

An audit of symptomatic household contact tracing of Sputum Smear Positive TB Patients enrolled at TB DOTS centre in Nishtar Medical University Multan, Pakistan

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Author Contributions

MIS AN MAM conceived idea, MAM MWA MWT drafted the study, MAM MIS collected data, AN MWA MWT did statistics analysis and interpretation, MAM MIS critical review manuscript, All approved final version to be published

Declaration of conflicting interests

The authors declare that there is no conflict of interest.

Abstract

Background: Tuberculosis still remain one of the biggest issue in our part of the world. Pulmonary tuberculosis is special in this regard that it spreads through coughing and those persons who are in close proximity of such patients specially smear positive cases are at stake of developing the same disease. So, the basic purpose of this study was to screen such persons who are in close proximity of smear positive pulmonary tuberculosis (TB) patients.

Objective: Basic Objective of the present study was to screen such persons who are in close proximity of smear positive pulmonary tuberculosis (TB) patients.

Methodology: This Audit was conducted among the household contacts of all newly diagnosed Sputum Smear positive pulmonary TB patients which were being diagnosed at/referred to the DOTS centre, Pulmonology department Nishtar Medical University Multan from 1st January 2017 to 31th December 2018. Cases included in the study were from both rural and urban areas.

Results: The household contacts of 661 index cases which were registered at DOTS centre in Pulmonology department Nishtar Medical University Multan from 1st January 2017 to 31th December 2018 were considered for inclusion in the study. The study subjects included 589 (89.1%) category I (CAT I) and 72 (10.9%) were on category II (CAT II) treatment strategy. Among 1336 household symptomatic contacts 43 cases (3.21%) were found to be smear positive. Among positive cases 26 (60.46%) were male and 17 (39.53%) were female. Among these 6 were diagnosed as Primary Multidrug Resistant TB (MDR-TB).

Conclusion: Our study concluded that 3.21% persons were smear positive among 1336 symptomatic contacts of the Index cases. This method of contact tracing is easy and need no heavy financing as well. World Health Organization (WHO) also endorses such approach of contact tracing. The focus on symptomatic contacts offers a cost effective alternative and the findings of this study suggest the need for more research to assess the cost effectiveness and large scale adoption of household contact tracing for detection of TB in Pakistan.

Key Words: Sputum Smear positive; MDR – TB; Punjab; Pakistan GOLD

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Introduction

The contacts of people with tuberculosis (TB) have higher risk of having a latent tuberculosis infection (LTBI), and of developing TB than the general population. This is particularly true among the contacts of people with sputum smear-positive

pulmonary TB (SS+PTB).¹ People with LTBI have a 5–10% lifetime risk of developing TB if they do not receive LTBI treatment. The risk is higher in the first two years after infection and decreases gradually thereafter.² Achieving tuberculosis (TB) control depends on maximizing early case detection, in the community and their effective treatment using the

Directly Observed Treatment-Short Course (DOTS) strategy. Various studies have shown the importance of active case detection among the household contacts of TB cases.³⁻⁸

Household contacts are highly susceptible to acquire TB infection from the index cases because of their close proximity. Active tracing of such contacts and their screening for TB could lead to the detection of additional cases of TB, maximizing the impact of case detection and effective treatment. Household contact tracing not only results in detection of additional cases but further offers several indirect advantages in the form of lead time obtained for these cases by early diagnosis, reduced duration of morbidity and reduced risk of transmission to other.

Methodology

The objective of Audit was to assess the prevalence of TB among the household contacts of newly diagnosed sputum smear (SS) positive TB cases and treat them as early as possible. Written informed consent was taken from all the patients as well as their symptomatic contacts included in the study.

This Audit was conducted among the household contacts of all newly diagnosed Sputum Smear positive pulmonary TB patients which were being diagnosed at/referred to the DOTS centre, Pulmonology department Nishtar Medical University Multan from 1st January 2017 to 31th December 2018. Cases included in the study were from both rural and urban areas.

An index case was defined as the first Sputum Smear positive TB case identified in the household. Household contacts who had no history of ATT were

included for the study.

Household contacts were defined to be those people who shared meals with the index case; stayed together as a family with the index case; spent 8 or more hours per day with the patient in a single room and/or resided with the index case for any 7 consecutive days before the diagnosis of TB.

Symptomatic contacts were defined as household contacts with one or more symptoms suggestive of TB including cough more than 2 weeks, hemoptysis, weight loss, or fever irrespective of duration at baseline or within 3 months of diagnosis of index case.

Index cases and household contacts not confirming to the case definitions were excluded from the study. All the symptomatic contacts were interviewed and screened within 2 weeks of diagnosis of their index case.

Two sputum samples of all symptomatic contacts were collected. The samples were subjected to sputum acid fast bacilli (AFB) examination by Ziehl-Neelsen (ZN) method as per the National Tuberculosis Control Program guidelines. The chest x ray PA view was also carried out for all symptomatic contacts.

All the new cases diagnosed on the basis of sputum smear positive among the household contacts were enrolled into the DOTS program for further evaluation by GeneXpert to rule out MDR TB and treatment. Household contacts who were negative for active TB work up were counselled about the symptoms of TB and advised to approach health care workers in case such symptoms appear.

