Study title

Impact of private medical practitioners involvement on Tuberculosis case notification to the National Tuberculosis Control Program in Gharbia governorate, Egypt.

Abstract

Private Physicians represent the most powerful professionals in health sector. Doctors are permitted to work simultaneously for government and private sector. This study aimed at investigating the impact of private practitioners involvement on Tuberculosis case notification to NTP in Gharbia governorate, one of lowest case detection. Privateproviders of chest specialty, internists and General practitioners were chosen as they most expected to deal with TB presumptive cases. In this interventional study with purposive sample of 390 physicians includedusing a well-structured questionnaire showed physicians preferred to detect, diagnose but refer cases for treatment in NTP. There was marked increase of referred presumptive and cases to NTP. Although statistically insignificant, but this may be due to the short period of the study and the small proportion of physicians referred cases. Raisingawareness, involving other specialties and well organizing notification tools and system can positively impact the case notification.

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BACKGROUND

World Health Organization's (WHO) recommended TB control strategy, DOTS, has been implemented in 148 countries. However, the majority of patients in developing countries with high TB incidence are not treated under DOTS [1]. Instead, these patients are treated by private providers (PPs), who are not formally involved in national TB program (NTP). PPs usually do not notify detected cases, rarely use recommended TB case management principles and generally produce poor treatment outcome [2-5].

Although TB notification is mandatory in Egypt and required by law, there is currently no standard process / system in place for this notification and it is not enforced.

Egypt is divided for administrative purposes into twenty-seven governorates (muḥāfaẓah). The health care system in Egypt is quite complex with a large number of public entities involved in the management, financing and provision of care. Egypt's wide network of public (several ministries beside the military and police), NGOs, faith-based charity organizations and private health facilities allow good geographic accessibility and coverage. The MOHP is responsible for overall health and population policy as well as the provision of public health services, and is responsible for health insurance organization that provides services too.

The MoHP is currently the major provider of primary, preventive, and curative care in Egypt, with around 5,000 health facilities and more than 80,000 beds spread nationwide.

However, Private Physicians represent the most powerful professional group in the health sector. Doctors are permitted to work simultaneously for the government and in the private sector. The Egyptian National Health Care Provider Survey (Nandakumar et al., 1999) showed that 89 per cent of the physicians with private clinics had multiple jobs. These physicians have the technology, the resources, and the visibility required to run very successful and profitable private practices.

In 2013, 74% of all TB cases were notified through the NTP units, while notification from the private sector was very small (less than 2%) [6]. Also, the latest surveillance data from the NTP of Egypt for the year 2017 showed that around 79% of cases are notified by NTP units, while the private sector share in case notification in that year was negligible. Moreover, the total notification rate for all TB case is still low [7].

The surveillance data of the same year 2017 showed that 17 governorates (63% of the 27 governorates) notified less than 50% of the estimated case detection. The same data showed that the total number of TB cases notified from the private sector were only 5 cases during the whole year in spite of the huge network of private providers for-profit and non-for-profit.

Involvement of the private sector is recommended by WHO as an approach to improve TB case management in general and notification in particular. Many studies support this notion. A study conducted in Vietnam showed that case detection of new sputum smear-positive cases in PPM districts increased applying this approach [8]. Other studies showed that about half of all TB patients diagnosed in the NTP in Ho Chi Minh City, Vietnam, initially sought help in the private sector [9]. Studies have also demonstrated the gross lack of knowledge of private practitioners (PPs) about the best protocols for the diagnosis and treatment of TB [10] [11].

Community-based TB case management is a recommended approach by WHO. In order to reach the unreached and to find TB patients early in the course of their illness, a wider range of stakeholders already involved in community-based activities needs to be engaged. These include the nongovernmental organizations (NGOs) and other civil society organizations (CSOs) that are active in community-based development, particularly in primary health care, HIV infection and maternal and child health, but have not yet included TB in their priorities and activities [12].

Engaging all relevant health care providers in TB care and control through public-private mix approaches is an essential component of the WHO's Stop TB Strategy. PPM for TB care and control represents a comprehensive approach for systematic involvement of all relevant health care providers in TB control to promote the use of the ISTC and achieve national and global [13].

