Outworn or forgotten: Time and motion study of male multipurpose health workers from South India

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Abstract

Introduction: In India, there is a critical shortage of frontline health staff while requirements for new programs are increasing. Role of by male-multipurpose health workers (MPHWs) is less specified.

Materials & Methods: A cross-sectional mixed methods study was conducted in South-India to examine the time utilization and various factors affecting it. We directly observed six male-MPHWs for six continuous days using time and motion approach followed by interviews of participants and officials. We analysed quantitative data for time spent per male-MPHW and qualitative data by thematic content analysis and computed Smith's score.

Results: Male-MPHWs spent median 7.5 hours in a day, which includes three hours on total travel on any day. They spent median 5.4 hours on job and, excluding within field travel they spent median 4.2 hours on actual work per day. They spent median 16.6 hours per week on programmatic activities, 5.0 hours on programme support and 6.1 hours in other activities. Male-MPHWs were mostly involved in programs on communicable diseases, seasonal diseases, non-communicable diseases. Male-MPHWs helped female-MPHWs in outreach activities and special health camps. Support from coworkers and supervisors was mentioned as facilitating factors. The adhoc and non-standardised nature of their work and, absence of recognition and incentives were impeding factors.

Conclusion: Male-MPHW provided services for only limited components of health programs and they stay largely underutilized. Amidst critical shortage of community health workers (CHWs), especially male-MPHWs, it is required to devise optimal interventions with proactive policy to define specific roles and better utilize them in health service delivery.

Keywords: Male frontline health workers, Health manpower, Multi-purpose health worker, MPHW, Time and motion study, India.

Introduction

Post Alma-Ata Declaration there have been various programmes related with Community Health Workers (CHWs) to deliver cheap and effective life-saving interventions.[1] CHWs have been recognized critical to achievement of universal health coverage[2] by means for continuum of care and strong referral services.[3,4]

In developing countries, there is gender-based disparity in access to health care.[5] Community level health services are biased towards reproductive and child health, and men play an important role in decisions.[6] Moreover, there has been feminization of workforce while male-health workers' potential role is often ignored.[7] It becomes imperative to study male health worker engagement to improve population level health outcomes.[8]

In India there has been a systematic policy-shift towards coopting female over male health worker at community level.[9] Role of male-Multipurpose health worker (MPHW) has been pointedly laid out across different national health programs[10,11] but in practice there is less emphasis on recruiting male-MPHWs. India requires 52% new posts of male-MPHWs whereas almost 38% of sanctioned positions are vacant.[5] Scarcity of male-MPHWs has caused challenges not only in implementation of national health programmes but also increased responsibilities of female-MPHWs. Another impediment is the inefficient utilization of existing male-MPHWs especially when focus is increasing on non-communicable diseases.[11,12]

Hence, we conducted this study to (i) demonstrate time utilisation by male-MPHWs in various activities, and (ii) understand the facilitating factors and barriers to efficient service delivery.

Materials & Methods

We conducted the present study in Srikakulam and Chittoor districts of Andhra Pradesh and Khammam district from Telangana state, in India. Approval for the study was obtained from state and district administrations. Ethics approval was obtained from institutional ethics committee.

Study Design

We conducted mixed-methods research including time and motion approach where qualitative data was collected by direct observations and qualitative data by interviewing male-MPHWs and their supervisors and

officials. This study is part of bigger study assessing time utilization and work pattern of different cadres of frontline health workers.

Sample selection

We used multi-stage stratified sampling. We purposefully selected three districts across two states such that they consist of substantial tribal population. We then randomly selected two clusters from each district such that one of the clusters was predominantly rural (non-tribal) and another tribal. From each cluster, we randomly selected one Primary health centre (PHC) and within the PHC, we selected four Sub-centres (SCs) in an increasing order of distance. Thus, we included 24 SCs from six PHCs in three districts. Each SC was likely to have one male-MPHW. Considering 50% vacancies, we expected to study 12 male-MPHWs. We found only five male-MPHWs in the selected SCs and one additional male-MPHW in adjoining SC. Thus, we studied six male-MPHWs—four from tribal PHC and two from non-tribal PHCs. We in-depth interviewed these male-MPHWs, their supervisors, Medical officers and district officials across three districts.

