

Original Research Article

The cost of conducting rapid assessment of avoidable blindness survey in Andhra Pradesh State, India

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ABSTRACT

Background: To determine the cost of conducting a rapid assessment of avoidable blindness survey in Andhra Pradesh State, India. RAAB is a simple rapid survey methodology that can provide data on prevalence and causes of blindness and visual impairment. As per the manual published by international centre for eye health, ICEH London United Kingdom the cost of doing a RAAB survey was US \$ 20000 to 30000. No data were available regarding the cost required for doing the RAAB survey in India or from any other developing country. Hence the present study was conducted to arrive at the average cost of a RAAB survey in Indian scenario.

Methods: The Andhra Pradesh right to sight society conducted RAAB surveys in three different tribal areas by three teams in the year 2009. The average cost of doing RAAB survey was arrived by calculating the mean expenditure of the three surveys.

Results: The average cost of doing a RAAB survey in India was Rs.2, 30,541.66 (US \$4,433.50). which was 15 to 22% of the cost mentioned in the RAAB Instruction Manual version 4.02 published by ICEH.

Conclusions: As the cost of doing RAAB survey is very much less in India, this may encourage the epidemiologists and researchers to undertake the rapid assessment surveys with limited budget and can easily be repeated every 5 years to know the trends.

Keywords: RAAB survey, Cost, Tribal areas, India

INTRODUCTION

The current study was conducted with an objective to find out the cost of conducting a rapid assessment of avoidable blindness (RAAB) survey in Andhra Pradesh State, India. The rapid assessment of avoidable blindness is a rapid survey methodology developed at ICEH (International center for community eye health), and used to complete over 300 surveys of visual impairment and blindness in over 80 countries to date.¹ RAAB was developed by Hans

Limburg working with the International centre for eye health, first as the rapid assessment of cataract surgical services in 1997, and then updated and modified to create RAAB in 2004.²⁻⁵ RAAB is rapid because it uses simplified examination techniques and, because it only includes examination of people 50+, requires a small sample size. RAAB is a survey methodology that aims to provide data on the prevalence and causes of blindness and visual impairment.² Reliable information is required for the planning and management of eye care services.⁶ Many of

the times the program planning was delayed by lack of data either no survey has been conducted in the area or the surveys are too old to be relevant.⁷ While population based epidemiological surveys provide reliable estimates, they are expensive, time consuming and resource intensive. The rapid assessment (RA) methods are useful tools when the resources are limited and the data are needed quickly. Since 1990's rapid assessment (RA) methods are used for cataract, onchocerciasis, trachoma and for main causes of avoidable blindness and visual impairment. It's a rapid methodology to conduct a population-based survey of visual impairment and eye care services among people aged 50 years and over.⁶ The RAAB package was developed and programmed by Hans Limburg, Walter Meester with major contribution by Hannah Kuper and Sarah Polack in collaboration with International centre for eye health.⁸ The Andhra Pradesh right to sight society (APRTSS) was established in the year 2002 as part of Global initiative of Vision 2020 the right to sight with a goal to eliminate needless blindness in the state of Andhra Pradesh by the year 2020. The Andhra Pradesh right to sight society made a significant contribution to the eye care services in Andhra Pradesh since the inception by following the three strategies of vision 2020 namely human resources development, infrastructural strengthening and Control of major eye diseases causing blindness and visual impairment. All these activities implemented in close coordination with National programme for control of blindness (NPCB) involving all the stake holders in eye care namely the Government eye care facilities, non-governmental and private eye care facilities. Before beginning of our activities, we have taken the blindness and visual impairment indicators as baseline from the Andhra Pradesh eye disease study (APEDS) which was just concluded at that time.⁹ After six years of APRTSS activities in controlling blind and visual impairment in undivided Andhra Pradesh State, we conducted the RAAB studies to find out the trends in blindness and visual impairment.

In order to carry out the RAAB studies we formed the Andhra Pradesh Raab group comprising of APRTSS people along with ophthalmologists, midlevel ophthalmic persons from government service who were trained in masters in community eye health (MCEH) course. We formed three teams consisting of at least one ophthalmologist in each team. All three teams were trained by WHO certified RAAB trainer at international centre for advancement of rural eye care (ICARE), LV Prasad Eye Institute. All three teams conducted survey in three different tribal areas of the AP state simultaneously in the year 2009. The literature search in PubMed, Science Direct and Google Scholar revealed only one report on the cost of conducting RAAB survey.¹⁰ In view of this we attempted to estimate the cost of doing RAAB survey in Andhra Pradesh after completion of the survey. This will be the first report on the cost of conducting a RAAB survey exclusively in tribal areas anywhere in the world.

METHODS

This study was conducted as part of a research project to determine the impact of blindness control activities in the southern Indian states of Andhra Pradesh and Telangana and was conducted in accordance with the principles of Declaration of Helsinki. The RAAB survey was conducted in the year 2009 for a period of three months, from July 2009 to September 2009. The survey was conducted in three different tribal areas of undivided Andhra Pradesh state in India (Figure 1) which were 150 to 700 kilometers away from the capital city of Hyderabad. The study criteria were; the cost incurred in RAAB surveys conducted in Government notified tribal areas only. The cost incurred by the three RAAB teams was verified with original bills of expenditure and cross checked by the team of accountants. The study was also taken into consideration that the surveys were conducted in three tribal areas which were having different terrain and landform.