Aim of the study

Within the public private mix approach recommended by WHO, this study is of a main goal that is to increase case detection in general and in the study setting, Gharbia governorate, in Egypt in general

Study objectives:

1. Measuring impact of involvement private health care providers on all TB case notification in Gharbia governorate.

   Case referral and registration will continue for two quarters (second and third quarters 2019) and number of all TB cases notified during the two quarters will be compared with the corresponding two quarters of the year 2018
2. Testing which approach for collaboration is preferred by the providers and their patients. This can be done

Study area/setting

The study will cover the Gharbia governorate which is located in lower Egypt. It is located in the north of the country, south of Kafr El Sheikh Governorate, and north of Monufia Governorate. Its capital is Tanta, which is 90 km north of Cairo, and 120 km south east of Alexandria. The largest city in Gharbia is El Mahalla El Kubra. The total area of Gharbia governorate is 25,400 km2, making it the tenth-largest governorate of Egypt. The estimated population is 4,751,865.

During the year 2017, Gharbia was one of the lowest four governorates in case notification. The surveillance data of the NTP for that year showed that there were 17 countries notified less than 50% of estimated cases. The lowest four were Gharbia 32%, Northern Sini 28%, Kafr Elsheikh 27% and Southern Sini 4%. Most of the governorates notified zero cases from the private sector including Gharbia governorate.

Gharbia governorate was chosen due to feasibility of implementation of the study within the time frame and budget assigned being near to Cairo.

Study subjects

Private physicians (running private clinics) in Gharbia governorate. We chose the private providers who are specialized in chest diseases, internal medicine and General practitioners as those are the most expected to deal with patients with respiratory symptoms among them TB suspect cases can be picked up. Those included 151 chest physicians, 222 internist and 17 general practitioners with a total number of 390 after exclusion of 11 physicians with internal contradictions in questionnaire filling.

The sampling technique used in this study is a purposive sampling technique.

Instrument for data collection

1. A self-administered questionnaire will be used on starting the orientation session to evaluate the previous knowledge and attitude in TB cases management if any.
2. A referral form also will be used to refer cases picked up to the nearest TBMU for diagnosis/treatment

Ethical considerations

Theproposal got the approval of the ethical committee in the MOH to allow dealing with data within the TBMUs

Results

Total number of oriented physicians was 401; only 390 physicians were included in analysis as 11 physicians were excluded in data validation and cleaning due to internal contradictions in questionnaires filling. Males represented 55% of included physicians (no. 214) while females represented 45% (no. 176), table 1.

Age of participants ranged from 25 to 65 years with 14 participants did not mention their age (mean = 42.06, St. Deviation = 10.217).

Concerning specialty, internists represented a majority with a percentage around 57% (no. 222), while chest physicians came in the second rank with around 39% ratio (no. 151) and general practitioners were minority with around 4% ratio (only 17), table 2.

Master degree represented the majority of post graduate qualification degree (around 45%, no. 175), followed by diploma (40%, no. 156) and MD was the post graduate degree of 16 participants, table 3.

Concerning affiliation of the included participants to the public sectors, only 17 mentioned they did not belong to any governmental health facility; (2 were GPs, 3 chest physicians and 11 were internists); 16 of them were males and only one was female (with chest specialty). All other participants had affiliation to governmental health facilities. Table 4 shows the frequency and percent distribution of participants who had affiliation to different governmental health facility. Majority of participants belonged to general public hospitals (no. 134, 34%)

During the study period, only 39 participating physicians (10% of participants) referred 75 cases as presumptive TB cases to different TB centers (TBMUs) and chest hospitals.

The referred presumptive cases were 75 cases with 8 cases (10.7%) proved to be extra-pulmonary TB and 10 cases (13.3%) proved to be smear positive pulmonary TB. The final

diagnosis of the remaining cases was acute bronchitis for 45 case (60%), COPD in 8 cases (10.7%) and pneumonia 4 cases (5.3%), table 5.

As table 6 shows, all cases referred from chest physicians and internists. Generalpractitioners had no role in detecting and referring presumptive cases during the study period.