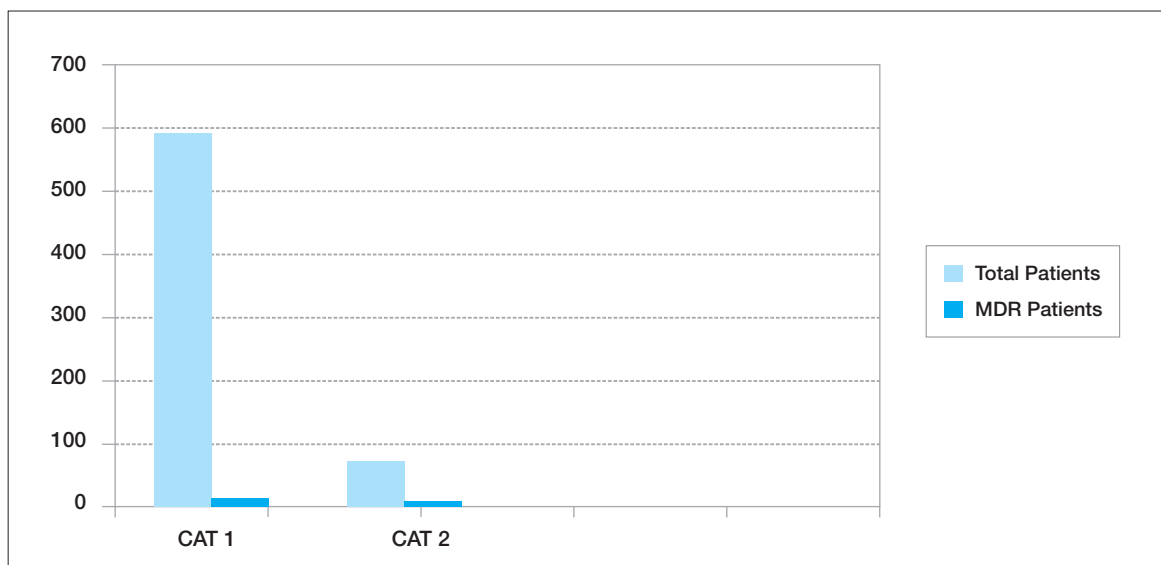
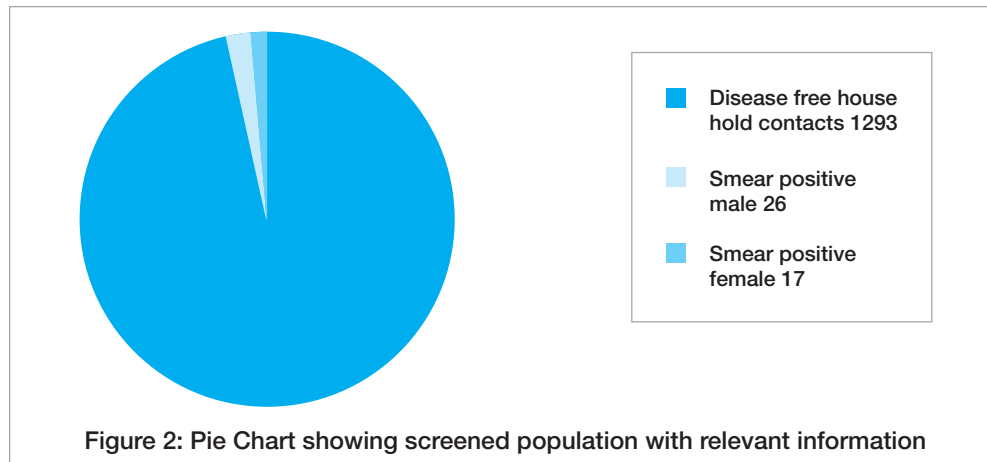


Figure 1: Treatment Regimen and detected MDR patients

Results

The household contacts of 661 index cases (CAT- I TB 589 & CAT- II TB 72) which were registered at DOTS centre in Pulmonology department Nishtar Medical University Multan from 1st January 2017 to 31th

December 2018 were considered for inclusion in the study (Figure 1). Age range was between 12-65 years. There were total 1821 household contacts of 661 index cases but only 1336 symptomatic household contacts were screened for study purpose. There were 43 cases (26 male & 17 female) that were found to



be smear positive on sputum microscopy from CAT I TB patients (Figure 2). There was no positive case detected in household contacts of CAT-II TB patients.

There were 6 primary MDR TB cases detected also among the study cases.

Discussion

Our study showed that 3.21% (n = 43) of household contacts were symptomatic with symptoms suggestive of TB. This highlights that symptomatic household contact screening could be used as a prospective case detection tool.

A prospective cohort study conducted in Uganda reported the detection of 6% secondary cases among the household contacts of index TB cases.³

In another study conducted in Kenya, mothers attending maternal and child welfare clinics were interviewed for detecting TB suspects in their households. Mothers were asked to give letters to the suspects asking them to come to clinic for screening. This approach resulted in 4% of annual incidence of SS positive cases being detected with very few resources being expended.

Gupta and colleagues conducted a cohort study in Kolhapur, India showed that 3.45% of household contacts were symptomatic with symptoms suggestive of TB.¹⁰

Contact screening method provides considerable evidence for moderate additional yield of cases of TB. The approach is practical since minimal resources are

required to achieve this additional yield. Furthermore, the method offers the potential to approach the exposed contacts through their family members. Systematic screening of household contacts of TB patients has been strongly recommended by the World Health Organization.¹¹

There is evidence that risk of active TB among household contacts of active case subjects is very high which indicate that investigating the symptomatic household contacts could provide a powerful approach to explore undiagnosed cases in the community.¹² The focus on symptomatic contacts offers a cost effective alternative and the findings of this study suggest the need for more research to assess the cost effectiveness and large scale adoption of household contact tracing for detection of TB in Pakistan.

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