Study tools

We observed each male-MPHW using an observation checklist. Qualitative enquiry was conducted using interviews, field notes and photo-essays. We used semi-structured interview schedules with a mix of close and open ended questions.

In the formative stage of the study, we directly observed two male-MPHWs for three days and through paper-pen based *de-facto* writing we recorded a detailed account of the workers' days. Analysis of these inductive exploratory enquiry yielded an exhaustive free list of activities, which was then analyzed to generate a checklist. This was supplemented with literature review and interactions with health administrators in order to explore key responsibilities assigned to male-MPHWs. We pilot tested these tools twice with 15 days gap in order to account for any variation across a month. The final observation checklist consisted of 17 major categories listed under results in table-1. These categories were further sub-divided into sub-categories with an activity list against it. For example, under the category '*service delivery and counselling'* sub-categories devised were various disease control programmes. Subsequently, the final checklist was installed as an app in android enabled tablets with GPS tagging which was field-tested prior to main study.

We also conducted detailed interviews with male-MPHWs, supervisors and experts to draft interview schedules. For the main study, we developed a structured interview schedule that gathered information on socio-demographic and economic profile, physiological status, daily work functioning and planning, supervision, training etc. This enabled us to explore facilitating factors and barriers in their time utilizations. Interviews of health officials explored their opinion regarding specific working patterns, work load management of male-MPHWs and suggestions to improve their working.

Obtaining data and quality assurance

We obtained written informed consent for the study from each participant. Trained observers directly observed each male-MPHW for six consecutive days (Monday to Friday) from home to home. Observations were strictly non-participatory ensuring that the normal working of male-MPHW was not interfered. With due consent we captured photographs of important activities which were representative of male-MPHWs functioning in field and at health facility.

Field leads directly supervised the observers and maintained field notes for other observations. They randomly cross-checked the entries in the tablet with field notes and with reference to GPS co-ordinates for movement, time logs and completeness of the data entry. At the end of each day, the data on the tablets was synced with the online server.

Trained field leads conducted interviews of male-MPHWs at the end of last observation day. This minimized data bias and contamination. Field leads also conducted interviews with supervisors and officials. We carefully transcribed information obtained from interviews and translated it into English. We randomly cross checked these against voice recordings/field notes and sorted the discrepancies if any. A central coordinating team monitored overall data collection and management.

Data analysis

We extracted data from android application onto Microsoft Excel for analysis. We analysed data under three broad domains; i) Programmatic activities comprising of service delivery, recording, travel within field; ii) Programmatic support activities comprising of training, meetings, administrative work, activities outside job description; and iii) Other work comprising of waiting, personal work, uncategorised. Time spent was calculated in median (IQR) hours/week/male-MPHW.

Interviews yielded both quantitative and qualitative information. We represented structured responses through simple frequency count. We used Anthropac software to analyse a free list of responses generated out of open-ended questions. We computed Smith's Saliency Score (S) value[13] using the frequency and rank of responses. Data triangulation was done across methods and participants enlisting regional variations wherever applicable.

Results

Five of six male-MPHWs were above 30 years, married, graduated and owned their own vehicle. All the

six male-MPHWs were hired on contract. None of them were staying at duty headquarters.

Time utilization by male-MPHWs

In total we observed 33 male-MPHW work days. Male-MPHWs spent median 7.6 hours (IQR, 5.5 – 9.5) from home to home in a day. They spent about three hours on travel on any day. Travel from home to workplace and back to home took median 1.5 hours (IQR, 0.5-2.4) and within the field travel took median 1.2 hours (IQR, 0.5-1.4) in a day. Male-MPHWs spent only median 5.4 hours (IQR, 4.1-6.6) on the job and, excluding within field travel they spent only median 4.2 hours (IQR, 2.2-5.4) on actual work per day. Male-MPHWs spent median 16.6 hours per week on programmatic activities, 5.0 hours on programme support and 6.1 hours in other activities (table 1).

