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Social franchising of TB care through private GPs in Myanmar: an assessment of treatment results, access, equity and financial protection

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This article assesses whether social franchising of tuberculosis (TB) services in Myanmar has succeeded in providing quality treatment while ensuring equity in access and financial protection for poor patients. Newly diagnosed TB patients receiving treatment from private general practitioners (GPs) belonging to the franchise were identified. They were interviewed about social conditions, health seeking and health care costs at the time of starting treatment and again after 6 months follow-up. Routine data were used to ascertain clinical outcomes as well as to monitor trends in case notification.

The franchisees contributed 2097 (21%) of the total 9951 total new sputum smear-positive pulmonary cases notified to the national TB programme in the study townships. The treatment success rate for new smear-positive cases was 84%, close to the World Health Organization target of 85% and similar to the treatment success of 81% in the national TB programme in Myanmar. People from the lower socio-economic groups represented 68% of the TB patients who access care in the franchise. Financial burden related to direct and indirect health care costs for tuberculosis was high, especially among the poor. Patients belonging to lower socio-economic groups incurred on average costs equivalent to 68% of annual per capita household income, with a median of 28%. However, 83% of all costs were incurred before starting treatment in the franchise, while 'shopping' for care. During treatment in the franchise, the cost of care was relatively low, corresponding to a median proportion of annual per capita income of 3% for people from lower socio-economic groups.

This study shows that highly subsidized TB care delivered through a social franchise scheme in the private sector in Myanmar helped reach the poor with quality services, while partly protecting them from high health care expenditure. Extended outreach to others parts of the private sector may reduce diagnostic delay and patient costs further.

Keywords Tuberculosis, equity, financial protection, private health care, franchising, Myanmar

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KEY MESSAGES

- Tuberculosis care delivered through frontline private general practitioners operating in poor areas can help tuberculosis programmes reach the poor early with quality services.
- Providing drugs and diagnostic services free of charge through the private providers can reduce the heavy burden of costs of care for poor patients.
- Sustaining social franchising through user charges is unlikely to meet the objectives of reaching the poor and protecting them financially.

Introduction

Equity and financial protection in tuberculosis control

The proportion of people with tuberculosis (TB) who are enrolled in quality-assured TB programmes is steadily increasing globally. The World Health Organization (WHO) reports that 53% of all people with highly infective TB were treated under the internationally recommended TB control strategy in 2004 (compared with 10% in 1995), and that 84% of them were treated successfully (WHO 2006a). However, a huge number of people with TB still have limited access and/or reach appropriate treatment after long delays and much economic and social hardship (Croft and Croft 1998; Kamolratanakul *et al*. 1999; Rajeswari *et al*. 1999; Wyss *et al*. 2001; WHO 2005). Most of them are likely to belong to the poorest segment of society. It is believed that the poor are relatively under-represented among people treated in National TB Programmes (NTP). However, there is a lack of studies assessing the socio-economic profile of patients reaching NTPs as compared with the profile of people with TB in the community (*The Lancet*; 2005 Floyd *et al*. 2006).

TB is a disease mainly of the poor. TB is also a disease that can make the poor poorer. Studies have documented that direct and indirect health care costs can be catastrophic, even when NTPs provide TB drugs free of charge (Kamolratanakul *et al*. 1999; Rajeswari *et al*. 1999; Wyss *et al*. 2001). For example, a study in India showed that the total cost on average corresponded to 40% of the yearly family income and that about 70% of patients incurred TB-related debts (Rajeswari *et al*. 1999). Much of patients' direct expenditure before treatment in NTPs is for tests and treatments in the private sector, where diagnostic and treatment quality is often poor(Lönnroth 2000; Uplekar *et al*. 2001).

TB control efforts need, therefore, to incorporate two poverty-specific objectives: (1) to equitably reach the poor and vulnerable with quality TB treatment, and (2) to minimize the social and economic toll of TB and TB care for them. These objectives are included in the WHO's new Stop TB Strategy (Raviglione and Uplekar 2006), and in the Stop TB Partnership's Global Plan to Stop TB 2006–2015 (Stop TB Partnership and WHO 2006).

Reaching the poor through the private sector?

Many poor people use the private health care sector as first point of call (Lönnroth 2000; Uplekar *et al*. 2001). Therefore, one potential strategy for improving access to good quality care for the poor is to ensure that all relevant private providers become formally involved in national TB control efforts (WHO 2006b), follow International Standards for TB Care (Tuberculosis Coalition for Technical Assistance 2006) and provide TB diagnosis and treatment free of charge or at highly subsidized rates.

Several previous studies have shown that such initiatives can improve treatment results in the private sector and also help increase TB reporting and thereby case notification rates (Murthy *et al*. 2001; Arora *et al*. 2003; Lönnroth *et al*. 2004; Newell *et al*. 2004; Dewan *et al*. 2006; Floyd *et al*. 2006). However, it is not known to what extent such approaches actually reach the poor and help to protect them financially. One study showed that patients' cost of care was between 50 and 100 US$ lower when treated with drugs free of charge in quality-assured private clinics under NTP guidelines, compared with conventional private TB treatment financed out-of-pocket (Floyd *et al*. 2006). However, the socio-economic profile of these patients was not studied and it is possible that such initiatives improved access and provided subsidized care to the better-off only.

