

ORIGINAL RESEARCH

Developing and sustaining human resources in the health supply chain in Ethiopia: barriers and enablers

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ABSTRACT

Introduction: The health supply chain is often the weakest link in achieving the health-related Millennium Development Goals and universal health coverage, requiring trained professionals who are often unavailable. In Ethiopia there have been recent developments in the area of health supply chain management. The aim of this study was to explore the current status of the development of human resources in health supply chain management in Ethiopia and to identify important factors affecting this development.

Methods: A series of face-to-face interviews with key stakeholders was carried out in 2014. The interviews were conducted using a semi-structured interview guide. The interview guide comprised 51 questions. A qualitative analysis of transcripts was made.

Results: A total of 25 interviews were conducted. Three themes were identified: General changes: recognition, commitment and resources, Education and training, and Barriers and enablers. Results confirm the development of human resources in health supply chain management in many areas. However, several problems were identified including lack of coordination, partly due to the large number of stakeholders; reported high staff mobility; and a lack of overall strategy regarding the job/career structures necessary for maintaining human resources. Rural areas have a particular set of problems, including in transportation of goods and personnel, attracting and keeping personnel, and in communication and access to information.



Conclusions: Ethiopia is on the way to developing a nationwide viable system for health supply chain management. However, there are still challenges. Short-term challenges include the importance of highlighting strategies and programs for human resources in health supply chain management. In the long term, commitments to financial support must be obtained. A strategy is needed for the further development and sustainability of human resources in the health supply chain in Ethiopia.

Key words: Ethiopia, health supply chain management, human resources, medicines.

Introduction

Health systems must have access to quality medicines and other health commodities in order to meet the treatment and prevention needs of the patients and clients they serve¹.

The health supply chain (HSC) is often the weakest link in achieving the health-related Millennium Development Goals and ideals of universal health coverage. Trained professionals are needed to manage HSCs so that medicines and other health commodities reach the patients who need them²⁻⁴. The *Global pharmacy workforce report* of the International Pharmaceutical Federation (FIP) focuses attention on the lack of human resources in the healthcare sector, linking the lack of pharmacy personnel to inequalities in access to medicines¹. Of particular concern is sub-Saharan Africa, with an average of less than one pharmacist per 10 000 population¹. A recent pharmacist workforce survey reports only 2.3 pharmacists per 100 000 population in Ethiopia⁵.

According to WHO⁶, the 'global health workforce crisis' highlights the urgent need for competent, recognized and empowered HSC human resources, crucial for attaining the health-related Millennium Development Goals and realizing the goal of universal health coverage⁷. Four of the eight Millennium Development Goals involve medicines or medical commodities and their availability at the primary care level or service delivery point⁸. Understanding that the status of the HSC workforce in resource-constrained countries is in marked contrast to their status in high-income environments, a better grasp of the barriers and enablers to improving the human resources in HSCs is required⁹.

In general, health assistance from multilateral and bilateral donors has increased at a rapid pace, resulting in major increases in the quantity, value and complexity of supplies flowing through public HSCs (eg increased activity of the UN Commission on Life-Saving Commodities for Women and Children and Global Alliance for Vaccines and Immunisation)¹⁰.

Immediately following a WHO conference in June 2011, a global partnership of organizations with an interest in human resources for HSC management – People that Deliver – was launched¹¹. Ethiopia was selected as a key focus country for monitoring the implementation and progress of improved approaches to human resources development in the health supply chain (see box). In recent years, Ethiopia has had governmental, donor and technical support, with a commitment to pursue the improvement of human resources in the HSC. The lessons learned from Ethiopia are planned to be shared globally and serve as a resource to be used in other contexts.

Public health supply in Ethiopia is guided by the National Drug Policy and National Health Policy, developed in 1993 by the then Transitional Government of Ethiopia^{12,13}. A fragmented pharmaceutical plan for different programs and weak procurement and management of health commodities highlighted that achieving the health-related Millennium Development Goals was directly dependent on establishing an effective HSC system¹⁴. This led to the preparation of the Pharmaceuticals Logistics Master Plan, which transformed the former Pharmaceuticals and Medical Supplies Import and Wholesale Enterprise into the Pharmaceuticals Fund and Supply Agency (PFSA)¹⁵.

The PFSA was established in 2007 by Proclamation No. 553/2007 with a view to ensuring the uninterrupted supply



of vital and essential health commodities for the end-users at all public health facilities¹⁶. Since its establishment, the agency has continuously strengthened its organizational, financial and human capacity by constructing state-of-the-art warehouses, procuring trucks, establishing a revolving drug fund, securing additional finances and introducing new systems such as inventory control, a logistic management information system, storage management and operating systems in order to perform effectively and efficiently¹⁷.