Of the time spent under programmatic category, in a week male-MPHWs spent maximum time on within field travel (median 6.6 hours) followed by direct services to beneficiary (median 4.9 hours) and records maintenance (median 1.1 hours). Within direct services to beneficiary they spent maximum time on home visits, school health, seasonal disease control, and immunisation day. At the time of the study, since it was monsoon, all four male-MPHWs from tribal PHC were majorly involved in seasonal disease (such as malaria, dysentery) control activities. We observed that in remote tribal areas, most of the services were provided through home visits. Some of the significant aspects of service delivery were i) general curative care involving medicine distribution through home visits, ii) counselling male members of the community about health, iii) collection of blood sample for smear preparation, iv) geriatric care and counselling related with non-communicable diseases, v) organising and mobilising community for health camps and, vi) co-ordination with health workers on nutrition and health day for weight and height check-up of children.

Table 1: Activities performed and time spent (in hours*) by male-MPHWs per week and per day of the week, N=06

Activities	Total hours/week N=06					Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
	Count	Min	Max	Median	Total/week/ male-MPHW	Count	Median	Count	Median	Count	Median	Count	Median	Count	Median	Count	Median
1. Programmatic (sub-total)	6	9.7	29.6	16.6	14.2	4	2.7	6	3.8	6	2.1	6	2.4	6	4	5	0.5
Direct services to beneficiary	**6**	**4.3**	**15**	**4.9**	**5.8**	**3**	**0.2**	**5**	**1.3**	**6**	**0.7**	**6**	**1.2**	**6**	**1.5**	**5**	**0.3**
Communicable diseases (TB/HIV, Leprosy)	2	0	0.1	0	0.08	0	0	1	0	0	0	0	0	1	0	0	0
Non-communicable diseases	1	0	0.05	0	0.05	0	0	0	0	0	0	1	0	0	0	0	0
Nutrition	1	0	0.2	0	0.2	0	0	0	0	1	0	0	0	0	0	0	0
Seasonal diseases/Epidemic outbreaks (like fever, cold, dysentery etc.)	6	0.1	1.2	0.5	0.5	1	0	4	0.3	4	0.1	5	0.08	3	0.1	1	0
Camp work	2	0	0.6	0	0.3	0	0	0	0	0	0	0	0	2	0	0	0
Home visits	6	2	7.9	2.1	2.8	2	0.2	5	0.9	5	0.1	6	0.6	5	0.2	4	0.3
IEC activities among group(s)	1	0	0.05	0	0.05	1	0	0	0	0	0	0	0	0	0	0	0
School health	6	0.5	3.3	1.1	1.1	0	0	3	0.1	5	0.2	3	0.2	3	0.2	1	0
Universal Immunisation Day	3	0	6.2	0.4	2.4	0	0	0	0	1	0	0	0	2	0	1	0
Records maintenance	**6**	**0.6**	**6.6**	**1.1**	**2.3**	**3**	**1.2**	**3**	**0.1**	**3**	**0.2**	**3**	**0.1**	**5**	**0.2**	**2**	**0**
Administrative record	1	0	0.2	0	0.2	1	0	0	0	0	0	0	0	0	0	0	0

