

Assessment of Functionality of Health Extension Workers and Its Determinants in East Gojam, Northwest Ethiopia: A Comparative Cross-Sectional Study

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Abstract

Introduction: Programs promoting primary healthcare using Health Extension Workers are crucial to improve cost-effectiveness of healthcare, reaching large numbers of underserved people with expansion of high-impact basic healthcare services at grass-root levels in developing countries. Hence, this study attempted to assess Health Extension Workers functionality and its determinants of Health Extension Workers in Ethiopia.

Methods: A facility-based comparative cross-sectional study was conducted in eight randomly selected districts of east Gojam zone, Northwest Ethiopia in 2012. The study was cross-checked by facility observation using checklists. A total of 375 Health Extension Workers were included in the study. The questionnaire was designed using the job description of Health Extension Workers; the level of functionality was measured by using functionality score scaling technique and scores were given ranging from 0-2 in multi-interval scale with a minimum of zero if an activity had not been performed at all times and maximum of two if the activity was performed regularly. The average score of one for an item was taken if the activity was performed occasionally and those scored below the mean were considered non-functional and otherwise functional. Univariate, chi-square test and multivariate analyses were done. Ethical clearance was obtained from Research and Ethical Committee of Debremarkos University.

Results and discussion: The majority of Health Extension Workers (86.3%, n= 297) were functional. The overall non-functional rate was 13.7% (n=47). Health institutions support, regular drug supply, selection pattern and future job aspiration were found to be the determinants of functionality using logistic regression.

Conclusion: The functionality of Health Extension Workers was encouraging. Family health, personal hygiene and environmental sanitation, health education and promotion services were well being done by Health Extension Workers. Stakeholders must deploy qualified health personnel for training, supervision and support, and promote development of career structure in line with Health Extension Workers' future job aspiration.

Keywords: Health services extension program; Health extension workers; functionality

Introduction

At the heart of each healthcare system, the work force is central to advancing health. There should be optimum number and professional mix of human resources for effective coverage and quality of the intended services. Using auxiliaries to substitute for or assist skilled physicians tries to balance healthcare services expansion with the available resources. Indeed, the use of lower level auxiliaries has been identified as one of the key strategies to address the growing shortage of healthcare workers particularly in low-income countries [1-4].

Programs promoting the primary healthcare approach using auxiliaries are expected to improve cost-effectiveness of healthcare systems, reaching large numbers of underserved people with expansion of high impact basic services at grass root levels. In some cases, auxiliaries perform a wide-range of tasks that can be preventive, curative and/or developmental, while in other cases, they are appointed for very specific interventions. Although they can

implement effective interventions, sometimes consistency and quality of services they provide are poor [5,6].

The most common barriers to auxiliaries' productivity were shortage of supplies, lack of supervisory support, skill limitations and low levels of community trust. Supervision and other forms of support, such as supplies, are widely acknowledged as crucial for the continued quality of service provision but programmes have often neglected these areas, mainly because their cost had been overlooked in the planning process [7-9].

For auxiliaries to be able to make an effective contribution, they must be carefully selected, appropriately trained and adequately and continuously supported. Several studies have shown that without refresher training, acquired skills are quickly lost [10-12].

Community Health Worker (CHW) programmes had failed to understand the potential value of CHWs contribution. This in turn strained the relationship between CHWs and other health service providers, negatively affecting their satisfaction and performance [13-15].

Evidence suggests that the possibility of professional development is an important motivating factor for CHWs, possibly improving retention rate [9, 16].

The Health Services Extension Program (HSEP) is a package of basic and essential promotive, preventive and selected curative health services targeting households based on the principles of primary healthcare (PHC) to improve the health status of communities with their full participation, using local technologies and the community's skill and wisdom; it consists of 16 packages in four main areas: namely, hygiene and environmental sanitation, disease prevention and control, family health services and health education and communication and are implemented by Health Extension Workers (HEWs) at Health Post level under supportive supervision provided by respective Health Center staffs. It was about 10 years, since HSEP was launched and being implemented to address the failure of essential health services to reach at the grass root levels in Ethiopia. Over 30,000 HEWs were trained and deployed by the end of June 2009 throughout the country. However, the preliminary assessment showed a gap in some of the practical skills of HEWs [17-20].

