

Training program for community health workers in remote areas in Senegal. First experience

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Abstract. *Background:* In some countries, community health workers (CHWs) act as a bridge between the health care delivery system and the community, and ensure primary health care. It is essential to improve health worker education and training; however, in remote areas such as rural Senegal villages, these CHWs are often unable to leave their home community for training and education. We set out to perform a training program in a village in Senegal and to evaluate its effectiveness in that village. *Methods:* We prepared a training program to be based on face-to-face lessons and practical exercises; a nurse from the university of Parma carried out the training of the CHW in loco for a period of four weeks. After six months, the nurse with an anthropologist returned to the village to verify the results of the training program. *Results:* The CHW had retained most of what she had been taught, but her opinion about the training program was not altogether positive, given that the absence of a working health centre in the village and an insufficient period of practical experience in a hospital. The village community did not understand the role of the CHW and was not informed that there was a training program to help increase her technical know-how. *Conclusions:* This experience confirmed the important role of the CHW in rural areas in a poor region in Senegal, in the absence of other professional healthcare figures readily accessible to the population. Nonetheless, in order to properly carry out the role of CHWs, an adequate theoretical and practical training is necessary. (www.actabiomedica.it)

Key words: Health workforce, primary health care, community health workers, training program, retention health professionals

Introduction

Over a billion people worldwide have little or no access to health services or the help and advice of health workers. There is good evidence that the health workforce is the key to effective health services (1,2), and its shortage is the most commonly reported staff-related problem, especially in resource-poor countries (3,4). Global inequalities in the distribution of health

personnel hit those countries hardest which can least afford it (1). One of the most damaging effects of severely weakened and under-resourced health systems is the difficulty they face in producing, recruiting and retaining health professionals, particularly in remote areas. Health service policy makers and managers are searching for appropriate strategies to improve the attraction and retention of staff in remote and rural areas. There are many factors contributing to the

health worker brain drain: unfavourable socioeconomic factors, low wages, poor working conditions, lack of training, lack of supervision, inadequate equipment and infrastructures all have a contributory role in the flight of health care personnel from remote areas (5). Health workers will be attracted to the private sector, to urban areas, and also to the plethora of nongovernmental organizations that often pay more than the public sector (6). In industrialized countries there exists a shortage of registered nurses that is the result of increased demands outpacing the slower increase in the supply of nurses (7), and one means to alleviate the shortage crisis in developed countries has been to recruit foreign nurses from people in donor resource-poor countries to fill vacant positions. Given the current conditions, developed countries continue to actively recruit foreign nurses to fill critical shortages. Migration is predicted to continue until developed countries address the underlying causes of nursing shortages and until developing countries address conditions that cause nurses to leave (8).

The massive shortfall in production of trained health workers underpins all other problems. The international health organizations believe that urgent international action is needed to scale up the production of health workers (9). High-level health professionals take a long time to produce, are very costly, and often resist rural posting. In some countries, rural health workers have been successfully selected from rural populations and trained locally as community health workers (CHWs). CHWs act like a bridge between the health care delivery system and the community (10), and ensure primary health care (11). CHWs can empower the community to identify its needs and can assist in planning a strategy to achieve the desired results (10). CHWs have helped in improving the health situation in Senegal too.

CHWs can help improve the retention of health professionals in remote areas: there is now considerable agreement among research studies carried out in low-income countries (12-14) that rural upbringing increases the chances of health workers returning to practice in the rural communities (15, 16).

Appropriate knowledge, in addition to basic clinical skills, supplies and supervision, are a key to the work of CHWs (17). A number of authors recom-

mend devising strategies to improve health worker education and training (9,18); however, in remote areas such as rural Senegal villages, these CHWs are often unable to leave their home community for training and education. In response to their travel difficulties, education and training programs could also be carried out using technology and distance education to bring training opportunities into the community (19).

We set out to create a training program for CHWs of rural zones in Senegal, possibly also through 'distance learning'. For this purpose we thought it best to try out a training program in a village, to evaluate its effectiveness in that village and in at least two other villages and then eventually to prepare a course for distance learning. This article carries the results of the first phase of the project.

