ray finding or clinically diagnosed obtaining anti-TB treatment without previous treatment for more than a month. This category of disease includes smear negative or clinically diagnosed pediatric (a child less than 15 years old) PTB with 2 sputum specimens negative for AFB or with smear not done, who fulfills either 3 of the following 5 criteria for disease activity, i.e., i) signs and symptoms suggestive of TB, ii) exposure to an active TB case, iii) positive tuberculin test, iv) abnormal chest radiography suggestive of TB, and v) other laboratory findings suggestive of TB;¹⁰⁾ (4) percent contribution of NGOs (notified by NGO DOTS facilities) to total presumptive TB, new smear positive PTB, and new smear negative/clinically diagnosed PTB treated; (5) treatment success rate (the number of patients whose sputum follow-up showed negative AFB result; or patients who completed treatment without sputum follow-up) among new smear positive PTB; (6) number of presumptive TB referred by CHVs to DOTS facilities; (7) access rate of referred presumptive TB to DOTS facilities for consultation (the number of presumptive TB who accessed the DOTS facilities/the number of referrals); (8) the number of presumptive TB who completed diagnostic examination; (9) percent contribution of CHVs in the community or at NGO referring facilities to all new PTB cases treated at DOTS facilities.

Chi-square test was used to analyze the differences of the categorical data between the start and the end of the intervention period. A *p*-value of <0.05 was considered to be statistically significant. All analyses were performed using Microsoft Excel 2013 (Microsoft Corporation, WA, USA).

In order to understand the barriers related to lack of access to DOTS, diagnostic examination and treatment among presumptive TB, an interview was conducted for 35 CHVs in 2012. Those CHVs who frequently attended to TB patients provided consent to participate in this study were interviewed. The following inquiries were asked: (1) what were the challenges in conducting community visits and referring presumptive TB to DOTS facilities; (2) what were the possible solutions to address the gaps identified; (3) what were the reasons for inactive participation or attrition of some CHVs. Responses of interviewees were collated and presented to NTP coordinators to solicit recommendations in improving program implementation.

Ethical Consideration: The study protocol was approved by the Department of Health Research Ethics Committee,

Table 2 Interventions provided at NGO and GO DOTS facilities in Tondo & Payatas, Metro Manila

Interventions	2007		2008		2009		2010		2011		2012	
	GO DOTS	NGO DOTS	GO DOTS	NGO DOTS	GO DOTS	NGO DOTS	GO DOTS	NGO DOTS	GO DOTS	NGO DOTS	GO DOTS	NGO DOTS
Pre-intervention preparation & Interventions												
Pre-intervention preparation												
1. Mapping of NGOs in the intervention sites	✓											
2. Engaging existing NGOs in the intervention site	✓											
3. Building capacity of HCWs of GOs, NGOs and CHVs			✓						✓			
During intervention implementation												
4. Establishing referral mechanism of presumptive TB to DOTS facility for diagnosis and management								✓				
5. Development of a standardized recording form as registry for presumptive TB												
a. CHV TB referral form												
b. CHV referral masterlist												
c. Contact investigation masterlist												
6. Conducting quarterly joint monitoring visits with NCRO, MHD or QCHD			✓		✓		✓		✓		✓	
Post-intervention activities												
7. Developing a guide to improve access to TB services in urban poor											✓	✓

GO DOTS: Government Organizations DOTS facility; Health Center of Local Government, to diagnose and treat TB patients.
 NGO DOTS: Non-Governmental DOTS facility; NGO facility to diagnose and treat TB patients.
 NGO RF: Non-Governmental Organization referring facility; NGO facility that refers presumptive TB patients to DOTS facility.
 HCWs of GOs: Health Care Workers of Government Organizations; Medical personnel such as physicians, nurses and medical technologists who were trained on National Tuberculosis Control Program (NTP) guidelines in terms of TB diagnosis and management.
 CHVs: Community Health Volunteers; Medical or non-medical personnel who were trained on NTP guidelines on how to identify and refer-presumptive TB to DOTS facilities.
 NCRO: National Capital Regional Office; part of the Department of Health Office which provides local public health with resources, tools and support to promote and protect the health of their communities.
 MHD: Manila Health Department; local government where the 10 health centers of Manila, involved in the project are affiliated.
 QCHD: Quezon City Health Department; local government where the 3 health centers of Quezon City, involved in the project are affiliated.

Manila, the Philippines (No.04-2013).