Initially, the entire training institutes were with inadequate facilities to receive the HEWs trainee; their selection was flawed, most being selected from district (Woreda) towns and not the rural villages they will be working.

Trainees did not have adequate orientation on their future job during their recruitment. There were challenges in harmonizing staffing pattern at Health Post (HP) level, guidance in using time, working schedule, relationship with the community, career structure, transfer and leave of absence and in the reporting system; moreover, there was lack of planning and coordination for Continuing Education. The Woreda Health Offices and Health Centers were neither sufficiently staffed nor trained to provide good supervision [21-24].

Though many developing countries have CHWs comparable to Ethiopia's HEWs who receive just one year's basic training, their effectiveness has sometimes been questioned and they have often suffered from pressure of 'vertical' health programmes, each of which expects the workers to focus on activities relevant to their particular programme [24].

These challenges might influence the level of functionality of HEWs. Thus, this study tried to assess the level of HEWs functionality and identify its determinants. This could help to provide an insight to subsequent efforts in solving the hindering factors and ensuring the functionality of HEWs in Ethiopia and other countries with equivalent healthcare programmes.

Methods

Study area and period

This study was conducted in East Gojam, Northwest Ethiopia from October to November 2012. It had 18 districts (Woredas) and 425 Kebeles (the smallest administrative units) with an area of 13,809.08 square kilometers and population of 2,226,877 (CSA,2011). There were 2 hospitals, 18 Health Centers and 343 HPs operated by 818 HEWs.

Study design and source population

A facility-based comparative cross-sectional study design was employed and cross-checked by facility observation using checklist to assess the activities of HEWs based on the healthcare structure of HPs where they had been providing healthcare services to the community. The source populations for this study were all HEWs available in East Gojam, Northwest Ethiopia. Accordingly, the study participants were HEWs and HPs in eight randomly selected districts (Woredas) in East Gojam Zone. The units of analysis were selected HEWs.

Sample and sampling

The sample size required for the quantitative study was determined using sample size calculation for two proportions, taking 95% confidence interval, 80% power, 25% and 75% level of non-functional HEWs who were given and not given refresher training respectively, using the formula:

$$n_1 = \frac{\left[\frac{Z\alpha}{2} \sqrt{\left(1 + \frac{1}{r}\right)p(1-p)} + Z\beta \sqrt{p_1(1-p_1) + \frac{p_2(1-p_2)}{r}} \right]^2}{(p_1 - p_2)^2}$$

where,

n_1 =total number of non-functional HEWs without refresher training required to be detected=?

p_1 = estimated proportion of non-functional HEWs without refresher training=75%

p_2 =proportion of non-functional HEWs with refresher training=25%

r =ratio of sample size 1 to sample size 2 (without: with refresher training)=1:4.

$$p = \frac{p_1 + rp_2}{1+r} = \text{pooled population proportion} = 0.168$$

$$n_1 = \left[\frac{1.96 \sqrt{\{1.5 \times 0.168 \times 0.832\}} + 0.84 \sqrt{\{0.75 \times 0.25 \times 0.25 \times 0.75\}}}{(0.75 - 0.25)^2} \right]^2$$

$n_1=5$ non-functional HEWs, then assuming that 25% of all HEWs in East Gojam zone to be non-functional, $25 \times 5=125$ HEWs would be interviewed to get 5 non-functional HEWs. Hence, taking a design effect of 3, a total of 375 HEWs were included in the study.

All of the 18 Woredas in the zone were listed with their total number of HEWs. Eight Woredas were selected randomly at the first stage. Conveniently, 188 accessible Kebeles at the second stage and 375 HEWs, one randomly taken from each HP, were included in the study at final stage.