Materials and Methods

The village of Diol Kadd in the health district of Khombole (Thies Region) was chosen following the indications provided by one of the authors (AS), who had already spent some time there, and agreements were made with the village leaders to carry out the formation of the CHW. The village consists of wooden huts, without either electrical power, running water or a sewer system, and has a population of about 500 people who get their water from wells. There is a primary school in the village which also serves the neighbouring villages, in which toilets have recently been built, and there is brick structure (2 rooms) which should serve as the "case de Santé" for the village and four other neighbouring villages. At the moment the structure is not equipped and therefore not active. There is a non-profit association, Takku Ligey, which works in international corporations, made up of inhabitants of the village founded by one of the inhabitants who migrated to Italy and has returned to Senegal. This person helped in the planning of this project.

In preparing our training program we took into consideration the local healthcare structure, particularly the role assigned to the CHWs (Table 1) and the training they are supposed to receive (Table 2).

Table 1. Role of the CHW in Senegal

Health Education and Health promotion	<ul style="list-style-type: none"> - Health Education through the organization of discussion groups, meetings, house calls with the use of audio-visual aids on malaria and STD prevention - Preparation and distribution of insecticide impregnated mosquito nets. - Family Planning education
Treatment	<ul style="list-style-type: none"> - Wounds, 1st and 2nd degree burns of less than 25% body surface, traumas, eye problems - Malaria following precise schemes - Acute respiratory infections with Bactrim - Diarrhea in adults and children
Maternity and Pediatric health	<ul style="list-style-type: none"> - Taking charge of pregnant women - Administering trimester Iron tablets - Taking charge of new-born babies - Child alimentation and growth monitoring - Child vaccination
Epidemiologic Monitoring	<ul style="list-style-type: none"> - Disease Identification - Disease reports to Head Nurse
Hygiene	<ul style="list-style-type: none"> - Monitoring of water sources. - Treatment of water for domestic use. - Monitoring of environmental hygiene - School visits to promote personal hygiene of the pupils
Running of the Health Centre	<ul style="list-style-type: none"> - Control of warehouse stocks and book keeping - Distribution of medications according to nursing and medical prescriptions

After taking note of the training needs expressed by the CHW during a first mission to the village, we prepared a training program to be based on face-to-face lessons and practical exercises to be carried out in loco. We then created a handout of the training program which we gave to the director of ENDSS Dakar for adaptation to local teaching models. His adaptation was simply a reduction in the program content. The principal subject areas treated in the training are outlined in Table 3. During a subsequent mission a nurse from the university of Parma (EE) carried out the training of the CHW in loco for a period of four weeks, in two and a half hour lessons for five days per week. At the end of the training period, a practical test was carried out on a real clinical situation.

During the training period, data were collected on the number of villagers who came to the CHW for health issues, in order to compare them with the same data six months later.

After six months, a commission including, among other figures, the training nurse (EE) and an anthropologist (AS), returned to verify the results of the training program. The commission:

- questioned the CHW to verify what she had retained from the training
- questioned the CHW to find out her opinion about the training program
- compared the data on the number of patients who came to see the CHW during the six months after the training
- carried out 14 interviews with a representative sample of the local population, and two interviews with the health care professionals of the district, to find out their opinion about the training program. The themes of these interviews, carried out by an anthropologist (AS), are outlined in Table 4. The population sample was chosen with the help of the nurse who carried out the training and the founder of the Takku Ligei association.

Table 2. Formation of CHW in the Khombole District of Thies, Senegal

Communication techniques	Organizing meetings, groups and house calls with the use of visual aids	1 module (20 Minutes)
Prevention and treatment of malaria	<ul style="list-style-type: none"> • Use of Artesunate and Amodiaquine in the treatment of simple malaria in presence of two symptoms following schemes provided by the ministry of health. • Preparation and distribution of insecticide impregnated mosquito nets. 	2 modules (20 Minutes each)
Treatment of Acute respiratory infections	Use of Bactrim in the treatment or in the presence of two symptoms using schemes provided by the ministry of health.	2 modules (20 Minutes each)
Treatment of diarrhea in pediatric and adult patients	Signs of dehydration, use of homemade rehydration drink, signs of danger in pediatric patients.	2 modules (20 Minutes each)
Common pediatric diseases, growth monitoring and vaccination.	Malnutrition, dehydration, exanthemas, convulsions. The Senegalese vaccination calendar and infant growth charts.	2 modules (20 Minutes each)
Sexually transmissible diseases and HIV	Symptoms and treatment of STDs, prevention of HIV	1 module (20 Minutes)
Hygiene and epidemiologic monitoring	Protection of water	
Running of the health center	Distribution of drugs, warehousing and ordering of material	2 modules (20 Minutes each)
Maternity care		Side by side training with professional midwives

Results

During the training period in loco, the CHW expressed satisfaction with the didactic methods used and the course content. During this period 5 patients came to see the CHW and their cases are outlined in Table 5. The CHW blamed such a low rate of access to her services on the low levels of confidence the village population had in her professional preparation, the fact that they had to come to her family house in the absence of an active health centre in the village and the deep rooted habit of most families of seeking traditional cures or going to the Marabu. The practical test performed at the end of the course was on a patient with hyperpyrexia from a heatstroke. The CHW was able to make a differential diagnosis from

other diseases that could cause hyperpyrexia and was able to give therapeutic instructions that were considered correct by the nursing instructor.