Engaging the private sector in TB control in Myanmar

Myanmar, one of the least developed countries in Asia, has a high burden of TB. Despite very limited resources for health, the NTP has established TB diagnostic and treatment facilities in all parts of the country and has achieved a treatment success rate of 81% and case detection of 83% (WHO 2006a), though the latter figure has been questioned and might be overestimated. The poor still have limited access and often delay diagnosis. Furthermore, the large private sector in Myanmar treats many TB patients, including the poorest of the poor, without following recommended guidelines, and without notifying the NTP of patients (Saw *et al*. 2002). There are several initiatives in Myanmar to involve private providers. One initiative is a social franchise scheme run by an international NGO, Population Services International (PSI), under the brand 'Sun Quality Health' (SQH). SQH involves private GPs who provide quality controlled and highly subsidized TB diagnosis and treatment and a range of other clinical services.

Social franchising

Franchising is a business model that has been defined as 'an arrangement whereby a manufacturer or marketer of a product or service (the franchiser) grants exclusive rights to local independent entrepreneurs (franchisees) to conduct business in a prescribed manner in a certain place over a specified period' (Smith 2002). Social franchising applies the fundamental

elements of franchising: a clearly defined product and delivery mode, strict quality criteria, quality assurance and a brand that can be accessed by service providers if they abide by to the quality standards to which the brand is associated. In a social franchise, the end goal is a social gain, such as health improvement. Social franchising has been tested in reproductive health, sexually transmitted infection (STI) management, HIV testing and counselling, and essential drugs. There are no previously published examples of social franchising of TB services.

This study assesses the effects of the SQH franchise, focusing on four public health domains: (1) contribution to TB case notification, (2) ensuring equity in access, (3) curing patients equitably, and (4) protecting patients from adverse financial and social consequences of TB and TB care. The article also describes patients' health seeking patterns.

Methods

The intervention

Franchise setup

PSI/Myanmar established the SQH franchise in 2001. Members were selected among full-time licensed general practitioners (GPs) with existing clinics serving low-income populations. The network was established initially to offer family planning services but has since added components for malaria, STI management and, since March 2004, TB care. In each disease area, PSI provides: a 2–3 day training course; posters, leaflets and a signboard for use in the clinic; promotion of SQH products; and access to branded, high-quality products, either free or at highly subsidized prices. In return, the providers agree to keep clinical records, to respect service standards and to a price structure that offers them small margins but ensures that the services are affordable to low-income populations. As of December 2005 the SQH network included 556 active members located in more than 100 of Myanmar's 324 administrative townships, of which 220 SQH GPs in 49 townships were participating in the TB component. The NTP has been implemented in designated public sector facilities in all those townships, and the SQH network thus provides additional services, which are coordinated with the NTP.

Training, accreditation and supervision

Apart from TB training for GPs, PSI worked with the NTP to train and accredit selected private laboratories for sputum microscopy. Laboratory supervisors support the accredited private laboratories and continuous external quality assurance is done by the NTP. Franchise Officers conduct monthly follow-up visits to GPs to ensure continuous re-supply of products and to resolve any problems that may arise. Continuous training is provided on-the-job, as well as through seminars for the franchisee network, which, for example, deal with special clinical issues such as diagnostic challenges and management of side-effects of drugs. As an additional support for franchisees, a 'hot-line' for resolving clinical issues has been established, and all clinical issues brought up in this hot-line are shared throughout the franchisee network. Periodic 'mystery client surveys' are performed to ensure that providers conform to quality standards. Franchisees who are not meeting basic quality standards are dissociated from the franchise.

Responsibilities of GPs

GPs are responsible for making the TB diagnosis and prescribing drugs according to national guidelines; dispensing drugs free of charge to patients; doing clinical follow-up; instituting laboratory follow-up investigations; maintaining an individual patient record; appointing a treatment supporter (usually a family member or the GP him/herself); and reporting defaulters to the franchising officer (who will arrange with defaulter tracing as required).

TB drugs

The NTP provides anti-TB drugs to PSI free of charge. The drugs originate from the Global TB Drugs Facility (Kumaresan *et al*. 2004). PSI developed a set of 'DOTS' branded patient kits containing all the TB drugs and supplies needed to treat one patient, and delivers the kits to the franchisees free of charge.

Payments

PSI negotiated a payment scale with the private GPs and laboratories. GPs may not charge anything for dispensing TB drugs or observing the treatment, but may charge the equivalent of maximum Kyat 300 (US$0.3) per substantive medical consultation. No incentives are paid to GPs for detecting or treating TB cases. Laboratories are reimbursed for the costs of sputum microscopy (about US$0.16 per sputum smear examination), while sputum smear examination is free of charge for patients.