Measurement and data collection

Two instruments were used to collect the data: a structured questionnaire and a checklist. The level of functionality was measured by using functionality score scaling technique [22]. The questionnaire was designed using the job description and activities list of HEWs that could be measured easily or asked to determine the level of functionality. The lists of 25 items from the job description of HEWs were given scores ranging from 0-2 in multi-interval scale with a

minimum of zero if an activity or item had not been performed at all times and maximum of two if the activity was performed regularly (at least once within the last three months). The average score of one was taken for an item if the activity was performed occasionally (at least once within the last six or more months). HEWs scored below the mean score of 25 were considered non-functional and otherwise functional. To get an insight regarding the exposures, it was structured using standard checklists of drugs, stationery materials, medical equipment and schedules of supervision and refresher training recommended to a HP. Eight diploma nurse data collectors and two Public Health Officer supervisors were oriented about the objective of the study.

Data quality management

Pre-test was undertaken on 10% of the sample to examine the reliability and construct the validity of the instrument. Intensive training was given for data collectors and supervisors on the objective of the study, contents of the questionnaire and how to maintain confidentiality and privacy of the study participants. The supervisors and principal investigators closely followed the day-to-day data collection process. During data cleaning, logical checking techniques were employed to identify errors.

Data processing and analysis

After data collection was completed, data entry and cleaning was done by using Epi-Info version 3.3.2 and analysis was done by SPSS version 16; during data analysis, frequencies of the different variables were displayed. The association between dependent and independent variables was measured using odds ratios with 95% CI. Significant variables with p-value <0.05 at bivariate analysis were selected for multivariate analysis by means of logistic regression.

Ethical Consideration

Ethical clearance was obtained from Research and Ethical Committee of Debreworkos University. Written permission was also obtained from each district administration and health bureau. Information sheet was prepared to the eligible participants in order to obtain consent. Data collection was conducted after consent had been obtained.

Results

Socio-demographic characteristics of the HEWs

Of the 375 samples, data were collected from 344 HEWs. This yielded the response rate of 91.7%. The minimum and maximum ages of the respondents were 20 and 34 years respectively. About 40.4% (n=19) of non-functional and 44% (n=131) of functional HEWs were married; however, 46.80 % of non-functional vs. 47.5% of functional were single.

The mean service year of a HEW was 3.59 (SD ± 0.95) years. About 44% (n=21) of the non-functional and 57.9% (n=172) of the functional HEWs served for about 4 to 5 years (Table 1).

Variables	Non-functional HEWs (n=47)		Functional HEWs (n=297)	
	Frequency	%	Frequency	%

Age (years)				
20-25	35	74.50	257	86.50
26-30	9	19.10	36	12.10
31+	3	6.40	4	1.40
Religion				
Orthodox	38	80.90	273	91.90
Muslim	9	19.10	24	8.10
Marital status				
Single	22	46.80	141	47.50
Married	19	40.40	131	44.10
Divorced	3	6.40	21	7.10
Widowed	3	6.40	4	1.30
Distance				
≤10km	25	53.20	73	24.60
>10km	22	46.80	224	75.40
Service year				
≤3yrs	18	38.30	111	33.40
4-5yrs	21	44.70	172	57.90
>5yrs	8	17.00	14	4.70

Table 1: Socio demographic characteristics of Health Extension Workers, East Gojam Zone, Northwest Ethiopia, 2012.

Level of functionality of HEWs

Based on the scoring technique used to measure the level of functionality in this study, the majority of HEWs (86.3%, n= 297) were found to be functional; however, the rest (13.7% n=47), were non-functional.

