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Time Motion Study for the Effectiveness of Intervention by Accredited Social Health Activists (ASHAs) in the control of hypertension and diabetes in a rural population of Kolar District, Karnataka.

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ABSTRACT

Introduction: India with an established National Rural Health Mission program integrated with ASHAs provides an ideal platform to evaluate implementation of the World Health Organization (WHO) task-shifting strategy in the control of hypertension and diabetes; henceforth decreasing the burden of CVDs. Time motion study is a useful analytical tool for assessing and thereby increasing productivity by a worker. **Objectives:** To determine the amount of time required for the activity and work function of ASHAs under National Rural Health Mission (NRHM). **Methodology:** This study was done as a part of the non-randomized interventional study to assess the Effectiveness of Intervention by Accredited Social Health Activists (ASHAs) in the control of hypertension and diabetes in a rural population of Kolar District, Karnataka. In the intervention villages, ASHAs who were trained in the control of CVD did the intervention for 6 months. The time-motion study comprises observations of time consumed in each activity by the five ASHAs, who were trailed during the working hours during January - April 2015. Convenient sampling was done among ASHAs who were active and working; **Results:** The mean age of the ASHAs was 29.73 ± 6.17 years. Their specific tasks were recorded which includes -Arranging escorts where maximum time spent (median time of 1 hr 15 min), New born care (33 min), referral of cases (10 min), Record works (50 min), Attending meetings (20 min). Management of childhood illness, Primary medical care -Not observed. The average duration of their work including maternal & child health care was 5hr 15 min where the time varies on different days and also based on the work calls with CVD work amounting to 40 min which did not affect their routine works. **Conclusion:** Though ASHAs are involved in maternal and child health services, they are not burdened with the CVD work.

Key Words: Time-motion study, Accredited Social Health Activist (ASHA), India.

INTRODUCTION

According to the Global status report on Non communicable diseases 2014 by World Health Organization (WHO), NCDs are the leading cause of death globally and responsible for 38 million (68%) of the world's 56 million deaths in 2012.¹ Almost three quarters of all NCD deaths (28 million), and the majority of premature deaths (82%), occur in low- and middle-income countries.² As most of the urban areas have access to health facilities, the hidden mass of hypertension in the community can be detected and treated. However, the situation is reversed in rural areas. A majority of the rural population in India have inadequate access to healthcare.³ National Programme for prevention and control of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS) aims at integration of NCD intervention in National Rural Health Mission (NRHM) framework for optimization of resources. One of the key components of NRHM is to provide villages in the country with trained female community Health Activists (ASHA) selected from

the village itself who will be trained to work as an interface between community and public health system.⁴ Studies have shown that community based health workers can have a beneficial effect in quality of care and contribute to significant improvement in community members' access to and continuity of care and adherence to treatment for control of diabetes and hypertension.⁴

Main concern is that since ASHAs are involved in maternal and child health services, they might be burdened with the CVD work. This needs to be studied by time motion study to evaluate the work of ASHAs. Time motion study is one of the techniques of industrial engineering, an Activity analysis technique (Modern Management Technique).⁵ This Time Motion Study for the Effectiveness of Intervention by Accredited Social Health Activists (ASHAs) in the control of hypertension and diabetes in a rural population of Kolar District, Karnataka will help in the improvement of planning and scheduling of cost and time.

OBJECTIVES OF THE STUDY: To determine the amount of time required for the activity and work function of ASHAs under National Rural Health Mission (NRHM).

MATERIALS & METHODS

This study was done as a part of the non-randomized interventional study to assess the Effectiveness of Intervention by Accredited Social Health Activists (ASHAs) in the control of hypertension and diabetes in a rural population of Kolar District, Karnataka. In the intervention villages, ASHAs who were trained in the control of CVD did the intervention for 6 months. The time-motion study comprises observations of time consumed in each activity by the five ASHAs, who were trailed during the working hours during January - April 2015. Convenient sampling was done among ASHAs who were active and working; **STATISTICAL ANALYSIS:** The data was entered and coded in Microsoft Excel and analysed using SPSS version 16 for proportions, frequencies and associations. Measures of central tendency, dispersion and chi square tests were used to analyse data. We considered p value of less than 0.05 as significant. When more than 20% of cells in tables had value less than 5, then we considered Fisher's exact test for significance.

RESULTS

The Time-Motion Study

The time-motion study was conducted by using continuous observation method. On each day, the observer met the respondents at the village or at a prefixed starting point depending upon the schedule of the worker. During the day, all his activities were systematically recorded by the observer, including the nature of and time spent in each activity. During a field visit, the observer traveled with the respondent and continued with similar observations.

In the time-motion study, data were collected in printed forms. Groups of activities were coded into categories. The study data were coded into categories, and Microsoft excel was used to analyze the coded activities. The categories were:

Field activity: This category includes the time spent for the activities such as creating awareness and providing information to the community, counsel women on birth preparedness, importance of safe delivery, breast-feeding and complementary feeding, immunization, contraception, working with the village health and sanitation committee.

Break: This category includes the time spent on the lunch, snacks

Traveling: This includes the time spent on accompanying pregnant women and children requiring treatment/admission to the nearest pre-identified health facility

Reports: This category includes the time spent for the report writing, getting it signed by Medical officer, Nurse, ANM and forwarding it to the block level.