Several problems were identified within Ethiopia regarding the availability, affordability, storage and irrational use of medicines¹⁸. In recent years, a number of improvements have taken place within human resource in HSC management in Ethiopia, such as an increase in education and training, increased financial resources and infrastructure development. Many international organizations have been involved including UNICEF; United Nations Population Fund; Global Fund for AIDS, Tuberculosis, and Malaria; Gavi, the Vaccine Alliance; United Kingdom Department for International Development; Bill and Melinda Gates Foundation; and the USAID-funded programs President's Emergency Plan for AIDS Relief, Clinton HIV/AIDS Initiative, Supply Chain Management System project, Systems for Improved Access to Pharmaceuticals and Services, USAID | DELIVER PROJECT and Capacity Plus.

The aim of this study was to explore the current status of the development of human resources in HSC management in Ethiopia, and to identify important factors affecting this development.

Methods

To ensure an up-to-date and detailed description of the current status of human resources in HSC management in Ethiopia, key stakeholders were interviewed. Three of the authors (AB, JMT, SKS) developed an extensive semi-structured interview guide derived to achieve the aim of the study. The interview tool was based on *Human resource capacity development in public health supply chain management: assessment guide and tool* previously developed and trialed by People that Deliver²⁴. BM and WD pilot-tested the interview guide, which led to minor corrections and adjustments

in the interests of clarity and to avoid redundancy. The final interview guide comprised 51 questions and contained general questions about the current status and challenges of human resources in HSC management, including suggestions for further development and sustainability. There were also specific questions regarding the following themes: education, training, employment conditions, staff structure, financing, guidelines and management. Subsets of questions were compiled from the master interview guide specific to the work profile of each interviewee. In addition, each interviewee received a standard set of questions targeting strengths, challenges and suggestions for the future.

Key stakeholders were purposively chosen for interviews. They came from different organizations representing government on various levels, non-governmental organizations, donors, universities, healthcare facilities, private sector firms and professional associations. All interviewees had some experience and knowledge of the current state of HSC management in Ethiopia.

Face-to-face interviews were conducted by two of the authors (BM and WD), who had previous training in interviewing. Conducted in Amharic, interviews were audio-recorded, transcribed verbatim and translated into English by BM and WD.

JMT and SKS conducted an inductive thematic analysis that was then discussed using a consensus process²⁵. Themes were thereafter audited by BM and WD.

Quotes have been chosen to illustrate themes and each interviewee is represented by a number.

Ethics approval

This low-risk project was given approval by the Ministry of Health of Ethiopia with the acknowledgement that all participants engaged with their own free will and all data was de-identified. The Ethical Review Board of the School of Pharmacy, Addis Ababa University, reviewed this study retrospectively and found it to fulfil all ethical requirements (ref. no. ERB/SOP/63/04/2016).



Box 1: Health and health care in Ethiopia¹⁹⁻²³

- According to the World Bank, Ethiopia is on the right track in its efforts to reach key health targets; child mortality has dropped by nearly a third in 7 years; more than 35 000 health workers are bringing health services to rural areas.¹²
- Gross domestic product: \$47.53 billion (in 2013).¹²
- Population: 94.10 million (in 2013).¹²
- Life expectancy at birth: 63 years (in 2012).¹³
- More than 85% of the population live in rural areas. Population density averages 52.2 per km², with great variation among regions.¹⁴
- The government has chosen to strengthen primary healthcare as a strategic approach to addressing a major gap in the country's healthcare system: lack of physical access to even basic healthcare facilities in rural areas.¹⁴
- Currently Ethiopia has more than 156 hospitals, 3335 health centers and 16 251 health posts.¹⁵
- There are 246 pharmaceutical importers and/or wholesalers, 12 pharmaceutical manufacturing firms in the country, 378 pharmacies, 1662 drug shops, and rural drug vendors.¹⁶
- As much as 80% of the health problems in the country are due to preventable, communicable and nutritional diseases; these health problems are associated with low socioeconomic development.¹⁴

Results

A total of 25 key stakeholders were interviewed. Interviews lasted for 50–90 minutes and were conducted in August to September 2014. Most of the respondents were pharmacists, some with additional degrees in supply chain management or public health. Other professions represented included medical doctor, nurse and engineer.