RESULTS

In Tondo and Payatas together from 2007 to 2012, the number of presumptive TB examined increased by 51% (from 3,252 to 4,905) at GO facilities, by 90% (from 1,103 to 2,093) at NGO DOTS facilities, and by 61% (from 4,355 to 6,998) in total (Fig. 1). Similarly, the number of new smear positive PTB increased by 29% (from 492 to 637) at GO facilities, by 25% (from 191 to 238) at NGO DOTS facilities, and by 28% (683 to 875) in total. The number of new smear negative/clinically diagnosed PTB drastically increased in 2011 by 333% (from 249 to 1,078) at GO facilities, by 170% (from 215 to 581) at NGO DOTS facilities, and by 258% (from 464 to 1,659) in total (Table 4, Fig. 2).

During the project period, attendance rate of presumptive TB in total per population also increased from 1.0% (4,355/449,652) to 1.3% (6,998/525,493) ($p < 0.01$). Likewise, the notification rate of new smear positive PTB increased from 152/100,000 (683/449,652) to 167/100,000 (875/525,493) ($p < 0.01$). And the notification rate of new smear negative/clinically diagnosed PTB increased from 103/100,000 (464/449,652) to 316/100,000 (1,659/525,493) ($p < 0.01$).

From 2007 to 2012, the percent contribution of NGO

DOTS facilities in the number of presumptive TB significantly increased from 25% (1,103/4,355) to 30% (2,093/6,998) ($p < 0.001$). It slightly decreased from 28% (191/683) to 27% (238/875) in new smear positive PTB ($p = 0.737$). But it declined from 46% (215/464) to 35% (581/1,659) ($p < 0.001$) in new smear negative/clinically diagnosed PTB (Table 4).

The access rate of presumptive TB to the DOTS facilities improved significantly from 53% (188/357) in 2010 to 77% (281/363) in 2012 ($p < 0.001$). Among those who accessed

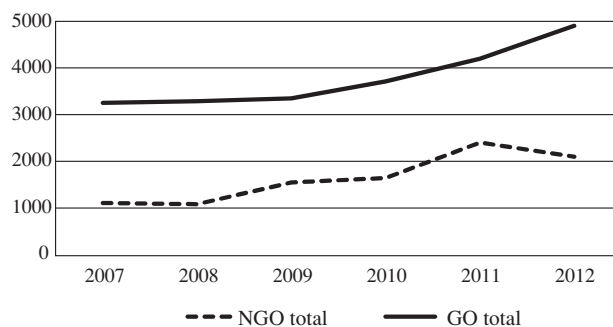


Fig. 1 Trend of the number of presumptive TB examined at GO and NGO DOTS facilities in Metro Manila

Table 4 The number of presumptive TB, new smear positive PTB, and new smear negative/clinically diagnosed PTB in Tondo & Payatas, Metro Manila

		2007	2008	2009	2010	2011	2012	% increase 2012/2007*
Presumptive TB	NGO total	1103	1075	1540	1637	2402	2093	89.8%
	GO total	3252	3288	3348	3714	4200	4905	50.8%
	Grand total	4355	4363	4888	5351	6602	6998	60.7%
	% of NGO	25.3%	24.6%	31.5%	30.6%	36.4%	29.9%	
New smear positive PTB	NGO total	191	198	259	247	264	238	24.6%
	GO total	492	449	515	566	565	637	29.5%
	Grand total	683	647	774	813	829	875	28.1%
	% of NGO	28.0%	30.6%	33.5%	30.4%	31.8%	27.2%	
New smear negative/clinically diagnosed PTB	NGO total	215	197	239	274	666	581	170.2%
	GO total	249	229	214	264	962	1078	332.9%
	Grand total	464	426	453	538	1628	1659	257.5%
	% of NGO	46.3%	46.2%	52.8%	50.9%	40.9%	35.0%	

Presumptive TB: a person with signs and/or symptoms suggestive of TB

PTB: pulmonary tuberculosis

*% increase 2012/2007: (number in 2012 - number in 2007)/number in 2007 × 100

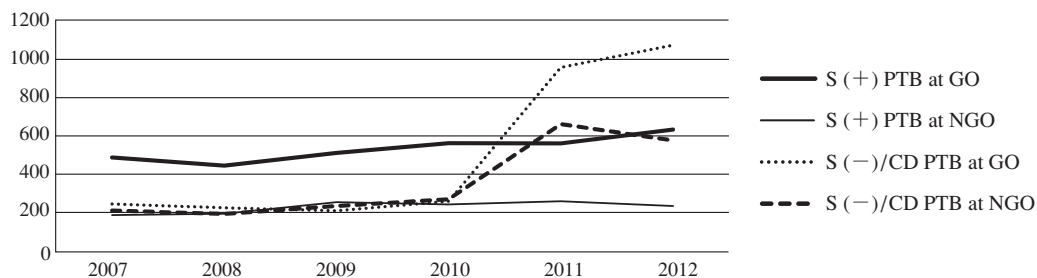


Fig. 2 Trend of the number of S (+) PTB & S (-)/CD PTB at GO and NGO DOTS facilities in Metro Manila
S (+): sputum smear positive, S (-)/CD: sputum smear negative or clinically diagnosed

the DOTS facilities, there was a significant increase in the rate of presumptive TB who completed diagnostic examination from 40% (76/188) to 83% (232/281) ($p < 0.001$) (Table 5). As a result, total number of TB cases referred from NGO referring facilities increased from 49 to 75, although proportion decreased from 4% (49/1,351) to 3% (75/2,534) as total number of TB cases further increased ($p = 0.268$) (Table 6).

