Original article

Know-how of primary eye care among Health Extension Workers (HEWs) in Southern Ethiopia

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Abstract

Background/ Aim: Frontline health personnel can play key role in preventing and controlling blindness if they have good understanding of primary eye care (PEC). This study determined knowledge, attitude and practice of PEC among health extension workers (HEWs) in southern Ethiopia.

Methods: A cross sectional community based study was conducted between June and July 2007 in five randomly selected *woredas* of Gurage Zone. Quantitative data were collected using a questionnaire completed in a face-face-interview with 111 HEWs. And this was supported with qualitative information from two focus group discussions.

Result: HEWs (87%) had poor understanding of the functional definition of blindness. They identified cataract (85%), trachoma (96%) and trauma (64%) as causes of blindness. Although most (89%) correctly mentioned signs and symptoms of trachoma, but only 10% could describe its control strategy. Refractive error was wrongly perceived by most (77%) as only a near vision problem. Glaucoma was barely known but causes of childhood blindness were well identified.. Their main source of information for eye health care was pre-service training (50%) and refresher trainings by international organizations (46%). HEWs practiced mainly preventive aspects of PEC. Group discussions revealed that HEWs have good will to participate in PEC but barriers such as inadequate knowledge and lack of basic supplies are limiting their contribution.

Conclusion: Know-how of blinding eye disease among HEWs is too low to enable them contribute meaningfully towards prevention of blindness. It is recommended that PEC be incorporated in their training curriculum. [*Ethiop. J. Health Dev*. 2009; 23(2):127-132]

Introduction

According to the World Health Organization (WHO), 37 million people were blind in 2002. About two to three quarters of global blindness resulted from conditions that could have been prevented or controlled (1). A national survey in Ethiopia recently revealed that blindness is very prevalent (1.6%) and the common causes are preventable (2). Avoidable blindness could be eliminated through timely and appropriate interventions..

The WHO and its partners have launched 'VISION 2020: The Right to Sight' program which is an international initiative to eliminate avoidable blindness by the year 2020 (3). It has already begun to produce positive results (4). PEC was among the contributors for this success. PEC is concerned with the promotion of eye health and the prevention of blindness (2, 5). The four key tasks of a primary eye care worker are: awareness creation, preventive activities, curative work and rehabilitation.

Regarding the clinical components, the WHO states that a PEC worker is expected to perform three tasks (6, 7):

1. Identify and treat common eye conditions such as conjunctivitis and xerophthalmia;
2. Recognize, initiate treatment and refer conditions like corneal ulcer, lid laceration and entropion/trichiasis; and
3. Recognize and refer painful red eye with vision loss, cataract, pterygium, and vision loss.

A successful primary eye care program depends on a coordinated teamwork and regular interaction between full time eye workers, integrated eye workers and community eye workers (6). As to who is involved at the primary eye care level depends on the level of development of health care system in the country. In Ethiopia, nurses, general practitioners, ophthalmic assistants, ophthalmic nurses and optometry technicians work as PEC workers. The need for frontline human resource that can effectively implement the prevention oriented national Health Policy has lead to the development of the Health Extension Program (HEP) and HEWs. Based on the recent Health Sector Development Program of the Ministry of Health, each of the over 10,000 smallest administrative units of the country called *Kebele* would have a Health Post (HP) staffed with two HEWs. All HEWs are females who underwent one year of training focused on prevention of common diseases and are on the government's pay roll. The training and position of HEWs in Ethiopia puts them in a strategic position in primary as well as community based health care services.

It is believed that HEWs can play a significant role in PEC if they are adequately trained and well motivated. However, there is little information on how HEWs can participate in community level promotion of eye health in Ethiopia. In order to be actively engaged in primary eye care, HEWs should have good knowhow about the prevention strategies for common blinding eye diseases. The aim of this study was to assess if there is optimum level of knowledge, attitude and practices of PEC among HEWs in Gurage Zone of Southern Ethiopia.

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Methods

Design and Setting

This study was designed to generate both quantitative and qualitative information. A cross sectional community based survey combined with focus group discussions (FGD) was conducted between June and July 2007 in West Gurage Zone in five selected *Woredas*. Gurage Zone is located about 150 km south of Addis Ababa, in the Southern Nation's Nationalities and People Region (SNNPR) of Ethiopia. It has an estimated population of of 1.5 million. The mid-altitude lands of the Zone are mostly known to be hyper endemic for trachoma. The Zone has 12 districts (*Woredas*) and all of its *Kebeles* are staffed with at least one HEW who has two years' experience.

