Integration of informal medical practitioners in DOTS implementation to improve case detection rate

Huma Qureshi,[1] Ambreen Arif,[2] Ejaz Alam,[3] Najma Qadir[4]

Abstract

Objective: To integrate informal registered medical practitioners (IRMP) in Directly Observed Therapy Short Course (DOTS) implementation to improve case detection rate.

Methods: This interventional study was conducted in the settlement area of Malir district whereas New Karachi was taken as control, between February to November 2005. All registered healthcare providers within 5 kilometer around Tuberculosis (TB) DOTS center Malir were included. New sputum positive and sputum direct smear negative cases of pulmonary Tuberculosis above 15 years residing in the catchments area were included as target population. Informal registered medical practitioners were trained for the referral of suspected cases to the TB DOTs center where three sputum samples were taken, and X-ray chest was done to confirm if sputum direct smear (D/S) was negative. Demographic data regarding age, gender, address, case number, onset of symptoms, treatment given, response, compliance to treatment was all collected.

Results: Out of 64 health care providers there were a drop out of 6 leaving 58 informal registered medical practitioners (36 homeopathic/ 22 Hakims) who referred 54 cases, of these 16 cases were actual suspects. Two out of these 16 (12.5%) were Tuberculosis positive. One was Sputum D/S positive and the other sputum direct smear negative with X-ray chest positive. Comparison of data (Malir and New Karachi diagnostic center) showed that by incorporating homeopathic and Hakims an increase in the proportion of case identification (0.477) was significantly higher in Malir (intervention area) vs New Karachi (non-intervention area) (0.316).

Conclusion: Integration of informal registered medical practitioners was found to be effective in DOTS implementation hence they can be incorporated in other national programmes to improve public health.

Introduction

WHO has estimated that the incidence of sputum positive cases in Pakistan is 81/100,000 population and the incidence of all Tuberculosis cases is 177/ 100,000.[1] Pakistan is rated 8th amongst the 22 high burden countries[2] with 270,000 new cases added to the pool each year. There are more than 5000 diagnostic and treatment facilities throughout the country. Ministry of Health implementing Directly Observed Therapy, Short-Course (DOTS) in 1995, with Balouchistan as a pilot province. Between 2000 and 2004, DOTS coverage increased in Pakistan from 9 to 79 percent.[3] The targets are not being met but Sindh has claimed to achieve 100% DOTS coverage in public health facilities. However, overall case detection rate is still low i.e. 37% with a success rate of 76%.[1] About 80% of population is visiting private practitioners to seek medical help.[3,4] Previous studies have shown that before detection of Tuberculosis a patient frequents at least 4-5 healthcare providers[5] resulting in long treatment delays resulting in patients infecting other community members, as Tuberculosis is highly infectious. In one of the studies conducted in Pakistan it was shown that one of the first actions taken by the patient is to consult the health care provider within the neighbourhood.[6] Similar observation has been made by Indian authors where private health care providers manage a bulk of patients with Tuberculosis.[7] Informal medical practitioners constitute 50-60% of the private health care providers. People prefer to visit them because they are easily accessible, relatively cheap in prescribing treatment and provide tailor made treatment. Hence, patient trust and satisfaction is more in these health care providers. Patient satisfaction is the key to patient compliance.

Data from Sindh TB control programme shows a high default rate of 10-25% which can result in spread of infection and development of multiple drug resistance (MDRT).

To reduce the default rate and improve case detection rate it is therefore important to try and integrate the informal health care provides in the implementation of DOTS. A study in rural India showed that partnership with private medical practitioners resulted in mere increase in case detection rate over a period of 5 months.[8,9]

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[1]Pakistan Medical Research Council, Islamabad, [2,3]PMRC Research Center, Jinnah Postgraduate Medical Center, Karachi. [4]National Tuberculosis Control Program.

Methods

Out of eighteen towns in Karachi city, two towns were selected for the study purpose. Intervention was carried out in the urban settlement of Malir which comes in the jurisdiction of Malir city and has a population of 398289 .All registered health care providers within an area of about 5 kilometers around the TB DOTS centre located in Malir were included in the study. The informal registered health care providers were all registered Hakims and Homeopaths who were treating more than 20 patients a day.