Record keeping

It is mandatory for GPs to maintain a client history form (standard NTP 'treatment card'). Accredited laboratories are obliged to keep a standard NTP laboratory register. Franchise Officers complete a standard TB register (WHO 1998) during their visits to the SQH clinics and provide case detection and treatment results to the NTP every quarter.

TB advocacy

PSI developed a logo to help brand recognition of SQH and DOTS, which has been displayed in a range of communications materials. These include a 60-second TV spot, aired on national television, as well as patient kits, signboards, leaflets, posters, promotional items and forms. The DOTS logo is used in both the public and private sectors.

Data sources

Two sources of information are used to study the effects of social franchising: (1) case notification data (second quarter 2002–fourth quarter 2005) from quarterly reports of PSI and NTP for Yangon Division; and (2) a patient baseline and follow-up survey conducted between September 2004 and August 2005.

Notification data

Notification data, disaggregated by source (SQH GP or NTP facility), was obtained through the NTP routine recording and reporting system for 16 townships (total 3 026 000 population)

in Yangon with SQH GPs, as well as for the remaining 11 townships (total population 1 426 574) in Yangon without any SQH GP. Relative change in case notification was calculated as the ratio of the notification rate over the seven quarters after SQH was launched, to the notification rate seven quarters prior to the launch, in SQH townships and control townships, respectively.

Patient survey

All consecutive patients registered in the Township TB Treatment Register (WHO 1998) kept by PSI and covering all patients treated in SQH clinics in Yangon, during the period 1 September–30 October 2004, were eligible for inclusion in the study. A total of 253 patients receiving treatment by a SQH GP were approached, and all agreed to participate in the study. Ten patients could not be included in the follow-up interview: one patient had died and relatives could not be interviewed, and nine patients had moved and could not be traced.

Baseline interviews were carried out in the patient's household within 2 weeks from date of registration in the TB register, and follow-up interviews within 2 weeks of registered treatment outcome. For paediatric cases, the caretaker was interviewed. In case the outcome was death, a relative was interviewed. The structured interview guide included questions about social, demographic and economic variables, living conditions (verified during the household interview), health seeking history, experiences during treatment, and direct and indirect costs before and during treatment.

Socio-economic status (SES) of households was determined using an instrument that has been developed by Myanmar Marketing Research and Development Co. Ltd. (MMRD), and which has been used for household SES classification since 1996. The instrument classifies households into five SES groups in two ways: based on education level and occupation of the main income earner of the household, or based on ownership of household goods. In this study, the classification was based on education and occupation only.[1] For analysis of the association between SES and other variables, patients belonging to either of the two lowest SES groups were classified as 'Lower SES', and the others as 'Higher SES'.

Total delay to treatment was defined as time from first symptom of the TB illness to start of treatment. Patient delay was defined as the time from first symptom to first contact with any health provider. Provider delay was the time from first health provider contact to start of treatment, and SQH delay was the time from first contact with a SQH GP to start of treatment.

Indirect and direct patient/household costs were estimated based on patients' and attendants' recall for the period until treatment started with a SQH GP in the baseline interview, and for the period during treatment by a SQH GP in the follow-up interview. 'Cost burden' was defined as the ratio of cost to yearly per capita household income (reported total yearly household income divided by number of household members).

Clinical information was copied from patients' treatment cards, where it is recorded prospectively throughout the treatment (WHO 1998). Treatment outcomes were defined as recommended by WHO (WHO 1998). Of the nine patients that had moved and could not be traced for an interview, treatment outcome could be ascertained for two (one treatment completion and one cure). The remaining seven were classified as defaulters.

Results

Contribution to case detection

Trends of case notification are shown in Figures 1 and 2. After SQH was launched (second quarter 2004–fourth quarter 2005), SQH GPs contributed 4955 (15%) of the total 32 071 cases and 2097 (21%) of the total 9951 new smear-positive cases notified in townships with SQH GPs. The notification rate of all TB