Treatment success rate of new smear positive PTB ranged from 83% (458/553) to 89% (536/604) in Tondo, and from 83% (165/199) to 92% (120/130) in Payatas between 2007 and 2011. The interviews revealed that when CHVs accompanied presumptive TB to DOTS facility, that practice improved access to care and diagnostic examinations. The results of interviews also suggested that better communication skill of the DOTS facility staff would improve access rate of referred cases. In 2012, 53% (255/485) of CHVs remained active in community-based TB activities and attrition rate was 47% (230/485). Interviews with CHVs made clear that high attrition rate was related to low motivation, finding job opportunities, routine activities of their organization were prioritized, need to take care of family member, old age, and mandatory relocation of residents. Provisions of recognition awards and training were suggested to encourage CHVs to continually contribute to the society.

Table 5 Referrals by CHVs in Tondo & Payatas, Metro Manila, 2010 to 2012

Area	2010	2011	2012
No. referred			
Tondo	315	354	283
Payatas	42	97	80
Total	357	451	363
No. who accessed DOTS facility			
Tondo	162	190	216
Payatas	26	52	65
Total	188	242	281
Access rate (%) to DOTS facilities			
Tondo	51%	54%	76%
Payatas	62%	54%	81%
Total	53%	54%	77%
No. who underwent diagnostic examination			
Tondo	70	79	175
Payatas	6	39	57
Total	76	118	232
% with complete diagnostic examination			
Tondo	43%	42%	81%
Payatas	23%	75%	88%
Total	40%	49%	83%

CHV: community health volunteers, trained on how to identify and refer presumptive TB to DOTS facilities.

No. who accessed DOTS facility: presumptive TB who reached the DOTS facility.

Access rate: number of presumptive TB who accessed DOTS facility over the total referred presumptive TB.

% with complete diagnostic examination: number of presumptive TB who completed diagnostic examination over the number of presumptive TB accessed the DOTS facility.

DISCUSSION

The notification rate of new smear positive PTB in Metro Manila is declining from 93/100,000 (10,761/11,553,427) in 2007 to 75/100,000 (9,193/12,315,437) in 2012 (data from NCRO). Therefore, the increase in the notification rate of new smear positive PTB from 152 to 167/100,000 by 10% in the project in part of Metro Manila is remarkable. It is clear that the increase in the notification rate of new smear positive PTB with maintained high success rate of 82–92% is a satisfactory result of the project achieved by collaboration of NGOs with GOs.

In order to investigate the cause of sudden increase in the number of smear negative/clinically diagnosed PTB, age group of PTB patients was reviewed. Then it was found that pediatric TB patients (under 15 years of age) accounted for 45% (732/1,628) in Tondo and 43% (718/1,659) in Payatas of all notified PTB cases in 2011 and 2012 according to NTP Register (data from NCRO). There were very few extra-pulmonary TB observed in the project. The proportion of pediatric TB cases of all TB cases of more than 40% is quite high to compare to the estimated 15% of all TB cases in other low income countries.¹¹⁾ Contact investigation program was regarded as the cause of the sudden increase especially for children because it started in the project area in 2011. During the evaluation meeting, the procedure and content of contact investigation was reported as follows: To initiate the activity, NGO had outreach workers to visit household of PTB index patients. To take one instance of one author (AS)'s investigation, 32 contacts were examined. Among them 12 children under 5 years of age had symptoms suggestive of TB and

Table 6 Number of TB cases referred by CHVs and percent contribution to DOTS facilities in Tondo and Payatas, 2010 to 2012

Area	2010	2011	2012
No. of TB cases initiated treatment			
Tondo	916	1583	1713
Payatas	435	874	821
Total	1351	2457	2534
No. initiated treatment from referrals of CHVs			
Tondo	43	25	56
Payatas	6	16	19
Total	49	41	75
% contribution of CHVs to DOTS facilities			
Tondo	4.7%	1.6%	3.3%
Payatas	1.4%	1.8%	2.3%
Total	3.6%	1.7%	3.0%

DOTS facilities: health facilities in which they identify people with TB symptoms, diagnose, treat and manage TB patients.

Total number of TB cases: number of all TB cases registered in DOTS facilities of Tondo and Payatas

Number initiated treatment from referrals of CHVs: number of TB cases identified and initiated at DOTS facilities through the efforts of CHVs.