Only new sputum direct smear positive and sputum direct smear negative cases of pulmonary Tuberculosis above 15 years of age residing in the catchments and seeking treatment for their symptoms from the health care providers, were included in the study. Homeopaths, Hakims who refused to participate in the study were excluded and so were the cases with extra-pulmonary TB (documented by history and relevant tests) and paediatric cases

The control area was New Karachi hospital (New Karachi city) with a population of 240000, which had a similar socioeconomic background and equally large number of health care providers practicing and no intervention was done in their area.

Being an interventional study, baseline data was collected from both Malir TB clinic (interventional area) and Sindh Government New Karachi Hospital (control area). In the initial part of the study a proper listing of all the Hakim/Homeopaths practicing in the specified areas was done by the survey team. After informed consent, the knowledge of the health care providers in context with tuberculosis was assessed. Later, intensive training regarding the disease and symptoms was done using the expertise of provincial and the local Tuberculosis control programme group. The training included all basic knowledge regarding Tuberculosis as a disease plus all components of DOTS like diagnosis of Tuberculosis, laboratory confirmation and DOTS treatment regimen. They were trained to identify all suspected cases of pulmonary tuberculosis and refer them to DOTS TB diagnostic center which was located within the vicinity of the IRMP's (informal registered medical practitioners). Collaboration was established between the IRMP's and the DOTS diagnostic centre for early diagnosis of the case referred by the IRMP's. The work plan was explained to the IRMP's and facilities to perform sputum microscopy at the diagnostic center was provided when found positive then the diagnosis was confirmed. However, if the case was sputum direct smear negative then ten (10) day antibiotic

regimen was given and patient was re-evaluated to determine a change. If there was no change then X-ray chest was done to confirm the diagnosis.

Once the diagnosis of Tuberculosis was confirmed the patient was then referred back to the respective IRMP's for 8 months treatment. A proper record was maintained at Malir TB clinic and the IRMP's when treatment was started and drugs were supplied by TB centre. The IRMP's were allowed to charge their weekly fee but medicines and diagnostic facilities were free of charge. During intensive phase (2-3 months) the patient was advised to visit the concerned IRMP every day and followed by continuation phase every 7-15 days. The medicines were administered by the IRMP or their assistant to ensure compliance. Patient was referred back at 2and 5 months to the diagnostic center for sputum microscopy.

If a patient was lost to follow-up, he was pursued through his relatives. Also, when he came to the IRMP's for other ailments the health care provider convinced the patient to continue treatment according to National Tuberculosis Programme (NTP) guidelines.

The research team monitored and supervised the activities of IRMP's regarding case detection, treatment, follow up of defaulters and maintenance of records. Quarterly meetings were held between IRMP's, research team and the TB control group to assess progress. Certificates and gift vouchers were also distributed among IRMP's who showed best participation.

From February 2005 till November 2005 all patients suffering from pulmonary tuberculosis residing in the two target areas within 5 kilometers of the Tuberculosis diagnosis center were included in the study. All IRMP's working in the same population were briefed about the project and those who volunteered to participate in the study were included.

All patients registered by the DOTS diagnostic center were identified by the survey team in collaboration with the TB control programme. All patients referred to the TB centre by the IRMP's were given a separate colour coded card to differentiate these cases from those coming on their own or from other sources. The name bearing the card of the IRMP's who had consented to work in the intervention area was also listed after identification.

Three sputum samples were taken within 1-2 days. The first was "on-the- spot specimen collected on the spot when the patient was identified as a pulmonary TB suspect. The second was an early morning specimen which was collected by giving a container to the patient and for early morning specimen at home. The third

specimen was another on-the-spot specimen which was collected when the patient returned to the facility with the early morning specimen. All specimens were subjected for direct smear microscopy using the following steps:

The slides were numbered for identification, smear was prepared. After the smear was dried and fixed (15-20 minutes) slides were arranged and properly numbered. Carbol fuschin solution was put on the slides, the slides were then heated discarding the excess carbol fuschin. After the slides were washed excess water was discarded. Colour was washed using 25% Sulphuric acid / 3% hydrogen chloride (HCL) followed by washing the slides again. Methylene blue 0.3% was put on the slide and left for 10 seconds, excess Methylene blue was washed and slides were dried. Immersion oil one drop was put on smear placed on slides and examined. Zeihl Nelson stained sputum identified the Mycobacterium, if present, as red against the blue background.

