

# Diagnostic, Therapeutic Monitoring of Tuberculosis Patients of Silk City by Telemedicine

Dr. KarthikaJayakumar\*, Dr. Sundaramurthy\*\*, Dr.Srividhya\*\* Mr.Sunilkumar.Jada\*

\* Department of Microbiology, Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram Tamilnadu.

\*\* Department of TBCD/ Pulmonology, Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram Tamilnadu.

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**Abstract-** In this era of Mobile world, the no of mobiles in a family outnumber the members living in the same household!!!!It simply explains the importance of this hand set & its inevitable role in an individual's routine.

It can be used not only for personal & official communication but also for MEDICAL PURPOSE!

**Context:** To bring telemedicine in diagnostic & therapeutic management of TB patients in rural area.

**Aims:** To study diagnostic, therapeutic monitoring of Tuberculosis in our patients attending our pulmonology department.

**Settings and Design:** Study was planned for three months-Oct to Dec 2015.

It was done in three different phases: I, II, III

**Methods and Material:** Clinically suspected cases were included

**Phase I:**

The faculties & patients were informed separately about this Telemedicine project by sensitization program.(-pic1 &2.)

**Phase II:**

The selected, willing patients were divided into two categories as follows:

(a) Those who had mobile phones with talking facility only

(b) Others with mobile phones that also had video & Skype facilities.

**Phase III:**

collection & analysis of the video chats - for the completion of the project.

**Statistical analysis used:** SPSS 20

**Results:** Of the 75 willing participating patients, 51 were found to be AFB positive, having 68% positivity, which was a high incidence .They were found to be positive both by acid fast stain & culture.

37 patients had mobile with video & Skype APP, included under direct follow up. Among these 37, 32 were highly interactive, communicating with the treating pulmonologist (video-2) at the given time for therapeutic monitoring.

**Conclusions:** This is an essential process to prevent the occurrence of resistance development in TB causing bacteria (ref2).

Our study ensures this, along with the follow up of the deadly multidrug resistant disease.

**Index Terms-** Telemedicine, Diagnostic & monitoring

**Key Messages:** Telemedicine is very effective in the diagnostic and therapeutic management of TB patients by mobiles in rural tertiary care centres.

## I. INTRODUCTION

In this era of Mobile world, the no of mobiles in a family outnumber the members living in the same household!!!! it simply explains the importance of this hand set & it's inevitable role in an individual's routine.

It can be used not only for personal & official communication but also for MEDICAL MANAGEMENT !

This equipment can be used as an effective instrument in the diagnostic & therapeutic monitoring of tuberculosis by two way communications between the diseased & the treating physician. so, we planned to undertake a study on the diagnostic, therapeutic monitoring of Tuberculosis in our patients attending our Pulmonology department in our hospital , which is situated in the SILK CITY OF TAMIL NADU! Kanchipuram District.

## II. SUBJECTS AND METHODS

**Inclusion criteria:** Out patients with: cough with expectoration > 2 weeks duration, Hemoptysis+/-, evening rise of temperature, loss of weight, F/H of tuberculosis, contact with TB & willing patient

**Exclusion criteria:** unwilling patients , Inpatients ,other LRT cases

**No of patients enrolled:** 75.

Study was planned for three months-Oct to Dec 2015.

It was done in three different phases: I, II, III

Phase I: Sensitisation of the Faculties & patients

Phase II: Actual video chat & Skype discussion - a) House visit

b) Direct follow up

Phase III: Data collection –video chat & analysis.

**Phase I :**

The faculties & patients were informed separately about this Telemedicine project by sensitization program.(-pic1 &2.)

The Department of Pulmonology /TBCD had 434 patients in the three months period of October, November & December 2015. Of this 434, there were 288 males & 146 females, giving a ratio of 3:1.

From this group, 75 willing patients, whose consent was taken in regional language, (attachment -1) were enrolled for the study.

These 75 patients were screened by Acid fast stain, culture in Middle Brooke's method.

### Phase II:

The selected patients had to be divided into two categories as

- (a) Patients with Mobile phones that had talking facility only,
- (b) others with mobile phones with video & Skype facilities also

The first group required support, for the video chatting, as they were willing to participate in the project; these patients were included under the HOUSE VISIT GROUP.