Health institution support

Majority of the respondents (72.7% non-functional vs. 91.6% functional) had HP ($\chi^2=15.92$, $p=0.0001$). About two-third of the non-functional (63.8%) and more than two-third of the functional (71.4%) were recruited by a recruiting committee organized at the Woreda capacity building office. The rest (36.2% non-functional vs. 28.6% functional) either did not know or forgot how they were selected. More than one third (34% non-functional vs. 36.7% functional) HEWs were selected from their future working Kebeles ($\chi^2=11.54$, $p=0.009$). The majorities (80.9% of non-functional and 93.9% of functional) were supplied with at least one kind of drug; however, about a fifth (19.1%) of the non-functional and 6.1% of the functional claimed that they had not yet been supplied with any kind of drugs recommended for HP ($\chi^2=9.61$, $p=0.0019$) (Table 2).

Variables	Non-functional HEWs (n=47)		Functional HEWs (n=297)		x ²	p-value
	Frequency	%	Frequency	%		
Had health post						
Yes	34	72.70	272	91.60	15.92	0.0001
No	13	27.30	25	8.40		
Recruited by						
Committee	30	63.80	212	71.40	1.11	0.2923
Other	17	36.20	85	28.60		
Selected from						
Future work site	16	34.00	109	36.70	11.54	0.009
Nearby Keble	9	19.10	70	23.60		
Woreda town	13	27.80	102	34.30		
Other Woreda	9	19.10	16	5.40		
Drug supply						
Yes	38	80.90	279	93.90	9.61	0.0019
No	9	19.10	18	6.10		
Refresher training given						
Yes	28	59.60	198	66.70	0.91	0.3413
No	19	40.40	99	33.30		
Supervised						
Yes	10	21.30	222	74.70	52.84	0.0001
No	37	78.70	75	25.30		

Table 2: Items reflecting health institution support of HEWs, East Gojam, Northwest Ethiopia, 2012

Community support

About 13% of the non-functional and 8.8% of the functional mentioned that there was no a health committee in their Kebeles. Though a health committee was present in most *Kebeles*, 42.6% of the non-functional and 45.1% of the functional said that the committee

had not yet been involved in planning HP activities. More than one third of the non-functional (36.1%) and nearly one third of the functional (31.3%) responded that curative services were more preferred by the community (Table 3).

Variables	Non-functional HEWs(n=47)		Functional HEWs(n=297)		F	p-value
	Frequency	%	Frequency	%	x ²	
Presence of health committee						
Yes	41	87.20	271	91.20	0.77	0.38
No	6	12.80	26	8.80		
Committee participation						
Yes	27	57.40	163	54.90	0.11	0.74
No	20	42.60	134	45.10		

Community participation						
Yes	44	93.60	249	83.80	3.07	0.08
No	3	6.40	48	16.20		
Preferred health service						
Preventive	14	29.90	120	40.40	1.94	0.38
Curative	17	36.10	93	31.30		
Both	16	34.00	84	28.30		

Table 3: Items reflecting community support of HEWs, East Gojam, Northwest Ethiopia, 2012

Health Extension Workers’ future aspiration and job satisfaction

The majority (93.6% non-functional vs. 86.9% functional) responded that they were capable of doing all of their activities independently. A little less than two-third (59.6% non-functional vs. 58.2% functional) HEWs described that they were not satisfied by what they were doing. With respect to the reason why they did not satisfied, majority 91.7% of the non-functional and 90.2% of the

functional responded because they lack an upgrading opportunity. Other reasons were insufficient salary (75% non-functional vs. 74.1% functional), lack of refresher training (41.7% non-functional vs. 59.2% functional) and lack of incentives (58.3% non-functional vs. 54.6% functional). About 60% of the non-functional and 89.9% of the functional aspired to upgrade soon whereas only 4.3% (n=2) of the non-functional and 5.1% (n=15) of the functional aspired to stay as a HEW for a maximum of 3 years ($\chi^2=69.04, p=0.0001$) (Table 4).