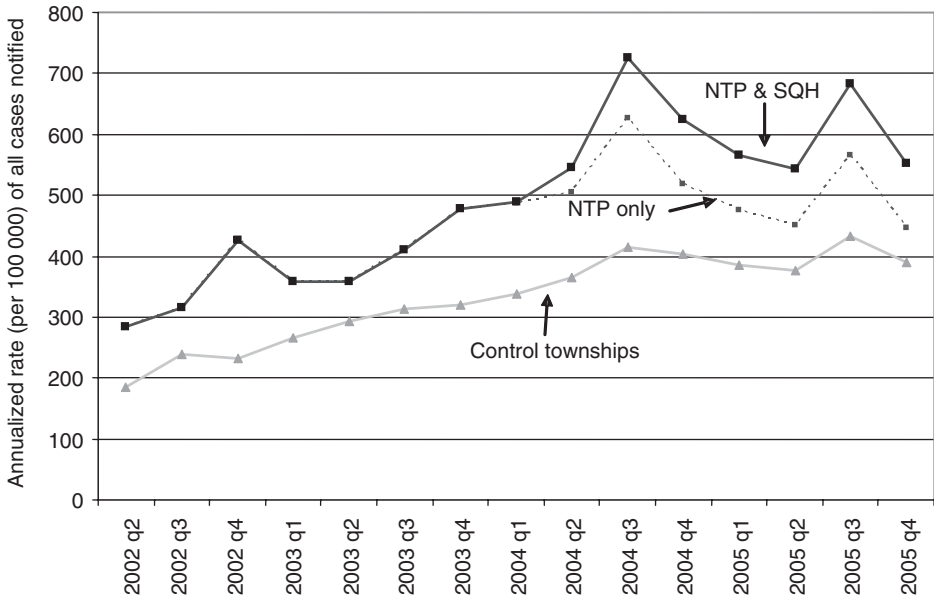

Figure 1 Trend of DOTS case notification rates of all cases in SQH townships and control townships

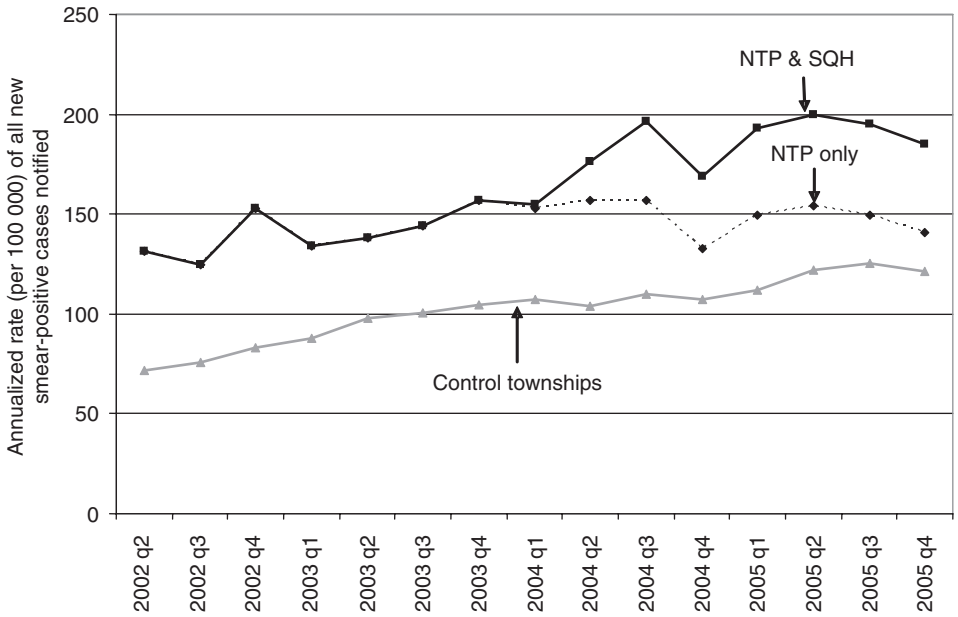

Figure 2 Trend of DOTS case notification rates of all new smear-positive cases in SQH townships and control townships

cases increased from 405/100 000 before SQH was launched to 606/100 000 in the seven quarters after the launch (rate ratio: 1.50, 95% CI: 1.47–1.52), while the increase in the control townships was from 285/100 000 to 395/100 000 (rate ratio: 1.39, 95% CI: 1.34–1.43). Notification rate of new smear-positive cases increased from 143/100 000 to 188/100 000 (rate ratio: 1.31, 95% CI: 1.27–1.35) in SQH townships and from 94/100 000 to 115/100 000 (rate ratio: 1.22, 95% CI: 1.16–1.29) in the control townships.

Patient profile

Patient profile is shown in Table 1. People from the lower SES group represented 68% of the patients treated by the private SQH GPs, and 67% of the patients were from households with a yearly per capita income of less than 120 000 Kyat (about US$120). Thirty-nine per cent of the patients were classified as new smear-positive TB, and 57% of the patients were male.

Treatment outcomes

Treatment success (sum of percentage cured and percentage completed) was 87% for all cases, 84% for new sputum smear-positive pulmonary cases, 92% for new smear-negative pulmonary and extrapulmonary cases, and 73% for re-treatment cases treated by SQH GPs (Table 2). Lower SES, old age and re-treatment were associated with less probability of treatment success (Table 3), and this did not change significantly after controlling for confounding through multiple logistic regression (data not shown).

Health care seeking

Eighty-five (34%) of the patients had turned directly to an SQH GP. The majority of the remaining patients had first visited another private clinic. In total, 96% of the patients turned to a private clinic as their first point of care (Table 4).