The following themes were identified based on the analysis of the transcripts, with focus on important factors affecting human resources in HSC management:

- general changes: recognition, commitment and resources
- education and training
- barriers and enablers.

General changes in human resources in health supply chain management: recognition, commitment and resources

Based on the interviews, it is obvious that many positive changes affecting the HSC management of medicines in Ethiopia have been made in recent years. First and foremost

the majority of interviewees recognized the need for and acknowledged the problems related to human resources in medicine supply.

Several interviewees mentioned government recognition and focus on the importance of HSC management and related issues at high levels of government. Many were aware of a more visible commitment by the government, manifested in several ways. In the words of one participant:

There is willingness of government officials to work on [the] supply chain at all levels. (no. 11)

This change in attitude has, according to participants, also been expressed in changes in the infrastructure beginning with the establishment of the PFSA.

Other changes mentioned were warehouse improvements (particularly increased capacity) and improvements in transportation, cold chain management, information and data management.

Most interviewees spoke of the obvious increase in recent years in the number of professionals already trained or being trained in HSC management.



We have educated people now. (no. 13)

... in terms of personnel there is a huge increase. (no. 20)

In addition to an increase in numbers, it was also mentioned that there appears to be a positive change in attitude as well.

... a movement to professionalize health supply chain management ... (no. 19)

People now understand that the supply chain should be managed by supply chain personnel who have the required skills and knowledge. And these skills differ at each level in the system. ... So [that] they are more aware and understand the supply chain better than before. (no. 8)

Unfortunately, participants found that these rapid, positive changes seemed not to be happening at the same pace and with the same resources in all regions. Rural areas were lagging behind, as expressed by the shortage of trained personnel.

Another sign of development is the increase in resources observed and reported by the interviewees. Funding opportunities have emerged from a variety of organizations, with interviewees mentioning various donors, development partners and implementing partners that have appeared in Ethiopia in recent years.

The rapid development of interest in and resources allocated to supply chain management, has not been without problems. For example, there appear to be many – some respondents say too many – stakeholders and actors engaged in HSC management of medicines today in Ethiopia. The problems reported include a lack of communication and coordination with all stakeholders and involved partners.

Education and training

Interviewees reported that there have been many advances in the pre-service and in-service training for the human resources involved in HSC management. There has been an

increase in personnel who have received training in health logistics at the health facility level, and both the government and the private sector are involved. However, it was reported that some regions have benefited more than others. There has also been a curriculum review of the pharmacist program. Overall resources for training have also increased, as one health center worker reports.

I have been working in the system [health centers] for the last ten years and I can see there is an increase in the [number of] professionals and the in-service and pre-service training. There is standardization of the training given for those professionals working in the supply chain. (no. 25)

Respondents reported that the Ministry of Health had issued a directive and implementation guidelines to standardize the in-service training given at the health facility level. Various stakeholders provide this training. The PFSA, regional and zonal health office bureaus offer in-service training for supply chain personnel in the public healthcare system. In addition, considerable in-service training is given by implementing partners. It was also noted that staff had been sent to other countries (eg Tanzania and South Africa) for training in warehouse operation management and supply chain certificate courses.

The HR [human resources] director of FMoH [Federal Ministry of Health] has initiated and is leading taskforces composed of Addis Ababa University School of Pharmacy, PFSA, the Ethiopian Pharmaceutical Association, implementing partners and donors to work on standardizing the in-service training given to the health facilities. Before this, training was given by different implementing partners and no standard was set. (no. 10)

Training is given at different levels, from staff at health posts to health professionals in health centers and hospitals.

So in every case there is a local institution or hub-based team providing the training. And we have the standardized guideline for training procedures and the standard curriculum for both in-service and pre-service training. (no. 24)



According to some interviewees, training is decided on the basis of needs, after gaps are identified using an assessment tool.

A new curriculum was reported to have been implemented for pharmacist education, including a course on supply chain management of medicines.

At least this course enabled the graduate to have a better understanding of health supply chain management instead of doing things on a trial and error basis. (no. 19)

The competences they need to manage [the] pharmaceuticals supply chain from selection to how it is used by patients is covered in the new curriculum. So this is a huge step forward in addressing the supply chain in pre-services education. (no. 2)

Participants reported that there are two postgraduate degree programs on supply chain management: the School of Pharmacy at Jimma University offers a program mainly for pharmacists on pharmaceutical supply chain management, and the School of Commerce at Addis Ababa University offers courses in logistics and supply chain management for professionals from different backgrounds. As a member of the staff explained:

We provide one course related to supply chain for pharmacists. Whether it is sufficient or not we can't say. (no. 15)

Although there has been progress, some of the interviewees are skeptical.