Variables	Non-functional HEWs (n=47)		Functional HEWs (n=297)		F	x2	p-value
	Frequency	%	Frequency	%			
Work independently							
Yes	44	93.60	258	86.90	1.72	0.1892	
No	3	6.40	39	13.10			
Job satisfaction							
Yes	19	40.40	124	41.80	1.41	0.2355	
No	38	59.60	173	58.20			
Future aspiration							
Stay as HEW	2	4.30	15	5.10	69.04	0.0001	
Upgrading	28	59.60	267	89.90			
Shifting	5	10.60	13	4.30			
Stop working	12	25.5	2	0.70			
Preferred upgrading areas							
Nursing	32	68.10	169	56.90	10.23	0.0167	
*EHT	10	21.30	47	15.90			
*PHT	3	6.40	77	26.00			
Management	2	4.20	4	1.20			

*EHT (environmental health technician) and *PHT (public health technician)

Table 4: Job satisfaction and future aspiration of HEWs, East Gojam Zone, Northwest Ethiopia, 2012

Multivariate analysis

A logistic regression multivariate analysis was conducted to identify independent determinants associated with functionality of HEWs. The criteria for selection of these variables for possible inclusion in multivariate analysis were based on p-value of less than 0.05 during the bivariate analysis. Health institution support, recommended drugs supply, HP staffing, distance from the nearest health institution and future aspiration were significantly associated with functionality of HEWs at bivariate analysis. Moreover, on multivariate analysis, among

non-functional HEWs, the odd of health institution support was 0.59 times less than functional HEWs [AOR=0.41, 95%CI: 0.02-0.69]. Moreover, the odds of regular drug supply among non-functional HEWs were 0.63 times less than functional HEWs [AOR=0.37, 95%CI: 0.12-0.81]. Non-functional HEWs were 0.47 times less likely recruited by adhering to the criteria than functional ones [AOR=0.53, 95%CI: 0.37-0.90]. Moreover, those with future aspiration of upgrading were two times more likely to be functional than those intending other categories of professions [AOR=2.1, 95%CI: 1.35-5.76] Table 5).

Variable	Non-functional HEWs n (%)	Functional HEWs n (%)	COR (95% CI)	AOR (95%CI)
Health institution support				
Yes	10 (67)	253 (90)	0.23 (0.1- 0.9)*	0.41 (0.02-0.69)
No	5 (33)	29 (10)	1.00	1.00
Drug supply				
Yes	8 (53.3)	231 (82)	0.25 (0.1-0.9)**	0.37 (0.12-0.81)
No	7 (46.7)	51 (18)	1.00	1.00
Committee Recruited				
Yes	9 (60)	241 (86)	0.19 (0.1-0.7)**	0.53 (0.37-0.90)
No	6 (40)	41 (14)	1.00	1.00
Future aspiration				
Upgrading	10 (67)	91 (15)	4.20 (1.3-16)*	2.10 (1.35-5.76)
Other	5 (33)	191 (85)	1.00	1.00
Distance				
>10km	11 (53)	89 (25)	5.96 (1.7-26.2)*	4.67 (2.54-13.12)
≤10km	4 (47)	193 (75)	1.00	1.00
* (p<0.05) and ** (p<0.001)				

Table 5: Bivariate and Multivariate analyses of determinants of HEWs, East Gojam, Northwest Ethiopia, 2012

Discussion

HEWs Functionality

This study tried to assess the level of functionality and determinants of HEWs. Accordingly, it was shown that the proportion of non-functional Health Extension Workers was 13.6% in randomly selected *Wordas* of East Gojam, Ethiopia.

Health institution support to all HEWs could reduce the level of non-functional HEWs by 59%. It was found to be important influential factor for HEWs optimal functioning. Generally, numerous programmes had failed in the past because of unrealistic expectations, poor planning and an underestimation of the effort and input required to make them to work energetically. Hence, large-scale CHW systems require substantial increase in support for training, management, supervision and logistics [3,6].

The HEWs recruited without adhering to the selection criteria were found to have higher non-functionality rates. It was found that the

working conditions of HEWs and the criteria for recruitment of HEWs trainees varied slightly from document to document and between regions.