The second group who had phone with video & Skype facility were included under the DIRECT FOLLOW UP GROUP.

### Phase III:

The video chat was collected & it was analyzed for the completion of the project.

The project was started with the sensitization programme for the junior faculties & CRRI in the beginning of October .

After which a separate program for the patients awareness was done.

The written consent from 75 willing patients in regional language was obtained.

The Direct follow up group –those with video & Skype facility were registered separately, were given unique log in Id, for the direct observational monitoring of drug intake & diagnostic updating.

The other group, possessing only mobile phones, without any added APPS, who were willing to par take in the group, were monitored with the help of the Junior Residents (JR) or House Surgeons (CRRI)-by House visit method.

The chat & drug intake was video tapped & was maintained as the recorded document for therapeutic monitoring– (video-1)

The diagnostic monitoring for the patients was made feasible, by selecting six labs, whose staining & reporting corroborated with our reporting technique with the same clinical specimen. Patients were encouraged to have their specimens investigated in these selected nearest lab. They were guided to upload the report as image (images 1&2)

These images were also saved & maintained as recorded document for diagnostic prognosis.

At the end of the third month, after screening the willing positive participants, the chats were collected, analyzed & report was prepared.

### III. RESULTS

Of the 75 willing participating patients, 51 were found to be positive, having 68% positivity, which is a high incidence .They were found to be positive both by acid fast stain & culture. 37 patients had mobile with video & Skype APP, had direct follow up. Among these 37, 32 were highly interactive, communicating with the treating pulmonologist (video-2) at the given time for therapeutic monitoring.

5 patients were refraining from active chatting & had to be encouraged frequently, in that 2 were non cooperative due to personal reasons.

14 patients had only mobile without any required APP, supported by the Skype & video chat of the electronic gadget of the JR & CRRI.

### IV. DISCUSSION

Telemedicine is an ideal method for monitoring the therapeutic & diagnostic technique of managing TB patients, who are living in rural areas where, transport facilities are very poor.

This project was launched by the joint venture of Departments of Microbiology & Pulmonology (TBCD).

This workup had its positive response in the form of quick turnaround time (TAT), less time consumed for meeting the treating physicians, from their own home/ work place, without affecting their routine. It was more an individual based meeting, therefore had more positive impact, rather than waiting in the hospital clinic, for their turn to come!!!.

For the house visit program, our project was unique in that, the medical officers –JR/CRRI went with their mobiles with the necessary APPS & made the video chat feasible & ensured the monitoring of drug intake (video 3)

As per norm, the success of TB control program relies on the proper intake of the ATT & its monitoring (ref 1).

This is an essential process to prevent the occurrence of resistance development in TB causing bacteria (ref2).

Our study ensures this, along with the follow up assessment of diagnostic indicator.

The patients who were monitored by these two methods felt happy to have their physician contact in a comfortable & convenient ambience, supported by the JR /CRRI wherever required, especially in rural area where the patients are residing in far flung areas with less transport facilities.

This networking not only builds an effective relationship between the treated & treating but also ensures proper monitoring of intake of the ATT.

### V. CONCLUSION

Our study is an effective monitoring technique of therapeutic & diagnostic indicators of Tuberculosis management.

### ACKNOWLEDGEMENT

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AUTHORS

**First Author** – Dr. KarthikaJayakuma, Department of Microbiology, Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram Tamilnadu.

**Second Author** – Dr. Sundaramurthy, Department of TBCD/ Pulmonology, Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram Tamilnadu

**Third Author** – Dr.Srividhya, Department of TBCD/ Pulmonology, Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram Tamilnadu

**Fourth Author** – Mr.Sunilkumar.Jada, Department of Microbiology, Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram Tamilnadu.

**Correspondence Author** – Dr.Karthika Jayakumar, Address: Shri Sathya Sai Medical College & Research Institute, Ammapettai, Kanchipuram, Tamilnadu., Phone numbers: 9952507190, Facsimile numbers: Nil, E-mail address: jayakumarkarthika900@gmail.com