There is some change, but it has not been the big change yet. Health extension workers have not gotten any direct training. (no. 22)

Barriers and enablers

There are several areas where interviewees point to possible solutions to current problems and challenges. They also have

ideas regarding what is needed to make the system sustainable.

One of the areas mentioned most often by respondents was finance with particular concern regarding the assurance of financial resources for the future.

Regarding human resources, respondents see a need for more people trained in and working with supply chain management in medicines. One solution is not to focus so much on pharmacists.

... involving other professionals like logisticians in the supply chain rather than focusing on the pharmacists. (no. 9)

It was also pointed out that this is already happening.

People now understand that the supply chain should be managed by supply chain personnel who have the required skills and knowledge. And these skills differ at each level in the system. (no. 8)

Several respondents pointed out problems and possible solutions to the question of education and training. For example, a person within the government said:

... our problem can't be resolved by having professionals with a master's degree, since these individuals can only work at the central level and most of our problems are on the lower level. (no. 9)

The solutions suggested by participants typically involved more of what is already there: university courses, in- and pre-service training, especially at facility level and having people go abroad for training.

The need to increase the motivation of the staff was mentioned by many and is seen as crucial in order to encourage people to stay longer and to develop and maintain commitment to the continuous improvement of the system. Suggestions about how this could be done included economic incentives for working in remote areas, and formal job



recognition – including coordinating and systematizing the various education and training programs. Continuous on-the-job training and peer support systems were frequently mentioned as potential improvements.

The need to focus on strategies and coordination with regard to infrastructure development was mentioned by many; in the words of one participant:

There is much work to be done on human resources. This can be done by building strategies, coordinating partners that work in this area, building public and private partnerships and also logistic partnership. (no. 1)

Suggestions by participants for strengthening the infrastructure focused on the need to make data on medicines use and disease prevalence more available, as well as improving the ability to maintain medical equipment in health centers.

... for example we should have a strategy to study the disease trends in Ethiopia and work on that to accommodate the demands. (no. 3)

The first thing is [ensuring] community empowerment [with regard to] the regulatory system and creating awareness about the importance of the system. The other thing is to work on the structure at the lower level. Building on integrated automation databases for the registration of products so that from any part of the country people can have easy access to those products that are registered in the system. (no. 7)

Establishing maintenance rooms in the regions so that proper maintenance can be done for the medical equipment we use. (no. 2)

According to many of the respondents, a focus on coordination and strengthening communication is important for improvements and sustainability to be achieved. They emphasized that cooperation and communication are needed between stakeholders, especially with reference to geography to support the more remote parts of the country.

According to the interviewees, creating or sustaining awareness of human resources in HSC management as a whole is seen as very important, especially commitment from the government.

However, some interviewees saw recent developments as only the start of a long process.

At this time we are not talking about sustainability issues, rather we are talking about how to start. (no. 16)

Discussion

This study documents recent and rapid growth in the development of human resources allocated to HSC management in Ethiopia. Although this has been seen as a positive development, it has brought with it many challenges that must be addressed if continued progress and sustainability are to be maintained.

In recent years Ethiopia has been making a concerted effort to address the need for developing HSC management. For example, the country has established an infrastructure (note the establishment of the PFSA) and developed and implemented education and training within the area, for example a curriculum review of the undergraduate pharmacist program to include HSC management and standardized in-service training. This finding is consistent with analyses of human resources-related activities conducted by Gavi, the Global Fund and the World Bank, whose most commonly supported activity in developing countries is short-term and in-service training²⁶. Studies conducted in other countries show that pre-service training is cost effective, and often structured and sustainable; investing in expanding pre-service training and institutionalizing it in the curriculum of the country has been shown to alleviate the shortage of adequately trained supply chain management professionals or practitioners due to attrition and migration²⁷. Perhaps most importantly, this study shows that there appears to be a change of attitudes in Ethiopia on all levels,



including in government, where human resources in HSC management is a focus and its importance acknowledged.

However, the results of this study point to several important factors and areas that are essential for further development and sustainability. There would appear to be a continuing lack of a strategy to improve the job and career structures necessary for sustaining the engagement of currently employed personnel. Staff mobility is reported to be high in many areas, for example moving from public to private sectors and from rural to urban areas.