Annual village heath plan preparation	1	0	0.4	0	0.4	1	0	0	0	0	0	0	0	0	0	0	0
Beneficiary records	3	0	0.5	0	0.2	1	0	1	0	0	0	0	0	2	0	0	0
Computer data entry	2	0	1.4	0	1.1	1	0	0	0	1	0	0	0	0	0	0	0
Registers	4	0	2.7	1	1.7	1	0	1	0	3	0.2	2	0	2	0	1	0
Tour visits records	1	0	0.2	0	0.2	1	0	0	0	0	0	0	0	0	0	0	0
Others	5	0	2.7	0.4	0.7	1	0	2	0	2	0	2	0	3	0.02	1	0
Travel to and within field	**6**	**4.5**	**10.6**	**6.5**	**6**	**4**	**1.2**	**5**	**1.6**	**6**	**1.1**	**6**	**1.2**	**6**	**2**	**5**	**0.2**
2. Programmatic support (sub-total)	6	3.9	9.5	5	14.2	4	1	6	1.2	6	1.3	6	0.9	6	1	5	0.4
Trainings	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Meetings/Discussions with co-workers or village community	6	2.7	4.9	3.2	2.9	4	0.3	6	1.1	5	0.7	4	0.2	5	0.7	5	0.2
Meetings/Discussions with seniors	6	0.1	3.6	1.5	1.4	3	0.1	2	0	4	0.1	2	0	3	0.1	2	0
Non-health but work related other activities	2	0	1.1	0	0.6	0	0	0	0	0	0	1	0	0	0	1	0
Administrative work	6	0.1	1.5	1	0.7	2	0.1	4	0.1	3	0.1	6	0.1	5	0.1	4	0.2
3. Other work	6	5.2	9.8	6.1	5.8	4	1	6	0.6	6	0.8	5	1.1	6	1.1	4	1.6
Waiting	6	0.1	2.6	0.9	1.1	1	0	3	0.2	6	0.3	2	0	3	0.1	2	0
Miscellaneous: Personal work	6	0.3	5	3.3	2.8	3	0.9	6	0.2	6	0.1	4	1	5	0.9	3	0.2
Uncategorised	6	0.4	4.8	2.2	2	3	0.1	2	0	1	0	4	0.5	3	0.1	4	1.3
4. On job Total	6	23.4	45.2	26.5	25.3	4	5.4	6	5.6	6	6.6	6	5.8	6	6.2	5	3
5. Travel home to centre / field and return to home	6	2.85	17.9	9	9.2	4	0.8	6	2.1	6	2.8	6	2.6	6	1.4	5	1
Grand Total (home to home)	**6**	**29.4**	**62.5**	**41.1**	**34.5**	**4**	**5.9**	**6**	**7.7**	**6**	**9.3**	**6**	**8.4**	**6**	**7.1**	**5**	**3.5**

**Data in hours presented above has been rounded off to single decimal point*

Facilitators and barriers to work functioning

Table-2 presents the facilitators and barriers in daily functioning. Five of six male-MPHWs expressed presence of a conducive work environment adding to their job satisfaction. A male-MPHW (No-1) shared, "*I receive support from ASHAs (community health volunteer Accredited Social Health Activists) at village level and coordination with female-MPHWs helps in sharing and doing work easily*".

On the other hand, daily functioning of male-MPHW was marred by various contextual and systemic barriers. Male-MPHWs shared that the beneficiaries who were poor did not wish to lose days' wage thus avoided visiting a health facility. Allopathic practices were seen as an antithesis to the indigenous tribal health beliefs, practices and culture, which often made it difficult for male-MPHWs in tribal PHCs to deliver health services. As there was shortage of male-MPHWs thus they were deputed charge for more than one SC. This caused overburdening and multi-tasking that resulted in comprised service delivery. Male-MPHW (No-3) shared, "E*very time my posting is changed to other SC or PHC, it makes it difficult for me to function consistently".* Additionally, male-MPHWs reported lack of incentives,

either financial or non-financial. Only one had received an award for his work in the past. Participants expressed that recognition for their work and workplace motivation was totally missing.

Table 2 Facilitative factors and barriers to efficient functioning of male-MPHWs

Themes	Code	Code description	Smith's S Score*
Facilitative factors			
1. Interpersonal and community related factors	Coworkers support	Support received from co-health workers, supervisors and MO.	0.667
	Community support	Support received from community level institutions and groups.	0.472
2. Health system related factors	Work division	Clear task allocation between male- and female-MPHWs with no duplication and allowing maximum coverage.	0.167
	Ease in transportation	Possessing own vehicle	0.083
	Residence location	Residence closer to health facility saved travel time and made it easier to look after emergency cases.	0.167
3. Other factors	Local affiliation	This enabled in community rapport building	-
	Continuity of service	Regular community meetings and routine follow ups helped in continuity of care.	-
Barriers			
1. Interpersonal and community related factors	Community support	From indigenous tribal communities	0.300
	Locally spoken language	Dialects used by local communities	0.133
2. Health system related factors	Transportation	Inaccessible hilly terrains and remote locations with no roads.	0.300
	Meetings	Unplanned long meetings hampered routine tasks for the day.	0.200
3. Other factors	Climate	Monsoons and extreme summers	-

Smith S score depicts frequency and rank of responses. We present S score for top five responses.