During the year 2018 case detection in Gharbia governorate in quarter 2 and quarter 3 is shown in tables 7 and table 8.The total notification rate showed no difference between the two quarters in the two years. However, there was a change in notification rate from the private sector between the years, see table 11. As it is noticed in table 11, the total number of TB cases notified to the NTP was 40 cases, out of them 18 cases (45%) are due to the study impact as they are nominally notified and recorded and no place for confounders. During the year 2018, the cases notified from private sectors were 29, this means that there was an increase of cases by 11 cases to reach 40 in the year 2019.However, the difference between the two means with exact Mann-Whitney U test is not significant, p-value = 0.666667

Concerning willing to diagnose (51 physicians did not answer this question), physicians who had no affiliation to any public (governmental) health facility (total number 17 physicians), 9 of them (52.9%) declared that they are willing to diagnose TB cases, while 6 (35.3%) preferred to refer for diagnosis.

Willingness to proceed in diagnosing cases among physicians affiliated to other public facilities were as following: TB center (48.5%), TB hospital (68.4%), Fever hospital (31.1%), PHC (16.7%), Public hospital (22.4%), university hospital (72.7%). It is highest among chest physicians working in chest hospitals followed by physicians working in university hospitals.

In general, 162 (48%) chose diagnosis as an option out of 339 participants who answered this question while 177 (52%) chose referral for diagnosis. The difference between two groups is not significance, p = .22353884 for binomial test. See Table 12

Concerning willingness to treat a TB case (217 physicians did not answer this question). All physicians who answered this question and had no affiliation to a public health facility preferred to refer cases for treatment (9 physicians, around 53% within this affiliation)

Other physicians' response according to their affiliation was preference to refer for treatment as follows: 45.5% of physicians working in TB centers, 66.3% of those working in chest hospitals, 37.8% of those working in Fever hospital, 50% of PHC physicians, 27.6% of those working in public (general) hospital and 72.7% of university hospitals physicians. These figures represent the participants who respond to this question, meaning that referral for treatment was universal choice. This can be explained by two factors, either physicians prefer not to deal with patients with TB or because of the unavailability of anti-TB medicines in private pharmacies and TB centers are the only source for them. See Table 13

Discussion

This study showed that training and orientation of private practitioners can increase the tuberculosis case notification by those private practitioners. The increase in number of cases notified, although not statistically significant, however, it is a true increase as the cases were notified and recorded nominally and related to the notifying physicians, hence, other confounders are excluded. It also showed that private physicians can start the process of diagnosis but once diagnosis is established, they prefer to refer cases to the TB facilities to receive treatment. This may be mainly due to shortage of anti-TB medicines in private pharmacies and their availability only in TBMUs. Another suggested cause is that they prefer not to deal with infectious TB cases as those who responded with preference of treating cases were mainly internists belonging to fever hospital and this is completely accepted as these are usually of EPTB lesions mainly meningitis.

A study conducted in Odisha, India concluded the same results where authors found that engagement with non-formal health practitioners contributed to an increase in TB notification to Revised National Tuberculosis Control Program, RNTCP, from key under reached, slum-dwelling migrant populations [15].

Another study in Jogjakartashowed that the TB case load per PP is low, where the NTP already involves public and private hospitals besides public health centers. Initiatives to engage all PP might only marginally contribute in increasing the TB case detection [16].

Another study in Ethiopia suggested limiting involvement of the private sector in tuberculosis control to identification and referral to tuberculosis cases and suspects but not treatment. This is may be in line with the attitude of private practitioners in Egypt who preferred to refer cases for treatment [17]

Recommendations

We recommend that

1. findings indicate that raising awareness of private practitioners about early detection of tuberculosis suspect/patients and motivating their collaboration with the NTP would enhance their referral and notification for tuberculosis presumptive/confirmed cases.
2. Otherprivate practitioners inGharbia and elsewhere in other governorates of Egypt should also be oriented on the importance of case notification, particularly other specialties not included in this study e.g. pediatricians, orthopedics and surgery.
3. Referral form used in this study can be improved and disseminated to private practitioners to use.