The most commonly reported reason for choosing an SQH GP for this illness episode was that the clinic was the usual point of care (Table 4). One hundred and twenty-four patients (49%) lived within 0.5 km of the treating SQH facility and 196 (77%) within 2 km. Two hundred and five patients (81%) knew that TB treatment was free of charge before starting treatment. One hundred and thirty-three (53%) had seen advertisements about free treatment in SQH clinics, of which 110 (83%) had seen the signboard about free treatment in the clinic itself. One patient had seen the TV spot about SQH TB treatment.

Treatment delays

The median total delay from first symptom to start of treatment was 26 days, while median patient delay was 5 days and median provider delay was 15 days. The median time from first visit to an SQH GP to start of treatment was 6 days (Table 5). There was no significant association between SES and health-seeking sequence or delay.

Patients' cost and social consequences

Median and mean total costs for patients (before and during treatment) were 16 900 and 37 400 Kyat, respectively. Median and mean cost burdens were 22 and 56% of yearly per capita income, respectively (Table 6).

The burden of health care cost in relation to yearly per capita income was significantly higher among people with lower SES compared with those from higher SES groups (mean: 68.3% vs. 32.5%, median: 28.1% vs 16.2%; Kruskall–Wallis *P*-value <0.001). Cost and cost burden were significantly lower among patients who had turned directly to an SQH GP, compared with other patients (mean: 34.5% vs. 67.7%,

median: 15.0% vs. 30.3%; Kruskall–Wallis *P*-value <0.001). Both these differences remained significant after controlling for confounding effects of age and type of TB (data not shown).

Eighty-three per cent of all costs were incurred before treatment started with an SQH GP (Table 7). Wages lost, cost of drugs and cost of transport were the main costs for patients. A significantly higher proportion among patients of lower SES had to borrow money to afford health care costs compared with those of higher SES (Table 8). Among patients of lower SES, 32% lost their job during the course of the illness, vs. 9% among higher SES patients ($P < 0.001$). Three patients had to stop studies, none were rejected by the family due to the disease and one patient was divorced during the course of the illness.

Table 1 Patient characteristics

	n	%
Type of TB[a]		
New pulmonary smear-positive	99	39.13
New pulmonary smear-negative	63	24.90
Extra-pulmonary	69	27.27
Re-treatment	22	8.70
Age (years)		
⩽15	66	26.09
16–34	92	36.36
35–54	64	25.30
⩾55	31	12.25
Sex		
Male	145	57.31
Female	108	42.69
Socio-economic group		
1 = highest	17	6.72
2	40	15.81
3	26	10.28
4	49	19.37
5 = lowest	121	47.83
Education level		
University	14	5.53
High school finished	26	10.28
Some high school	30	11.86
Some middle school	65	25.69
Some primary school	68	26.88
No formal education	50	19.76
Yearly household income per capita		
>120 000 Kyat	83	32.8
60 000–120 000 Kyat	93	36.8
<60 000 Kyat	77	30.4

[a] Among 69 extra-pulmonary cases, 66 were children aged <15.

Table 3 Determinants of treatment success

	Treatment success				
	Yes		No		
	n	%	*n*	%	*P*-value
Sex					
Male	126	86.90	19	13.10	
Female	94	87.04	14	12.96	0.974
Age					
0–15	66	100.00	0	0.00	
16–34	78	84.78	14	15.22	
35–54	56	87.50	8	12.50	
⩾55	20	64.52	11	35.48	***<0.001***
SES group					
Higher	78	93.98	5	6.02	
Lower	142	83.53	28	16.47	***0.021***
Distance					
0–0.5 km	108	87.10	16	12.90	
0.6–1.0 km	41	87.23	6	12.77	
1.1–2.0 km	22	88.00	3	12.00	
2.1–5.0 km	31	86.11	5	13.89	
>5 km	18	85.71	3	14.29	0.999
Directly observed treatment in intensive phase					
Yes	155	86.59	24	13.41	
No	65	87.84	9	12.16	0.789
Directly observed treatment in continuation phase[a]					
Yes	138	90.79	14	9.21	
No	80	87.91	11	12.09	0.475
Type of TB					
New	204	88.31	27	11.69	
Re-treatment	16	72.73	6	27.27	***0.038***

[a] 243 interviewed in follow-up interview.

Table 2 Treatment outcome among patients treated by SQH GPs

	Cured *n* (%)	**Completed** *n* (%)	**Failure** *n* (%)	**Default** *n* (%)	**Death** *n* (%)	**Transfer** *n* (%)	**Total** *n* (%)
New pulmonary smear-positive	81 (81.8)	2 (2.0)	2 (2.0)	8 (8.1)	4 (4.0)	2 (2.0)	99 (100)
New pulmonary smear-negative/extra-pulmonary	0 (0.0)	121 (91.7)	0 (0.0)	6 (4.5)	0 (0.0)	5 (3.8)	132 (100)
Re-treatment	16 (72.7)	0 (0.0)	1 (4.6)	2 (9.1)	1 (4.6)	2 (9.1)	22 (100)
Total	97 (38.3)	123 (48.6)	3 (1.2)	16 (6.3)	5 (2.0)	9 (3.6)	253 (100)