Facilitators and barriers to time management

Male-MPHWs' perceived following as their key roles and responsibilities, i) house visits and follow ups, ii) disease surveillance and control activities (Communicable and Non-communicable), iii) health and sanitation measures like water chlorination and insecticide spraying, iv) health education specially among men on issues such as reproductive and sexual health, v) school health, vi) household surveys, and vii) curative care.

Mutual support and coordination between male-MPHWs and female-MPHWs facilitated better management of time. The coordination was exhibited at three levels. Male-MPHWs provided logistic support during camp days and special days like immunization days, including carrying heavy vaccine kits. Male-MPHW (No-5) shared, "*On special days, coordination with female-MPHWs becomes important. We need to perform a range of activities and there is high load of beneficiari*es". Male-MPHWs supported female-MPHWs in service delivery, for example on school health days in Srikakulam, health hygiene activities and epidemics response in Chittoor, health education to community in Khammam, iii) Supported female-MPHWs for travel and, iv) records maintenance. Male-MPHWs mentioned that female-MPHWs felt more secure when male-MPHWs accompanied them to remote locations. Male-MPHW (No-6) mentioned, "*Regular touch with female-MPHWs needs to be there. Both of us have to travel to far off places and coordination certainly helps in doing better work".* Thus, they mostly jointly planned their field visits although components of service delivery at end point may be different. All four photo essays effectively captured above dimensions.

All four male-MPHWs from tribal PHCs voiced that adverse climate coupled along with hilly remote terrains mostly with no roads was a major impediment to their work. Male-MPHW (No-2) shared, "*Going to tribal villages consumes much of my time especially during monsoons because of no roads. This impacts my regular planning for the day and service delivery in the plains".* Apart from this deputations, extra responsibilities, and many non-work related activities consumed a lot of time. Male-MPHWs attended at least five types of meetings in any month and there are several additional unannounced sudden meetings too. These administrative events largely consumed their time which could have been utilized better.

During all six interviews, male-MPHWs shared that the following can help to improve their work

performance; i) supportive supervision and advance work planning ii) ease in transportation, iii) practical hands on training, iv) regular supply of stocks as per updated lists, and v) improved rapport and support from community.

Photo-essays and male-MPHWs functioning

Photographs were content analyzed to develop four photo essays (not described here). Main findings show that male-MPHWs provided general curative care including medicine distribution for non-communicable diseases, malaria testing, geriatric care, check-up of children on nutrition and health days and counselling to men. Photo essays showed that male- and female-MPHWs travelled together through difficult terrain and shared work in tribal areas. Male-MPHWs supported female workers in filling records.

Work planning and supervision

Upon minutely studying the work plans of all male-MPHWs we found that it only comprised of date wise village visit schedules which were adopted from plans generated under malaria program. These visit plans did not have details for services to be provided or client coverage. Most of their work was done on ad-hoc basis with no feedbacks from supervisors. Male-MPHWs expressed four key challenges to their work planning; i) unannounced and long duration meetings, ii) additional unplanned tasks outside their job description, iii) sudden outbreaks and epidemic alerts, and iv) villagers being gone on work during their visit hours.

Male-MPHWs desired that supervisors should be more approachable. Male-MPHW (No-2) shared, "*Supervisors should be friendly in nature which will help in understanding and learning things better".* Male-MPHWs sought co-operation in accomplishment of tasks including guidance in filling up records, problem solving, appropriate division of work and regular on-time stocks supply. Male-MPHW (No-6) emphasized "*Supervisory support is immensely helpful in dealing with difficult cases and devising solutions to problems".*

Interviews with immediate supervisors and MOs stated that largely male-MPHWs were not aware of what they are supposed to do and restricted themselves to administrative tasks. Senior health officials from districts identified following key factors which contributed to male-MPHWs' under-performance- i) no clearly defined job description, ii) no clear guidelines for work planning, and iii) Lack in supervision. Senior official from Chittoor shared, "*The male-MPHW who have been promoted to supervisory positions by virtue of seniority, often lack supervisory and managerial skills which are required for the new role. Most of them end up only collecting monthly reports".* Supervisors were unclear about what and how to supervise.