Sample size and Sampling

The list of all the 190 HEWs in the Zone was obtained from respective *Woredas* and the Regional Health Bureau. Sample size was calculated using EPI-INFO 6 statistical software. The expected prevalence of exact knowledge about the operational definition of blindness among HEWs was estimated at 20% (16 - 24%). Considering a precision of 20% and a 95% confidence interval, the primary sample size was calculated to be 128. Then the primary sample size was multiplied by a finite population correction factor of 0.6 resulting in a modified sample size of 74. A design effect of 1.7 was further allowed as the subjects came from similar schools and residence. The final sample size was determined to be 127.

Individuals were selected for the survey by lottery method or simple random sampling. The qualitative part of the study employed a purposive sampling technique capturing groups of HEWs assembled for training. Only HEWs not included in the questionnaire survey were included in two groups, each constituting 8 HEWs from the same districts.

Data collection

A questionnaire was prepared, pre-tested and standardized. It incorporated baseline information, questions pertaining to the commonest types of blinding eye diseases, knowledge on individual eye diseases, attitude, practice and source of information. Two nurses trained as Integrated Eye Care Workers (IECWs) were recruited from Wolkite Town, the capital of Gurage Zone, for data collection. They received two days of training. The questionnaires were administered and filled by the data collectors in a face-to-face interview.

To collect qualitative information two focus group discussions, each consisting of 8 HEWs, were conducted in Endiber and Enemor districts. Since *Woredas* are far from each other the groups were formed from the same *Woreda* but different *Kebeles*. The discussions were conducted from 9:00 AM to 10.30 AM for 90 minutes. All participants were fluent Amharic speakers and thus discussion was made in Amharic. Semi structured open questions were used to guide the discussions. Following introduction, participants were encouraged to freely discuss along the themes in the discussion guide. Facilitator occasionally interjected in the discussions using a non-directive approach to keep participants focused on the topic of interest and move discussions along.

Analysis

The data were analyzed using SPSS version11. Results were presented as frequency distributions and proportions. Qualitative data were analyzed using preset thematic framework to extract prominent concepts and deviant ideas reflected on focus group discussions. The FGDs were audio-taped, transcribed and finally reviewed by the main investigator in a two step process. First, major themes were identified and these were aggregated into lists. Phrases and quotations that highlighted these themes were identified. Sub-themes within the major themes were also identified and aggregated into lists.

Ethical Considerations

The study was approved and got clearance from the Research and Publications Committees of the Department of Ophthalmology, Faculty of Medicine and Gurage Zonal Health Office. The aim and objective of the study were explained for the participants and informed consent was obtained. Personal identifications were omitted and participants interviewed in private to ensure confidentiality.

Results

Questionnaire Survey

A total of 111 HEWs, all young females aged between 18 and 28 years, were interviewed. Most of them were single (84.7%). Sixty six (60%) of them started practicing as HEW in the past year. Fifty percent of the respondents participated in previous training on eye health provided by ORBIS International, a non-governmental organization (Table 1).

Only 10% of the respondents knew the functional definition of blindness given by the WHO as inability of a person to count fingers at three-meter distance with the best eye. Majority (87%) of the respondents, defined blindness literally as no light perception or unable to see in front (Table 2).

Among the respondents, 86% mentioned cataract, 96% trachoma and 65% trauma as causes of blindness, while none of them mentioned glaucoma and refractive error. All of them listed more than one type of cause. Thirty-three percent of the respondents mentioned cataract, trachoma and trauma.

Table 1: **General characteristics of a sample of Health Extension workers in Gurage Zone, 2007**

Variable (n=111)	Frequency	%
Age		
15-19	22	19.8
20-24	45	40.5
25-29	33	29.7
>29	11	9.9
Marital status		
Single	94	84.7
Married	14	12.6
Other	3	2.7
Number of service years		
<1	66	59.5
1-2	37	33.3
2-3	8	7.2
Training on Eye Care		
None	54	48.6
Once	46	41.4
Twice	11	9.9

The main source of information for eye health care was pre-service training (52%), followed by on job training by ORBIS (48%) and professional colleagues (47%). Most of them (96.4%) said they were able to identify community eye problems and mentioned eye health to be one of the priorities in their community (Table 2).

Half of the respondents (49.5%) defined and explained cataract as a white spot over the eye and the rest understood it to be a membranous growth over the eye. Most of them mentioned poor hygiene, fatty food and exposure to sunlight as risk factors to develop cataract. Almost all (96%) mentioned surgery as the mode of treatment for cataract and most (91%) also believed vision to get back after the surgery (Table 3).

Trachoma was understood by most (89%) to be red and discharging eye condition. Sixty two percent mentioned it as misdirection of eyelashes. Trachoma was mentioned by the majority to cause blindness but only few (13%) of them discussed corneal opacity and how it causes blindness. Majority (89%) mentioned eye ointment as one of the treatment modality of trachoma. Only 10% of HEWs discussed the SAFE strategy satisfactorily (Table 3).