Helping in Organizing& attending Meeting/ Camps: This category includes the time spent on finding the beneficiaries and organising camps in the PHC, participating in meetings.

Other services: provide primary medical care, act as depot holder, inform about the births and deaths to the subcentre

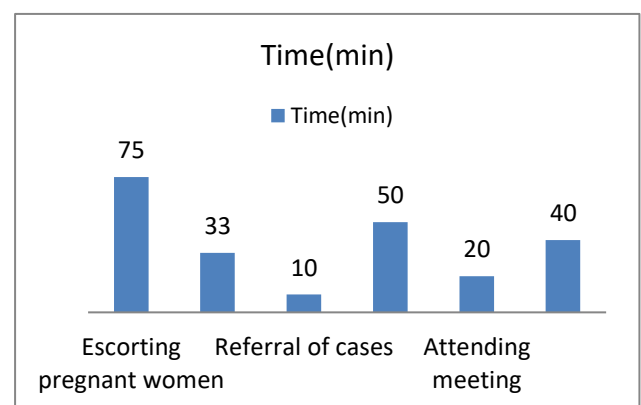
Table 1: Socio demographic details of ASHAs

	ASHA1	ASHA2	ASHA3	ASHA4	ASHA5
Age	28	29	29	33	27
Religion	Hindu	Hindu	Hindu	Hindu	Hindu
Marital status	Married	Unmarried	Married	Married	Married
Posted at	Jagdenahalli	Anchemuskur	Kalkare	kalkare	Pura

Table 2: The priority for the tasks performed by ASHAs (Mean time at the different activity points) Total time = 11,301 sec

Priority	Mean $\pm$ S.D (in seconds)	% of total activity time
Field activity	4502 $\pm$ 100.4	39.8
Travel	1970 $\pm$ 252.4	17.4
Meeting	1207 $\pm$ 88.2	10.7
Reports	2972 $\pm$ 201.9	26.3
Services	650 $\pm$ 17.5	5.8

Figure 1: Average time spent by ASHAs in different activity



The mean age of the ASHAs was 29.73 ± 6.17 years. Their specific tasks were recorded which includes -Arranging escorts where maximum time spent (median time of 1 hr 15 min), New born care (33 min), referral of cases (10 min), Record works (50 min), Attending meetings (20 min). Management of childhood illness, Primary medical care -Not observed. The average duration of their work including maternal & child health care was 5hr 15 min where the time varies on different days and also based on the work calls

with CVD work amounting to 40 min which did not affect their routine works. The mean duration of their work including maternal & child health care before the intervention was 5hr 15 min and after the intervention was 5hr 18 min which was the same.

Table 3: Comparison of activities of ASHAs in a month over time

MCH indicators (Monthly)	Before intervention		After (6mths) intervention	
	1 ASHA	5 ASHAs	1 ASHA	5 ASHAs
Pregnant women registered	3	43	4	50
Institutional deliveries	2	26	1	24
PNCare – 6 visits	3	45	3	40
Women referred for any complications	1	9	0	10
Children 12-23 months fully immunized	7	98	9	113
Set of home visits for new born care	3	35	4	47
Neonates with complications, who were referred	1	13	1	10
Successful referral of sterilization	2	30	3	28
Holding or attending Meeting(VHND, VHNSC, PMSY)	3	39	3	39

DISCUSSION

The time motion study is simple and consists of observing and timing by using stopwatches the physical work and movements carried out by a worker. The movements carried out in performance of a task are then broken into segments, analyzed and redesigned so that the task can be accomplished more efficiently. A series of related tasks is similarly studied for suggesting modifications to obtain maximum efficiency.⁶ Such modifications may bring about substantial reduction of physical effort and be time saving. The method is thus found to be a useful analytical tool for increasing productivity. Thus we expect output to increase overtime as more units are produced over time to complete task decreases as more units are produced.

ASHA's spend 39.8% of their time for field activities, while also their majority of their was spent on report making (26.3%) and the main works such as service was given much

less time (only 5.8%) (Table2). ASHAs were attending meetings at various places for half of the total working hours and were working for nearly half of the time they stay. Some activities have gone unrecorded as the researcher could not accompany the respondents, for example, getting report signed by the Medical officer etc. The presence of the researcher might have influenced the behavior of the respondents as it was because of our presence that the respondents were regular, on time, and careful not to spend time much in non-work activities as much as they normally do. Also the from the secondary data obtained from ASHAs, the Maternal and Child Health (MCH) work which ASHAs were doing initially did not vary over time (Table3) when they were given intervention for the control of hypertension and diabetes. The time taken for the work of cardiovascular disease (CVD) control was for 40 minutes (Figure1) which did not affect the MCH work. Though this study provides evidence that an ASHA led CVD control program is an effective model of care, adoption and sustainability of this model will require financing mechanisms and government backing.

CONCLUSION

The concept of community level workers intervention is receiving increased attention as a means to improve care and potentially reduce costs. From this study we conclude that though ASHAs are involved in maternal and child health services, they will not be burdened with the CVD work.

Conflict of Interest : None

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