% contribution of CHVs to DOTS facilities: proportion of TB cases contributed by CHVs to the total TB cases of DOTS facilities in Tondo and Payatas.

positive tuberculin test (weak reaction ranging from 11 to 13 mm of induration). They were diagnosed as TB patients following the definition of NTP and received TB treatment. However, considering high BCG vaccination coverage at birth in Metro Manila in 2010 (97%, 311,015/320,111) (data from NCRO) and presence of commonly observed symptoms such as cough and fever and without chest x-ray examination, over-diagnosis of pediatric PTB remained highly possible. This problem was also described in Joint Tuberculosis Program Review Philippines 2013 as follows: "The team noted large variations in the proportion of children among detected TB cases. There was concurrent over-diagnosis of children in some regions and under-diagnosis of children in others, raising concerns about the adequate implementation of NTP diagnostic algorithms for children."¹²⁾ In addition, over-diagnosis of chest x-ray reading was noted during author (AS)'s visit to one NGO facility. Nine chest x-ray films of children from 1 to 7 years of age were reviewed randomly. Four films were without abnormal shadows. It was explained that films of patients less than 10 years of age were not reviewed by TB Diagnostic Committee (TBDC).

For case finding, our study showed that CHVs are crucial links between the community and health facilities. The CHVs from NGO referring facilities volunteered to increase the number of presumptive TB and the number of those who completed diagnostic examination at DOTS facilities. Most of CHVs accompanied presumptive TB at DOTS facilities to ensure access to DOTS facilities and completion of diagnostic examination. Thus, this study has highlighted the importance of CHVs in low-income countries to contribute to human resource.¹³⁾¹⁴⁾ However, one of the challenges identified was the attrition rate of 47% for CHVs. Such a high attrition rate might have hampered the success of finding more TB cases and implementing local TB interventions.¹⁵⁾¹⁶⁾ Provision of awards recognizing CHVs excellence of service were recommended, as non-monetary motivation may be the key for CHV retention.¹⁷⁾ Nevertheless, addressing the reasons of CHV attrition should be explored further taking the social and economic context into account to maintain their participation in the program.

The interventions have positive effects in both Payatas and Tondo area in terms of TB case finding and TB case holding activities. The provided interventions accelerated TB services in the community by engaging several NGO facilities for a more responsive TB health system that is within the reach of the community. This clearly indicated that a successful GO and NGO cooperation has been established since the same standard of TB care based on the NTP protocol has been provided to patients in the community.

This study has some limitations. Firstly, despite the validation of data through interviews, the study was based on routinely collected data, some of which may have been incomplete. Secondly, examining only highly urbanized areas with low socioeconomic status may not allow generalization

of the findings to other urban sites. Nevertheless, this study revealed the value of NGOs and CHVs, as well as the mechanisms adopted to improve TB service delivery in highly urbanized and socio-economically marginalized areas in the Philippines.

CONCLUSION

The increase in the number of people with TB symptoms examined and TB notifications showed that GO-NGO intervention model (a system to ensure that TB patients has accessed and received the necessary TB care in accordance with the NTP guidelines) was able to improve access to TB services in the urban poor areas in the Philippines. Thus, the engagement of NGOs has complemented the work of GOs in TB control activities to reach more people in the urban community.

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Conflicts of interest: None to declare.

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フィリピン・マニラ首都圏貧困地域の結核対策における
政府および非政府組織の連携強化について
— 後ろ向き観察研究 —

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要旨：〔目的〕 フィリピン都市貧困地域における結核対策施設へのアクセス強化および結核患者の発見の増加により，政府（GO）および非政府組織（NGO）の連携による効果を評価する。〔方法〕 結核サービスの諸指標に関して，介入の前後に後ろ向き観察研究を実施し，通常の政府の報告様式によりGOとNGOの活動状況のデータを収集した。〔結果〕 2007～2012年に喀痰抗酸菌塗抹検査を受けた結核疑い者は対人口で1.0%から1.3%に増加した（ $p<0.01$ ）。同様に初回治療塗抹陽性肺結核の登録率は人口10万対152から167に増加し（ $p<0.01$ ），初回治療塗抹陰性・臨床診断肺結核は人口10万対103から316に増加した（ $p<0.01$ ）。患者発見に関するNGO施設の占める割合：結核疑い者は，25%から30%に増加（ $p<0.001$ ），初回治療塗抹陽性肺結核は，29%から27%に微減（ $p=0.737$ ），初回治療塗抹陰性・臨床診断肺結核は46%から35%へ減少した（ $p<0.001$ ）。地域保健ボランティアの全結核患者発見に占める貢献は3%であった。〔結論〕NGOが政府と連携することにより，人々の結核サービスへのアクセスが向上した。

キーワード：結核，フィリピン，都市貧困地域，患者発見