Three quarters of the respondents understood refractive error as a problem of near vision, while 25% related it to near or far vision. Eyeglass was identified as treatment modality. Only 16% of the respondents have heard the word glaucoma but were unable to tell what it is.

Among the respondents, 59.5% mentioned measles as the cause of childhood blindness, 42% said by vitamin A deficiency and 58.6% by trauma. Almost all mentioned prevention of childhood blindness is possible. Vaccinating a child, vitamin A supplementation and maternal health care were mentioned as some modes of prevention (Table 3).

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Practice of HEWs related to eye health was limited to providing health education and referral of patients to health centers. Most (97%) of the respondents refer patients with cataract and trachoma, while few said they would give eye ointments and dietary advice.

Table 2: **Knowledge and attitude of HEWs in Gurage Zone about blindness and its causes, 2007**

Variable	Frequency	%
Definition of Blindness		
Loss of light perception	97	87.0
Unable to see in front	50	45.0
Unable to count finger at 3mt with the best eye	11	9.9
Cause of blindness		
Cataract	95	85.6
Trachoma	107	96.4
Trauma	72	64.9
Sources of information		
School	58	52.3
ORBIS Training	53	47.7
Colleague at work place	52	46.8
Attitude on community eye health		
Feel capable of doing PECs	107	96.4
Believe PEC is a priority	88	79.3

Table 3: **Knowledge about cataract and trachoma among HEWs in Gurage Zone, July 2007**

Variable	Question	Responses	Frequency	%
Cataract	Defined	- Is white spot/membrane on eye	55	49.5
		- Lens changed to opaque white	48	43.2
	Cause	- Aging	41	36.9
		- Other or no information	82	73.9
	Treatment	- Treated by Surgery	107	96.4
		- Curable /vision restored/	101	91.0
Trachoma	Signs and Symptoms	- Red discharging eye	99	89.2
		- Misdirected eye lash	69	62.2
		- Itching and tearing	78	70.3
		- White over the eye	15	13.5
	Cause, risk factors	- Bacteria	106	95.5
		- Unhygienic condition	89	80.2
		- Flies	31	27.9
		- Polluted air/smoke	21	18.9
	Treatment	- Eye medication	99	89.2
		- Systemic medication	57	51.4
		- Surgery	48	43.2
		- Face washing	15	13.5
Child hood blindness	Causes	- Trachoma	68	61.3
		- Measles	66	59.5
		- Trauma	65	58.6
		- VA deficiency Inborn/hereditary	47	42.3
		- Traditional medication	29	26.1
		- Other	4	3.6
			10	9.0

Twenty one percent of the respondents manage trachoma with eye ointments, 61% manage trachoma patients with advice on face washing (Table 4). Trachoma patients were referred by the majority of HEWs due to lack of eye ointments in their place or had misdirected eyelashes.

Qualitative results

a. Knowledge of PEC: The participants were generally quite responsive when answering 'what do you know about PEC?' However, they seemed to have partial understanding of what PEC meant. Some were quite candid, saying that they had never heard the word and could not explain its meaning.

'PEC is trying to identify causes of eye disease especially those related to environmental and personal hygiene, thus keeping personal and environmental hygiene is PEC'.

'It is like teaching the community to be aware of treatments for each eye disease and encourages them to be operated'.

'It is the ability of identifying and treating an eye disease at the earliest time.

Table 4: **Practice of Health Extension Workers in primary eye care activities in Gurage Zone, 2007**

PEC Activity	Practice (Responses)	Frequency	%
Awareness creation	- H. education on face washing	61	55.0
Prevention	- Refer Cataract cases	108	97.3
	- Refer Trachoma cases	95	85.6
Curative /clinical	- Give medications for trachoma	24	21.6
	- Give medication for cataract	2	1.8
Rehabilitation	- None	-	-

b. Understanding of causes and prevention of blindness: The participants based their responses mainly on trachoma as to how to prevent blindness. Cataract blindness and childhood corneal scar were also mentioned. Glaucoma or refractive errors were not raised.

'If a person suffered from repeated attack of trachoma and misdirected lashes and not treated, the vision will be lost'.

'If a man with cataract is not operated on time he will stay blind and if he is operated his vision will be back'.

'I think blindness caused by measles scar and Vitamin A deficiency can be prevented by vaccination and good diet'.

c. Recognition' of blindness as a problem
HEWs agreed that blindness is one of the priorities for their community. The following represents

'I knew one old man, a house feeder, he almost stopped farming due to poor vision and currently the family is in problem'.

'Many people in my village are affected by trachoma and cataract; so eye health care is extremely needed'.

d. Attitude to participate in PEC
HEWs believed that they are the frontline eye health workers for their community. They felt they could contribute a lot towards prevention of blindness particularly in raising awareness.