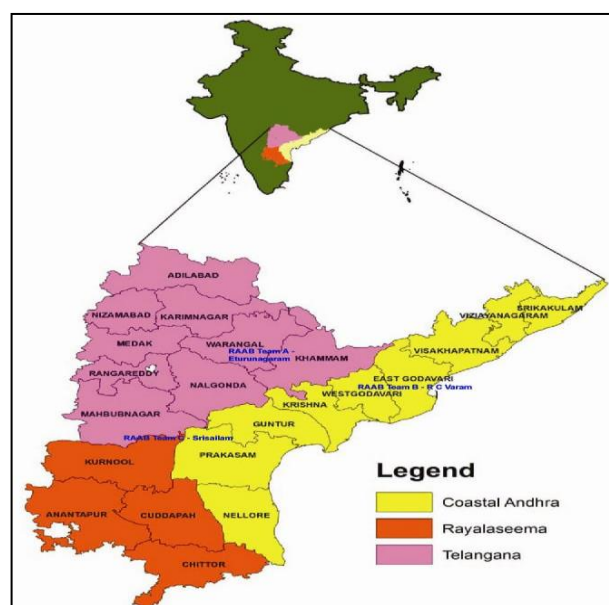


Figure 1: Survey areas in Warangal, Prakasam and East Godavari districts in undivided AP State.

Inclusion and exclusion criteria

Inclusion criterion for current study was the cost involved in conducting RAAB surveys in exclusively Government notified tribal areas. Exclusion criterion for current study was the cost involved in conducting RAAB surveys in non-tribal areas.

The average cost of conducting RAAB survey was arrived by calculating the mean expenditure incurred by the three teams in conducting surveys in three different tribal areas. The expenditure was divided into two parts. The first part was the pre-survey cost included the cost for preparation, training, purchase of survey equipment, stationary and the cost of the pilot study. The expenditure involved in pre-survey was common for all the three teams as the exercise

was conducted by a single world health organization (WHO) certified RAAB trainer for all the three teams at the same time and place. The second part of the expenditure was calculated as per actual expenditure incurred by each team under heads of cost of human resources, materials, transport, food and other miscellaneous expenses. The pre-survey cost was divided equally among the three teams and the cost of RAAB survey for each team was arrived by adding the pre-survey cost to the survey expenditure incurred by that team. The cost was estimated after completion of the survey work (Figure 2). As RAAB software has an inbuilt statistical analysis package, and thus we did not incur any expenditure for analysis of the data.



Figure 2: Assessing visual acuity at the door step of the subject.

RESULTS

The pre survey cost of all three teams was Rs.1,04,000.00 (Table 1). The average cost for each team was Rs. 34666.66. The total cost of survey at field level for three teams together was Rs.5, 87,649.00 The cost for doing the survey for individual teams is shown in (Table 2). The total

cost for doing RAAB for three teams together was Rs. 691624.98. The cost for the individual teams is shown in (Table 3). The average cost of doing RAAB survey was arrived by calculating the mean expenditure of the three teams. It comes to Indian rupees 2,30,541.66 equivalent to US \$ 4,433.50 at foreign currency conversion rate at the time of survey period.

Table 1: Pre-survey cost for all the three teams (APRAAB group).

Parameters	Cost (Rupees)
Human resources	
Cost of the external trainer honorarium for 4 days	24,000.00
Training cost of trainees of 3 teams - Travel allowance, accommodation and boarding	24,000.00
Materials	
Stationary	15,000.00
Survey equipment	24,000.00
Computer hire charges (3 computers)	10,000.00
Transport	
Transport of the 3 teams to the pilot survey study site	7,000.00
Total	1,04,000.00

DISCUSSION

The survey cost of Team B and Team C were nearly the same whereas the Team A cost was very much less. This can be explained by two factors. The Team A has not incurred the cost of services of ophthalmologist as their team principal investigator being an ophthalmologist, whereas as team b and team c has to hire the services of an ophthalmologist for their survey work. The survey areas of Team B and Team C was difficult terrains than that of Team A.

Table 2: Survey cost at field level (Indian Rupees).

Parameters	Team A	Team B	Team C
Human resources	37,500.00	52,750.00	65,500.00
Honorarium for ophthalmologist, mid-level ophthalmic person, community eye care worker/social worker			
Transport	33,943.00	47,000.00	49,500.00
Vehicle hire charges			
Fuel	21,014.00	19,472.00	23,528.00
Travel	15,199.00	31,955.00	28,290.00
Boarding			
Accommodation	16,490.00	54,700.00	49,950.00
Miscellaneous charges (included report writing)	5,243.00	12,710.00	22,881.00
Cost for doing survey for each team at field	1,29,389.00	2,18,587.00	2,39,649.00

As per the RAAB instruction manual published by ICEH the cost of doing the RAAB survey is US \$20,000 to 30,000.⁵ No data were available regarding the cost for doing RAAB survey in developing countries including India. In the present study the cost of doing RAAB survey

in India comes to US\$ 4,433.50 when compared to US\$ 20,000 to 30,000 as mentioned in the manual. The cost of our survey was very much less 15-22% of the cost (US\$ 20,000-30000), mentioned in the manual. The PubMed and

Google scholar search revealed no studies are available on the cost of conducting RAAB survey till date.

Table 3: Total cost for doing RAAB survey (Indian Rupees)

Parameters	Team A	Team B	Team C
Pre survey cost	34,666.66	34,666.66	34,666.66
Survey cost at field level	1,29,389.0	2,18,587.0	2,39,649.0
Total cost for doing RAAB survey for each team	1,64,055.66	2,53,253.66	2,74,315.66

CONCLUSION

As the cost of doing RAAB survey is less in India, this will encourage the young researchers to undertake the rapid assessment surveys with limited budget and can easily be repeated every 5 years to know the trends. The RAAB can be used for planning and monitoring the eye care services at district level by district blindness control society with limited resources.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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