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Tables

Table 1: gender distribution of participants

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	214	54.9	54.9	54.9
	female	176	45.1	45.1	100.0
	Total	390	100.0	100.0	

Table 2: Specialty distribution of participants

specialty					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	General practitioner	17	4.4	4.4	4.4
	Chest	151	38.7	38.7	43.1
	Internist	222	56.9	56.9	100.0
	Total	390	100.0	100.0	

Table 3: post graduate qualifications of participants

Post graduate qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	none	43	11.0	11.0	11.0
	Master	175	44.9	44.9	55.9
	Diploma	156	40.0	40.0	95.9
	MD	16	4.1	4.1	100.0
	Total	390	100.0	100.0	

Table 4: affiliation of participants to public (governmental) sector

Affiliation to public (governmental) sector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	17	4.4	4.4	4.4
	TB center	33	8.5	8.5	12.8
	TB hospital	98	25.1	25.1	37.9
	Fever hospital	74	19.0	19.0	56.9
	PHC	6	1.5	1.5	58.5
	Public (general) hospital	134	34.4	34.4	92.8
	Universityhospital	11	2.8	2.8	95.6
	Retired	17	4.4	4.4	100.0
	Total	390	100.0	100.0	

Table 5: referred presumptive cases and final diagnosis

Presumptive Cases and FinalDiagnosis					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acutebronchitis	45	60.0	60.0	60.0
	COPD	8	10.7	10.7	70.7
	Pneumonia	4	5.3	5.3	76.0
	EXPTB	8	10.7	10.7	86.7
	PTB (smear positive)	10	13.3	13.3	100.0
	Total	75	100.0	100.0	

Table 6: final diagnosis distribution according to different specialties

FinalDiagnosis * specialty of Referring Doctor Crosstabulation					
			Specialty		Total
			chest	internist	
Final Diagnosis	acute bronchitis	Count	26	19	45
		% within FinalDiagnosis	57.8%	42.2%	100.0%
		% within specialty	57.8%	63.3%	60.0%
		% of Total	34.7%	25.3%	60.0%
	COPD	Count	5	3	8
		% within FinalDiagnosis	62.5%	37.5%	100.0%
		% within specialty	11.1%	10.0%	10.7%
		% of Total	6.7%	4.0%	10.7%
	Pneumonia	Count	2	2	4
		% within FinalDiagnosis	50.0%	50.0%	100.0%
		% within specialty	4.4%	6.7%	5.3%
		% of Total	2.7%	2.7%	5.3%
	EXPTB	Count	5	3	8
		% within FinalDiagnosis	62.5%	37.5%	100.0%
		% within specialty	11.1%	10.0%	10.7%
		% of Total	6.7%	4.0%	10.7%
	PTB Smear positive	Count	7	3	10
		% within FinalDiagnosis	70.0%	30.0%	100.0%
		% within specialty	15.6%	10.0%	13.3%
		% of Total	9.3%	4.0%	13.3%
Total		Count	45	30	75
		% within FinalDiagnosis	60.0%	40.0%	100.0%
		% within specialty	100.0%	100.0%	100.0%
		% of Total	60.0%	40.0%	100.0%

Table 7: cases detected in quarter 2, 2018

Population 5,173 ,936	New SS+ve	New SS-ve	Extra Pulmonary	Relapse	Treatment after failure	After lost to follow	Others	Total	all rate
NTP	31	3	4	3				41	**32%**
Prison									4.5
HIO	1							1	
University			2					2	
Private sector		1	9					10	
Total	32	4	15	3				54	

Table 8: cases detected in quarter 3, 2018

Population 5,173 ,936	New SS+ve	New SS-ve	Extra Pulmonary	Relapse	Treatment after failure	After lost to follow	Others	Total	all rate
NTP	28	5	9					42	33%
Prison									4.6
HIO									
University	1	1	6					8	
Private sector	3	3	13					19	
Total	32	8	28					69	

Table 9: cases detected in Q2, 2019

Population 5,173 ,936	New SS+ve	New SS-ve	Extra Pulmonary	Relapse	Treatment After failure	After lost to follow	Others	Total	all rate
NTP	18	1	6	7				32	33%
Prison									4.6
HIO			1					1	
University	1		3					4	
Private sector	5		18	2				25	
Army Hospital				1				1	
Total	24	1	28	10				63	