Table 4 Health seeking before diagnosis in SQH

	n	%
Type of provider first visited		
Private	*243*	*96.1*
SQH GP	93	36.76
Other private doctor	70	27.67
Drug shop	65	25.69
Traditional medicine	15	5.93
Public	*10*	*3.96*
Hospital/Primary Health Care	6	2.37
NTP facility	1	0.4
Health assistant	3	1.19
Referring provider[a]		
No referral	247	97.63
Other private	4	1.58
Public/NTP	2	0.79
Diagnosing provider		
SQH GP	233	92.09
Other private	11	4.35
Public/NTP	9	3.56
Primary Reason for choosing SQH DOTS GP		
Used to go to this clinic	108	42.69
Good/friendly provider	54	21.35
Convenient location	39	15.42
Heard TB treatment was free	37	14.62
Other	15	5.94
Distance from home to SQH GP		
0–0.5 km	125	49.41
0.6–1.0 km	46	18.18
1.1–2.0 km	25	9.88
2.1–5.0 km	36	14.23
>5 km	21	8.3

[a] Provider, if any, that referred for diagnosis in SQH clinic.

Table 5 Delay from start of illness to start of treatment in SQH

	Median	Interquartile range	Mean	95% CI for mean
Total delay	26	13–54	51	42–59
Patient delay	5	1–15	18	12–23
Provider delay	15	7–31	33	27–40
SQH delay	6	4–9	12	8–15

Table 6 Cost and cost burden for patients from high and low socio-economic groups (based on 243 patients responding to follow-up survey)

	Cost (Kyat 000s)								Cost burden (Percentage of average yearly household income)							
	Before treatment			During treatment			Total		Before treatment			During treatment			Total	
	Median	Mean	95% CI for mean	Median	Mean	95% CI for mean	Median	Mean	95% CI for mean	Median (%)	Mean (%)	95% CI for mean	Median (%)	Mean (%)	95% CI for mean	Median (%)	Mean (%)	95% CI for mean
Higher SES	12.4	26.1	13.7–38.6	1.9	5.8	3.7–8.0	15.7	31.9	19.3–44.7	10.7	26.0	15.1–37.0	1.3	6.3	3.8–8.9	16.2	32.5	19.9–45.0
Lower SES	12.8	33.7	23.4–44.0	2.1	6.4	4.9–7.9	18.6	40.1	29.6–50.6	19.6	57.8	40.5–75.0	2.8	11.3	7.7–15.0	28.1	68.3	49.7–86.9
TOTAL	12.6	31.1	23.2–39.2	2.0	6.2	5.0–7.4	16.9	37.4	29.2–45.6	16.6	47.3	35.1–59.5	2.2	9.7	7.1–12.2	22.3	56.4	43.2–69.6

Discussion

Improving case detection

The results of this study indicate that the SQH franchise helped to increase TB notification in Yangon. The SQH GPs contributed 21% of all new smear-positive TB cases in the study townships. Similar results of private sector involvement in TB control have been reported in several other studies (Murthy *et al*. 2001;

Table 7 Distribution of patient costs (based on 243 patients responding to follow-up survey)

	Before treatment		During treatment		Total	
	Mean cost (Column %)	Row %	Mean cost (Column %)	Row %	Mean cost (Column %)	Row %
Consultation fees	193 (0.6)	60.7	125 (2.0)	39.3	318 (0.9)	100.0
Medicines[a]	8250 (26.5)	80.7	1977 (32.0)	19.3	10 227 (27.4)	100.0
Tests	2555 (8.2)	90.3	273 (4.4)	9.7	2828 (7.6)	100.0
Transport and other	5530 (17.7)	72.7	2078 (33.6)	27.3	7608 (20.4)	100.0
Wages lost	13 039 (41.8)	91.9	1149 (18.6)	8.1	14 188 (38.0)	100.0
Attendants' costs	1602 (5.1)	73.3	585 (9.5)	26.7	2187 (5.9)	100.0
Total	31 169 (100.0)	83.4	6187 (100.0)	16.6	37 356 (100.0)	100.0

[a] Not including TB drugs during treatment by SQH GP.

Table 8 Financial and social consequences of the disease

	Yes	No	*P*-value
Borrowed money before treatment[a]			
Higher SES	22 (26.5)	61 (73.5)	
Lower SES	94 (55.3)	76 (44.7)	<0.001
Borrowed money during treatment[b]			
High SES	14 (17.3)	67 (82.7)	
Low SES	62 (38.3)	100 (61.7)	0.001
Bought all prescribed drugs[a]			
Higher SES	79 (95.2)	4 (4.8)	
Lower SES	146 (85.9)	24 (14.1)	0.027
Lost job[b]			
Higher SES	7 (8.6)	74 (91.4)	
Lower SES	52 (32.1)	110 (67.9)	<0.001
Stopped study[b]			
Higher SES	2 (2.5)	79 (97.5)	
Lower SES	1 (0.6)	161 (99.4)	0.218
Rejected by family[b]			
Higher SES	0 (0.0)	81 (100.0)	
Lower SES	0 (0.0)	162 (100.0)	
Divorced[b]			
Higher SES	0 (0.0)	81 (100.0)	
Lower SES	1 (0.6)	161 (99.4)	0.479

[a] $n = 253$. [b] $n = 243$.