Demographic data of the patients including age, gender, address, case number, onset of symptoms, treatment given, response, compliance was collected by the research team. A simple card bearing the identification number of the patient, age, gender and treatment response was maintained both by the health care provider and the counterfoil was kept by the diagnostic center.

Results

Out of 64 health care providers who were initially listed as treatment supporters 6 refused to participate in the study leaving 58 health care providers/ informal registered medical practitioners (36 homeopathic and 22 Hakims). Basic awareness regarding DOTS, suspects, diagnosis was only 5% among the health care providers while the rest had no clue pertaining to Tuberculosis as their treatment is based on symptoms but not disease as a whole. After intensive training of the health care providers, a total of 54 patients were referred in the intervention period by the Hakims/Homeopaths (Table-1).

Detailed evaluation at the TB clinic showed that of these 54 cases, 40 cases were wrongly suspected and referred and only 16 cases were actual suspects. Further testing showed that 2 out of these 16 suspected cases (12.5%) were Tuberculosis positive. Sputum direct smear (D/S) microscopy positive pulmonary Tuberculosis was found in one patient while the other was sputum D/S negative

Table-1: Informal registered medical practitioners (IRMP) Referrals.

IRMP	Subjects Referred	Sputum D/S +ve / -ve	X-ray Chest	TB +ve cases
IRMP 1	4	- ve	- ve	- ve
IRMP 2	5	- ve	Bronchitis (1)	- ve
IRMP 3	1	- ve	Bronchitis	- ve
IRMP 4	2	- ve / - ve	- ve / + ve	Pulmonary TB +ve
IRMP 5	5	- ve	- ve (3) / LRTI (2)	- ve
IRMP 6	1	- ve	- ve	- ve
IRMP 7	1	- ve	- ve	- ve
IRMP 8	1	- ve	- ve	- ve
IRMP 9	3	- ve (2) / +ve 1	- ve (2) / +ve 1	L/S Spine / Pul. TB
IRMP 10	1	- ve	- ve	- ve
IRMP 11	3	- ve	- ve	- ve
IRMP 12	1	- ve	- ve	- ve
IRMP 13	1	- ve	- ve	- ve
IRMP 14	3	- ve	- ve	- ve
IRMP 15	1	- ve	- ve	- ve
IRMP 16	4	- ve	- ve (3) / LRTI (1)	- ve
IRMP 17	1	- ve	- ve	- ve
IRMP 18	1	- ve	- ve	- ve
IRMP 19	1	- ve	- ve	- ve
IRMP 20	7	- ve	- ve (6) / URTI (1)	- ve
IRMP 21	2	- ve	- ve	- ve
IRMP 22	1	- ve	COPD	- ve
IRMP 23	1	- ve	- ve	- ve
IRMP 24	1	- ve	- ve	- ve
IRMP 25	2	- ve	- ve	- ve
Total	54	- ve (53) / + ve (1)	-ve (45) / + ve (9)	+ve = 2 (3.7%)

Table-2: Patients status in TB Diagnostic Clinic Malir and New Karachi before and after intervention.

Time period	TB Diagnostic Clinic Malir Cases		TB Diagnostic Clinic New Karachi Controls		P-value
	OPD	TB +ve	OPD	TB +ve	
Apr. - Nov. 2004 Before intervention	9284	991 (10.7%)	3600	136 (3.7%)	0.001
Apr. - Nov. 2005 After intervention	8408	1328 (15.8%)	6750	340 (5.0%)	0.001
Rate of increase in proportion	0.477		0.316		0.001

Using Chi-square test for comparison between Intervention and non-intervention area.
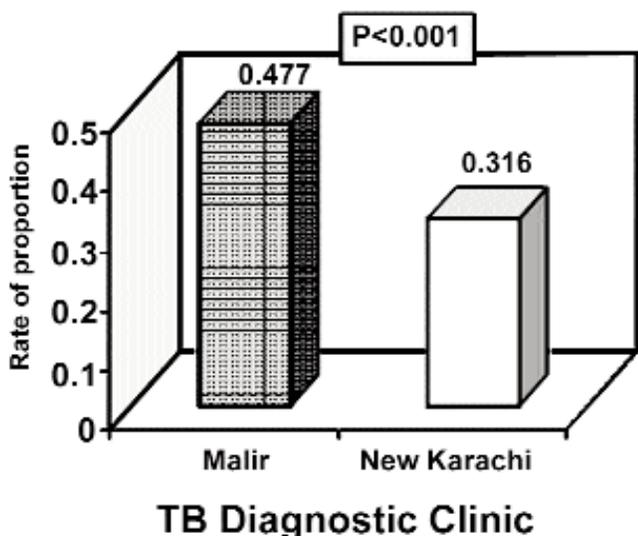