Table 10: cases detected in Q3, 2019

Population 5,173 ,936	New SS+ve	New SS-ve	Extra Pulmonary	Relapse	Treatment after failure	After lost to follow	Others	Total	all rate
NTP	40	7	8	2				57	32%
Prison									4.5
HIO			1					1	
University	2		3					5	
Private sector	6		7	2				15	
Total	48	7	19	4				78	

Table 11: cases notified Q2 and Q3 in years 2018 and 2019

year	Q2	Q3
2018	10	19
2019	25	15

Table 12: Ever Diagnosed/willing to diagnose * Affiliation Crosstabulation

			Affiliation								Total
			none	TB center	TB hospital	Fever hospital	PHC	Public hospital	university hospital	retired	
Diagnosed/willing to diagnose	no answer	Count	2	7	12	8	1	20	0	1	51
		% within Ever Diagnosed/willing to diagnose	3.9%	13.7%	23.5%	15.7%	2.0%	39.2%	.0%	2.0%	100.0%
		% within Affiliation	11.8%	21.2%	12.2%	10.8%	16.7%	14.9%	.0%	5.9%	13.1%
		% of Total	.5%	1.8%	3.1%	2.1%	.3%	5.1%	.0%	.3%	13.1%
	Yes	Count	9	16	67	23	1	30	8	8	162
		% within Diagnosed/willing to diagnose	5.6%	9.9%	41.4%	14.2%	.6%	18.5%	4.9%	4.9%	100.0%
		% within Affiliation	52.9%	48.5%	68.4%	31.1%	16.7%	22.4%	72.7%	47.1%	41.5%
		% of Total	2.3%	4.1%	17.2%	5.9%	.3%	7.7%	2.1%	2.1%	41.5%
	No	Count	6	10	19	43	4	84	3	8	177
		% within Diagnosed/willing to diagnose	3.4%	5.6%	10.7%	24.3%	2.3%	47.5%	1.7%	4.5%	100.0%
		% within Affiliation	35.3%	30.3%	19.4%	58.1%	66.7%	62.7%	27.3%	47.1%	45.4%
		% of Total	1.5%	2.6%	4.9%	11.0%	1.0%	21.5%	.8%	2.1%	45.4%
Total		Count	17	33	98	74	6	134	11	17	390
		% within Diagnosed/willing to diagnose	4.4%	8.5%	25.1%	19.0%	1.5%	34.4%	2.8%	4.4%	100.0%
		% within Affiliation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	4.4%	8.5%	25.1%	19.0%	1.5%	34.4%	2.8%	4.4%	100.0%

Table 13: EverTreated/willing to treat TBcases* Affiliation Crosstabulation										
			Affiliation							Total
			none	TB center	TB hospital	Fever hospital	PHC	Public hospital	university hospital	retired	
Ever Treated/willing to treat TB cases	no answer	Count	8	18	33	46	3	97	3	9	217
		% within Ever Treated/willing to treat TB cases	3.7%	8.3%	15.2%	21.2%	1.4%	44.7%	1.4%	4.1%	100.0%
		% within Affiliation	47.1%	54.5%	33.7%	62.2%	50.0%	72.4%	27.3%	52.9%	55.6%
		% of Total	2.1%	4.6%	8.5%	11.8%	.8%	24.9%	.8%	2.3%	55.6%
	Prefer to refer for treatment	Count	9	15	65	28	3	37	8	8	173
		% within Ever Treated/willing to treat TB cases	5.2%	8.7%	37.6%	16.2%	1.7%	21.4%	4.6%	4.6%	100.0%
		% within Affiliation	52.9%	45.5%	66.3%	37.8%	50.0%	27.6%	72.7%	47.1%	44.4%
		% of Total	2.3%	3.8%	16.7%	7.2%	.8%	9.5%	2.1%	2.1%	44.4%
Total		Count	17	33	98	74	6	134	11	17	390
		% within Ever Treated/willing to treat TB cases	4.4%	8.5%	25.1%	19.0%	1.5%	34.4%	2.8%	4.4%	100.0%
		% within Affiliation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	4.4%	8.5%	25.1%	19.0%	1.5%	34.4%	2.8%	4.4%	100.0%