Arora *et al*. 2003; Lönnroth *et al*. 2004; Newell *et al*. 2004; Dewan *et al*. 2006).

Ensuring quality of care

Treatment success rate was 87% for all cases. Treatment success rate for new smear-positive cases was 84% (95% CI: 76–91%), just below and not significantly different from the 85% target recommended by WHO (WHO 1998). People with lower SES had significantly lower treatment success rates than those from higher socio-economic groups. Still, the treatment success rate for all cases in the lower SES group was acceptable at 83% (95% CI: 77–89%). The treatment success rate among people with lower SES diagnosed with new smear-positive TB was 79%, though the confidence interval was wide and included the 85% target level (95% CI: 69–89%). In conclusion, overall treatment success rate was high, while there is still scope for improvement among patients from lower SES groups.

Reaching the poor

The SQH franchise has managed to reach people from the poorest segment of the population in Myanmar. Sixty-eight per cent of the patients were from the lower SES group and 67% were from households with a yearly per capita income of less than 120 000 Kyat (about US$120 or US$0.33 per day), which can be considered the income poverty line in Yangon. Without knowing the proportion with lower SES or proportion below the poverty line among all people with TB in the community (diagnosed and undiagnosed), it is difficult to judge if this represents fully equitable access for the poor. Also, there is no such data available on patients treated in NTP facilities in Myanmar. However, in the general population of Yangon, 38% belong to the two lower SES groups (unpublished data from MMRD 'Consumex' study from 2004, which used the same SES instrument as the present study), while among general patients (other than TB) in the SQH clinics in 2004, 47% were from the lower SES groups (PSI Myanmar, unpublished data from a study using the same SES instrument). This suggests that the SQH franchise has a bias towards the poorer segments of the population, which is logical since almost all of the SQH GPs have their practice in the poorest areas of Yangon.

Minimize treatment delays

Median total delay to treatment was 3.7 weeks. This is short compared with several other studies on TB treatment delay, which have reported median total delay ranging between 6 and 13 weeks (Mori *et al*. 1992; Beyers *et al*. 1994; Hooi 1994; Steen and Mazone 1998; Lönnroth *et al*. 1999; Odusanya and Babafemi 2004; Chiang *et al*. 2005; Kiwuwa *et al*. 2005; Lambert *et al*. 2005; Yimer *et al*. 2005). As has been shown in several other studies, the main part of the delay was due to providers delaying diagnosis and treatment rather than patients delaying health seeking. However, both median and mean delay from first visit to an SQH GP to start of treatment were very short (6 and 12 days, respectively), which indicates efficient diagnosis and treatment initiation. This seems not to have compromised diagnostic quality. All pulmonary TB cases except two had sputum smear microscopy performed according to guidelines (data not shown). Shortening diagnostic delay helps

reduce the burden on patients as well as reducing transmission of TB in the community.

Financial and social protection

The financial toll on patients and their families was considerable, especially among those with lower SES; half of patients had health care costs corresponding to 28% or more of the per capita yearly income. The mean cost burden among lower SES patients was 68%—this group of patients is from the poorest strata in one of the poorest countries in Asia. Consequently, a large proportion (55%) had to borrow money even before treatment by an SQH GP started. Despite severe financial constraints, 86% of them reported that they had bought all drugs prescribed to them, which suggests that willingness to pay may be much higher than actual ability to pay. These drugs (which did not include TB drugs prescribed by SQH GPs, since these drugs were free of charge) were mainly prescribed before TB treatment started. In fact, most of patients' health care expenditure (83%) was incurred before treatment started in the TB franchise.

Patients who had turned directly to an SQH GP, and thus avoided longer delay to treatment, had significantly lower median cost burden (15%) than those who had sought care at other providers first (30%). The SQH franchise seems to have protected patients from heavy additional financial burden through providing drugs free of charge, tests and consultation fees at highly subsidized rates, and flexible case management at a location which for the majority was close to the household. Through these mechanisms, the median cost burden during treatment was kept at 3% among those with low SES, while the mean burden was 11%. The costs of tests and consultation fees during treatment were negligible. Costs related to transport, lost wages and drugs other than TB drugs were the main cost components during treatment.

It is noteworthy that the mean cost per patient for consultation fees during treatment was 125 Kyats, whereas the agreement with the providers was that they could charge up to 300 Kyats *per consultation*. This indicates that many GPs charge fees that are lower than agreed, or waive fees altogether for most of their TB patients. This calls into question the common assumption that profit is the most important motivating factor for private providers.