'wherever I go, people in my village ask me many questions related to their health including eye diseases, including medicine (eye ointment) for their eye disease'.

'Since our responsibility is mainly disease prevention, , we advise the people to open their window routinely, wash their face frequently and use latrine'.

'I knew one traditional healer; she used to combine TTC ointment and some herbs to treat red eyes, I advised and convinced her not to do such things because it may cause blindness'.

c. Barriers to PEC practice: Inadequate basic knowledge and training on managing eye disease was emphasized as barrier towards practicing PEC. Also mentioned were workload and shortage of simple drugs to treat diseases like trachoma.

'In college what we learned is how to keep personal and environmental hygiene to prevent trachoma but in addition what we are doing here is more of referring patients and treating some eye diseases without skill and knowledge, so I would be more confident if we have a session on individual eye diseases'.
'It will be good if simple drugs like TTC are available at hand than referring patients'.

'The refreshing course given by ORBIS will be very good if it is prepared on both practical, case oriented and at least for three or four days…'

Discussion
The success of 'VISION 2020: The Right to Sight' in eliminating avoidable blindness depends on the development of PEC. This in turn mainly depends on the existing health care services and different categories of available health care workers (8). The emerging frontline health workers in Ethiopia, HEWs, are in a strategic position in primary as well as community based health care services. Although they are given enormous load of responsibilities, eye disease was not in their top priority lists. It is clear that prevention of eye diseases will be indirectly assessed through primary health care (PHC). However, HEWs can contribute more towards elimination of blindness if they know how to integrate PEC in their PHC practice.

The study showed that, the concept of PEC as an integral part of Primary Health Care (PHC) is not well incorporated in the trainings and job descriptions of health workers in developing countries. The majority of HEWs conceived eye health as a problem in their community and they were able to name some eye diseases individually. But their knowledge of causes of blindness was not consistent. Only 37% of HEWs mentioned cataract and trachoma as causes of blindness and none mentioned refractive error and glaucoma.

More than half of them misunderstood cataract and had wrong belief on its causes. Majority (97%) of HEWs suggested referring patients with cataract. But it is likely that they may confuse cataract with corneal opacity or pterygium and unduly refer such cases eventually affecting their credibility in the community.

Despite the high knowledge level of clinical picture of trachoma, only 13% of them knew the details of trachoma blindness. This showed lack of comprehensive knowledge of the subject and need of revising their method of education and refreshment courses. Some 85% of HEWs used to refer trachoma patients due to unavailability of eye ointments and also for surgical intervention of misdirected lash. This will lead to unnecessary additional cost to patients and reduce their respect for HEWs.

Knowledge of refractive error and awareness of glaucoma among HEWs was very low or inadequate. As early detection is vital in prevention of chronic eye diseases, health workers should have better knowledge to

convince people for screening their vision (9).

Knowledge about blinding eye diseases has not varied significantly with their years of experience or previous eye health training ($p>0.05$). It showed the inadequacy or inconsistency of information transmitted to these groups of health workers which needs consideration.

The qualitative results from FGD supported the findings of the survey. Although HEWs had incomplete knowledge of what PEC is, they had some understanding of prevention of blindness concerning the commonest causes in their area. They recognize blindness as a problem and had positive attitude towards participating in prevention of blindness. However they had inconsistent practice due to some barriers such as inadequate training and basic supplies.

The small number of participants in this study may limit generalizing the findings to all parts of the country and beyond. Comparison of the findings with other reports was not possible As references in the medical literature on the same issue are extremely rare. Assessment of knowledge on eye diseases in India (10) and Hong Kong (11) also showed that people have low awareness about eye diseases. Health workers are expected to have better knowhow than the general public.

In conclusion, this study revealed that HEWs have some level of useful awareness about common blinding eye diseases such as trachoma, cataract, and childhood blindness but not much about refractive error and glaucoma. However, their knowledge of prevention of blindness was limited to hygiene education. It was not comprehensive enough to conclude that they understand the bigger picture of prevention of blindness in the context of the national VISION2020 program. HEWs are willing to get refresher trainings and engage in the prevention of avoidable blindness. They appreciated the study that gave them the opportunity to discuss about eye disease and vocalize their opinions.

Therefore, we recommend that primary eye care should be well incorporated in the curriculum of HEW training so that they can identify and manage common eye disease at an early stage at community level. The method of teaching should be supported by model eyes as well as patient examination in order to visualize and understand each eye disease in a better way. Eye ointments for trachoma and conjunctivitis should be available at the community level to avoid unnecessary referral and cost to patients. There must be a referral system where consultants such as ophthalmologists or ophthalmic nurses could be accessible to individuals at the community level. Refresher sessions on eye care using standard curricula such as that of the WHO (7) should be encouraged.

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