Officials stated that over a period of time, greater emphasis was laid on maternal and child health with prime focus on strengthening female-MPHWs. This systematically contributed to undermining of male-MPHW cadre and redundancy within the system. Male-MPHWs were originally devised under a vertical national health programme for malaria control who are now largely under-utilized. Officials informed that new recruitments stopped almost a decade back. Majority of existing male-MPHWs posted in malaria endemic or tribal areas only.

Senior health officials across the districts unanimously shared that in the realm of vacant positions and multiple health programmes, especially with increased focus on non-communicable diseases and geriatric care, role of male-MPHW is more crucial. Senior officials from Khammam shared, "*Male-MPHWs have immense potential provided the system recognizes their need, lays down stringent roles and work plans with supervisory and monitoring mechanisms*".

Discussion

Our study found that male-MPHWs were mainly restricted to an assorted set of activities only. Male-MPHWs have been known to work only for few health aspects and there role has not been properly described.[14] The findings from our study (un-published) indicate that most of the service delivery in the community is provided by female-MPHWs while their counterparts are either administratively engaged or promoted as supervisors. In 1973 Kartar Singh committee recommended involvement of male-MPHWs in all domains of health service delivery except for maternal care.[15] With emphasis on reproductive health gradually an already weak cadre in India further receded into the background[12] with gross neglect of their utilization in key national health programmes.[14] Worldwide such increasing feminization of community level health workers is noted.[7,16] Whereas moving up the hierarchy there are more males who are often not efficient supervisors.[17] Such gender imbalances pose a major challenge before health policy makers.[18,19]

Male-MPHWs from our research and from other two studies from India stated that regular training with updated knowledge and convenient location with proper road connectivity were motivating factors; while heavy workload, non-cooperation from community, large coverage area, frequent meetings, abruptly assigned work, epidemics and inadequate supplies were found as major impediments and demotivating for male-MPHWs.[12,20] Lack of proper induction trainings and lack in clarity about roles and responsibilities, lack of synergy among health functionaries and poor supervision at all levels has added to non-functioning of male-MPHWs.

Our study results suggest that time spent on actual health service delivery can be maximized by clearly defining job description of male-MPHWs, supporting work planning, improved supervision, trainings and opportunities for competitive career progression. Better financial and non-financial incentives can impact

workplace motivation and consequent service delivery to a great extent.[21-22] Moreover, there should be sufficient career progression paths in the form of bridge courses and onsite training linkages.[23] Apart from these the vacant positions shall be filled so that the existing MPHWs don't have to bear additional responsibilities for other centres. In order to provide safe, effective, patient-centred quality care, amidst shortages and imbalances of health care workers, there is a need to optimise the available workforce by focussing on upgrading skills, effective usage of the skills and strategic management of work force.[24,25]

There are certain strengths and limitations to our study. Study provides evidence for a forgotten male community health cadre which could otherwise be utilized in pursuit of optimal primary health care for all. We could observe a very small sample due to un-availability of male-MPHWs in sampled facilities. But strong qualitative component provided evidence for comprehensive understanding about this cadre even with small sample size. Photo-essays depicted real-time functions of male-MPHWs and represented domains which could be significant for policy making. Direct observations may have had Hawthorne effect but we noticed that by the third day of observation they were not affected by presence of observers.

Conclusions

Male-MPHWs spent only about five hours per day on actual work with a focus on limited components of health programs. Male-MPHWs found support from coworkers and supervisors as facilitating factors. The abrupt and non-standardised nature of their work and absence of recognition and incentivisation was impeding to their work. Supervisors and officials felt that male-MPHWs were ignored in any planning and the system did not utilize them to their capacity. Interventions are required to better utilize the cadre and derive multipurpose benefits from them. Policy makers should reassess the need and revamp the of male-MPHW cadre, especially in purview of epidemiological profile of the populations and his utility in the larger gamut of health system.

Author contributions

SU, PD, and AD conceptualized the study. VK, ND and SS finalised the study protocol and tools. VK, ND and DD supervised the data collection. ND and SS, conducted the analysis and wrote the manuscript with inputs from PD, VK. AD, DD, and SU critically reviewed and revised the manuscript. All authors approved the final manuscript.

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Conflicting of Interests

The authors declare that there are no conflict of interest.

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