The fact that 38% of patients with lower SES borrowed money during the treatment shows that these small costs still can be a large burden. The cost during treatment, though small, could therefore have pushed some patients with lower SES over the limit of affordability and therefore negatively affected treatment outcome. However, the difference in treatment success between people with low and high SES was not due to difference in default rates (which were 6.0 and 7.7%, respectively), but to differences in death rates (2.9% vs. 0.0%) and transfer out rates (4.7% vs. 1.2%).

Lessons for social franchising of TB services

This study indicates that social franchising of TB care can contribute positively to public health, including equity in access to quality treatment and financial protection for the poor. The enabling conditions for this are currently being studied. However, the present study clearly suggests that franchising of TB services cannot be self-sustained through user charges if the poor are to be reached and financially protected. Considering the large financial burden for the poor even with 'free treatment', it is clear that social franchising of TB services needs to be publicly funded. This franchising undertaking has not yet been costed, though a full economic evaluation is planned. Other initiatives with public funding of privately provided TB care have demonstrated cost-effectiveness, from society's, the public sector's and the patients' viewpoints, providing a case for sustaining private sector involvement in TB care through public funding (Floyd *et al*. 2006).

The importance of branding and marketing needs to be studied further. The findings in this study indicate that patients mainly followed their habitual health-seeking behaviour, and first learnt about 'DOTS' and free treatment for TB when they had come to the GP. The marketing seems to have had limited influence so far. Only one patient had learnt that the treatment was free of charge from the TV spot. However, the study was performed at a time when the media campaign had just started.

Study limitations

Valid measures of socio-economic status are difficult to obtain. In this study, an instrument was used which has not been scientifically validated. Therefore, the data on SES should be interpreted with some caution. The advantage with the instrument used is that it had been used previously on the general patient clientele in the SQH franchise as well as in the general population in Yangon.

In order to assess equity in access correctly, socio-economic status of patients should ideally be compared with that of patients in NTP facilities as well as among people with TB in the community. A similar survey was originally planned also for patients in NTP facilities, but could not be carried out for a number of reasons.

Information on health seeking (in particular measures of health-seeking delay) and cost prior to treatment also suffers from validity problems, due to potential recall and other reporting bias. The problem is more pronounced when the delay and the recall period is long, while the recall period in this study was relatively short for most patients interviewed.

The way forward

A challenge for the future is to further limit the financial toll of TB and TB care, by reaching patients as early as possible with quality services at highly subsidized costs and minimizing indirect costs during treatment. The franchise scheme assessed in this study involved some of the frontline health workers that the poorest of the poor turn to first when seeking care. However, many patients reached SQH clinics late, and there are still more providers to involve. PSI is now expanding its initiative, and is also experimenting with various incentive schemes for patients from lower SES groups, to ease their financial burden further and improve adherence. The NTP and partners in Myanmar are scaling up private sector involvement nation-wide in a phased manner based on the SQH experience as well as other documented initiatives (Maung *et al*. 2006). Myanmar NTP has developed guidelines for private sector involvement in TB control (National TB Programme, Myanmar 2003) and training materials together with the

Myanmar Medical Association. Recognizing the need for better coordination, a national Technical Working Group on private-public mix for TB control was established with WHO's technical assistance in 2004. Similar developments are taking place in many other countries, including Bangladesh, Ghana, India, Indonesia, Kenya and The Philippines.

The quest should continue to identify and target the providers that patients first turn to when ill, and ensure that all of them apply the basic evidence-based principles of TB diagnosis and treatment, and thus help people to avoid spending huge parts of their limited resources on often useless or even dangerous tests and treatments. Globally, public-private collaboration for TB is practiced in a variety of ways. Global and national level collaborations are often referred to as partnerships, where the objective is to get all the stakeholders on board to promote and sustain TB control. Such partnerships have an important task to raise awareness of the role of the private sector in TB control and help mobilize resources for scaling up successful approaches. The global Stop TB Partnership—a stakeholder group—has a subgroup on Public-Private Mix (PPM) which deals specifically with collaborations between NTPs and health care providers of diverse types. The PPM Subgroup is a forum for exchanging experiences of the involvement of diverse health care providers in TB control, and also helps to facilitate operational research, including research on equity in access and financial protection in public-private mix initiatives.

A recent Editorial in *The Lancet* (2005) called for the development of tools and methods to more generally monitor the equity and poverty-related TB control objectives set out in WHO's new Stop TB Strategy (Raviglione and Uplekar 2006), and in the Stop TB Partnership's Global Plan to Stop TB 2006-2015 (Stop TB Partnership and WHO 2006). The present study presents a pragmatic contribution. If combined with TB prevalence surveys that incorporate information about socio-economic status, patient surveys, such as the one presented here, could prove a powerful tool to inform policy decisions on how to ensure equity and financial protection in TB control.

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Endnote

[1] Data collection instrument and matrix for classifying SES can be provided by the authors upon request.

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