The problems for rural areas are many, and include transportation, the difficulty of attracting and keeping HSC management personnel, poor communication and access to information. The improvements seen in the country as a whole are not seen in rural areas, with the result that medicines are not available or are not stored properly in many rural locations. A study conducted on the motivation of human resources personnel in rural settings in the Ghanaian health sector came to the same conclusion. The study reported low satisfaction, a heavy workload and difficult working conditions, lack of professional advancement and lack of educational programs, including structured mentoring²⁸. Ethiopia has prepared a strategic plan (2009–2020) for enhancing the deployment of key health professionals to rural and disadvantaged areas of the country²⁹. Findings of the present study and others^{28,30} have found that incentives for health professionals working in remote areas could be in the form of economic incentives, formal job recognition and various education and training programs.

Although the opportunities for training and education have increased in Ethiopia, the question remains as to whether these approaches are in fact efficient. In particular, the fact that pharmacists who are apparently not adequately trained in HSC management hold HSC management positions at higher levels is cause for concern. This means that people specifically trained in supply chain management, but not necessarily knowledgeable about medicines, are not filling strategic positions. These developments have raised the question of

'who' should be managing HSCs. On the one hand, joint FIP/WHO good pharmacy practice outlines that pharmacists have a role in obtaining, procuring, storing and distributing and ensuring rational use of medicines³¹. On the other hand, the International Association of Public Health Logisticians and People that Deliver advocate that the supply chain should be professionalized. Depending on the local context, those who are engaged in the actual work should be equipped with the right competency for the HSC management activities they undertake. The recent expansion of local health centers in Ethiopia makes in-service training of staff with different backgrounds important and a priority intervention.

Although the majority of respondents acknowledge improvements, they also express concerns regarding the sustainability of these improvements, for example in the areas of financial and organizational resources and continuous government commitment. A 6-year retrospective record review study on health workforce deployment and attrition in Ethiopia also reported the same findings. According to this survey, budget-related constraints, lack of continuing education opportunities and poor career development were reported to be the most likely causes for lower deployment and contribute to higher attrition of health professionals³².

It has been proposed that a systematic approach to the development of human resources in HSC management requires focus in five interrelated building blocks in order for sustainable change to take place: engaged stakeholders, policy and planning, workforce development, performance management and retention, and professionalization^{24,33}. The present study's results highlight these building blocks in the Ethiopian context, noting that the current emphasis is more focused on workforce development and engaged stakeholders, while acknowledging that further work needs to be done in performance management, retention, and professionalization.

Health supply chain systems are complex, requiring attention not only to the human resources within them, but also to the infrastructure, tools, systems and procedures, as well as to the system design appropriate for the local context^{34,35}.



Although this study has focused on the human resources aspects of the HSC in Ethiopia, it is clear from participant responses that other factors such as infrastructure development, data management and finance also need to be addressed in a systematic way in order for HSCs to continue to develop in Ethiopia in a sustainable way.

In line with the results of this study, a lack of coordination has been identified as one of the top ten challenges of global health supply³⁶. To address these challenges international donors at the global level have recently formed the Interagency Supply Chain Working Group (members include WHO, USAID, UN Population Fund, Bill & Melinda Gates Foundation, Department for International Development, UNICEF, Global Fund and UN Commission on Life-Saving Commodities). The aim of this group is to improve donor-coordinated approaches at the global and national level, supporting government priorities in the area of HSCs. Ethiopia is one of the key countries highlighted by this Interagency Supply Chain Working Group. The future will show whether this increased focus on coordination and government support yields sustainable HSCs resulting in improved medicines access and improved health outcomes for the general population.

Similarly, in Ethiopia the large number of stakeholders (not least donors and implementing partners) makes coordination of activities vital. Establishing and maintaining coordination and communication requires resources, and with regard to sustainability there is always the risk that international organizations will at some point move out of the country, leaving a supply chain that falls short of the resources needed to buy products and sustain transportation, for storage and to train personnel.

Conclusions

Ethiopia is on the way to developing a sustainable nationwide HSC. Positive changes include building infrastructure and attitudinal changes recognizing the need for trained personnel for HSC management. However, there are still challenges

ahead. Short-term challenges include the importance of highlighting strategies and programs for human resources in HSC management. In the long term, it is important to ensure a sustainable financial base and find ways to further develop and sustain human resources in HSC management for the increased availability of medicines to be a reality for all people in Ethiopia.

It is vital for the Ethiopian Government to take a lead in coordinating the process for systematic improvements in the HSC by engaging all partners including international organizations, and leading the strategic development agenda.

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