The same study also found, of the core criteria, only sex, i.e., all female, and completion of 10th grade of general education as adhered to the criteria. Moreover, the study found that an important criterion, being from the Kebele of future assignment (neighboringKebele or Woreda), however, it was not adhered to in most of the non-functional [24]. From their very nature, CHW programmes are vulnerable unless they are driven, owned by and firmly embedded in communities themselves. One of the most important features of CHW programs is that they strengthen already existing community network ties. The CHWs are uniquely qualified as connectors because they live in the communities in which they work, understand what is meaningful to those communities, communicate in the language of the people, and recognize and incorporate cultural buffers [3, 6].

This study indicated that future job aspiration as an independent determinant for HEWs functionality, most of HEWs planning to

upgrade to nursing and environmental health technician. This is consistent with the finding of the study on working conditions of HEWs which disclosed that only 16% expect to stay more than three years. Accordingly, the majority would like to upgrade to nurse (70%) and the rest to environmental health [24]. On multivariate analysis, those who aspire to upgrade soon are perhaps more prone to be taken by different activities leaving their current job, searching for other jobs and upgrading opportunities by themselves. Consequently, they become more susceptible to be non-functional compared to those who have other interests. If a career structure had been formulated and implemented to the HEWs, it would have been better to keep them in position waiting for the career they could get in the future. This might eliminate hopelessness and wonderers for other opportunities and might maintain them functional. A study on factors affecting implementation of HEP conducted in Wolaita zone also underlined the need for career structure [21]. In Malawi and Ethiopia, where the HSAs and HEWs are part of the MoH structure, their salary is below that of the professional healthcare workers. None of the CHW cadres in Uganda has so far been formally recognized by the MoH. The consequence is that they do not have structured career opportunities. The Health Surveillance Assistants (HSAs) in Malawi, by contrast, have a career path. According to the Ministry, they can be promoted to the position of senior HSA. They also have a better chance of being accepted for further studies to become environmental health officers, clinical officers or nurses [8]. Generally, it is better to have a career structure for HEWs to get their pronounced contribution with regard to improving the health status of the rural community. Some evidences suggest that the possibility of professional development is an important motivating factor for CHWs, possibly improving retention rate [8,24].

HEWs in East Gojam zone were more or less being supported but with great variation from Woreda to Woreda and even Kebele to Kebele with in a Woreda. Some Woredas support HEWs with regular supervision, supply of drugs and logistics recommended to a HP. On the other hand, in some Woredas a HEW even without a HP was assigned to work, seating at the Kebele administration office. Although there was a standard frequency of supervision and refresher course, recommended by the region (every week by the HC supervisor, every month by the regional supervisor and refreshed at least once in a year), this study found that there was a difference in the frequency of supervision and refresher course from Woreda to Woreda and irregularities in refresher course, for which a plausible explanation could be shortage of man power (trained supervisor) compounded with financial (budget) constraint and long distance. Unless HEWs are highly supported with regular refresher course, supportive supervision and logistics supply, leading them to function sub-optimally at unexpected range and be non-functional at the worst range. A study on community health workers for ART in sub-Saharan Africa, being consistent with this indeed, disclosed that the apparently insufficient attention to issues such as quality supervision and continuous training will lead to decreasing quality of the programmes over time [23]. Moreover, one study in Nepal found that the most common barriers to CHWs productivity were lack of supplies, lack of supervisory support, skill limitations and low levels of community trust [7].

The main limitation of this study is the findings of this study might not be generalized to all HEWs across Ethiopia due mainly to pocket nature of the study in terms of the area covered and samples included relative to the large number of HEWs in the healthcare system of the country.

Conclusion

Health Extension Workers functionality was encouraging. The majority of HEWs were functional. They were doing better on family health, personal hygiene and environmental sanitation and health education services.

Stakeholders should deploy qualified health personnel for training, supervision and support and career structure for HEWs in line with their future job aspiration.

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