Figure: Rate of increase in proportion in Intervention (Malir) and Non Intervention (New Karachi).

pulmonary tuberculosis (X-ray chest positive), there was one patient of extra-pulmonary tuberculosis (lumbo-sacral spine) who was dropped out from the final analysis (non-inclusion criteria) though his treatment was supported by the research team and the DOTS Diagnostic Center Malir.

Comparison of our data with the Malir diagnostic center and control area New Karachi diagnostic center is shown in the (Table-2). Over the past two years, the TB detection rate increased from 10.7% in 2004 to 14% in 2005, while similar trend was seen in the non intervention area i.e. from 3.7% to 5% (p<0.001). By incorporating the hakims and homeopaths we were able to increase the proportion of case identification (0.477) which was significantly higher in Malir diagnostic clinic (intervention area) as compared to non-intervention area (0.316) as shown in figure (p<0.001).

Discussion

Pakistan is a high prevalence country for Tuberculosis (171/100,000) and ranks 8th among the countries having highest disease burden. Tuberculosis (TB) was declared a global emergency by the WHO in 1993,[10] In Pakistan an estimated 271,500 cases of tuberculosis appear every year, of these 121,500 are sputum smear positive . In year 2004 there were 2,309 TB positive cases (1,100 male /1,208 females), of these 989 were smear positive, 82 relapses, 207 re-treatments, 606 smear negative and 424 extra-pulmonary.[11]

Whereas in 2006 the incidence of all new sputum positive cases was 291,743, case detection was 50 % treatment success 83% , default 10%

National estimates of the case detection rate suggest that 77 countries met the 70% target by the end of 2006.[12] Of the additional new smear-positive cases reported by DOTS programmes in 2006 (compared with 2005), 30% were in India and 33% were in Bangladesh, Pakistan and Indonesia.[13]

By incorporating the hakims and homeopaths we were able to increase the case identification by 2 cases, however, rate of increase in proportion of case detection rate (0.477) was significantly higher in Malir diagnostic clinic (intervention area) when compared with the non-intervention area (0.316).

Under WHO's National Program for the control of Tuberculosis in Sindh there are approximately 55 TB diagnostic centers and 111 treatment centers which are functional and reporting in Karachi. Despite the strenuous efforts of government of Pakistan and WHO the indicators are falling short of achieving the target. There is a need for improving the monitoring, supervision, developing linkages of diagnostic with treatment centers and collaboration with the private health care providers. The national health follow up report showed that only 20% of the population use public sector hospitals for the treatment support while 80% seek treatment from the private sector.[4] The private sector health care providers include general practitioners, specialists and Hakims/Homeopaths (informal registered medical health care providers-IRMPS) as they are more easily accessible, cheaper to consult, more trusted and they treat the whole family and therefore, have a regular clientage. The

compliance of the patients is an important factor in treatment.

The success rate of tuberculosis treatment is 76% which needs to be enhanced. This intervention study was done in collaboration with informal registered medical practitioners (IRMPs) and the provincial TB control programme to evaluate whether by establishing a strong link these Health care providers, can then be incorporated into our health care system.

Intervention in the area of Malir was planned because it has an established diagnostic center and a large number of Health care providers. Out of 64 health care providers 58 agreed to participate in the study. Their knowledge regarding Tuberculosis was assessed and only 5% were aware of Tuberculosis as a disease entity. They were given a rigorous training by the provincial and the local Tuberculosis control programme group to identify suspected cases of pulmonary Tuberculosis and refer them to DOTS TB diagnostic center. With all these efforts and provision of pick and drop services from the hakims to the diagnostic center and daily visit by our group, we got only 2 positive cases.

When we compared the present results with those from the same center in the last year; it showed that overall, case detection rate increased both at the intervention area and the non intervention area but was significantly more in the intervention area and integration of informal registered medical practitioners was found to be effective in DOTS implementation Hence, they can be incorporated in other national programmes to improve public health and this study can be replicated on national scale.

Acknowledgement

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