During the six-month period between our two missions to the village, the number of patients who came to see the CHW was on average six per month without considering the children who were vaccinated by the visiting nurse from the Khombole district.

During our second mission, the nursing instructor found that the CHW had retained most of what she had been taught, although her opinion about the training program was not altogether positive, given that the absence of a working health centre in the village and an insufficient period of practical experience in a "centre de santé" or in a hospital represented a great impediment to her own self-confidence.

Table 3. Contents of our training program

The CHW and the Senegalese health system	- Selection of the CHW and the concept of acceptability
Health Education	- Meaning and methods - Use of audiovisual aids
Basic nursing concepts	- The person - Health - Environment
Examining a sick person (Theoretical lessons and practical sessions)	- Communicating with the sick - Asking questions - Measuring and recording body temperature. - Blood pressure measurement - Pulse - Examining respiratory activity - Examining a patient's abdomen
Treatment of endemic diseases	- Recognition and treatment of simple malaria with the use of Ministry of Health schemes - Treatment of Acute Respiratory Infections with Bactrim
Taking charge of common health situations	- Treatment of cuts and wounds - Treatment of dislocations and fractures - BLS
Hygiene	- Security of water sources - Treatment of water for household use - Personal hygiene for school pupils
Maternity and Pediatric health	- The female reproductive organs - The menstrual cycle - Pregnancy and taking charge of the pregnant woman - Common complications and signs of complications - Labor and birth - The first minutes of the new born - Child growth charts - The vaccination calendar - Common diseases of the child and infant

From the interviews carried by the anthropologist the following items emerged:

1. In the village community there is a coexistence of various concepts of health and treatment that derive from tradition, from religion and from modern medicine (Table 6)
2. Pregnancy is viewed as a taboo: it has to be hidden and pregnant women would prefer to be examined in a place away from the eyes of the other members of the community. Nonetheless, the habit of giving birth at well-

equipped health centres is becoming widespread.

3. Principles of hygiene are taught at school, but these are not known to the adults. Household rubbish, for example, is left out at various points in the village and is blown away by the wind.
4. Healthcare organisation has to involve the official organs of the village: the health committee and community hygiene committee. The organisers of this study were blamed for not in-

Table 4. Themes addressed in the interviews carried out by the anthropologist with a representative sample of the village population

1. Inhabitants' conceptions of health, their relationship with traditional and modern medicine, healing practices used by the young, adults and the elderly
2. Conceptions and practices of hygiene, alimentation and care of babies.
3. Conceptions of the health problems in the village, the level of urgency and priority attached to their resolution and solutions considered valid by the village inhabitants
4. Knowledge of the training program carried out in the health sector and their perceptions and opinions of it
5. What meaning they attach to the figure of the CHWs and knowledge of their official role.
6. Recognition of the current CHW and opinions of her way of fulfilling her role as a CHW, with particular attention to certain characteristics such as her sex, age, family or social affiliation and recognition of her technical know-how.
7. Opinion of the structure chosen for the "case de santé" health centre.

Table 5. Clinical cases of five patients who came to see the CHW

	Patient description and symptoms	Diagnosis and treatment
Case 1	Female 28 years old with slight dyspnoea. Body temp. 38.7°C Heart rate 25 BPM Breathing 25/m	Day 1: Patient treated with 1000mg of Paracetamol to lower body temperature Day 2: Patient apyretic with slight productive cough: treatment with Bactrim following CHW guidelines suspecting an acute respiratory infection
Case 2	Male 20 years old with severe itching around the genital area.	Patient educated on basic norms of personal hygiene. Treatment with boric acid (readily available) of suspected fungal infection on inspection of the eczema.
Case 3	Male 7 years old with strong and persistent dry cough at school referred to the CHW by school teacher.	Patient's mother could not produce any vaccination records and since the cough had lasted more than a month the patient was referred to the district nursing health post for tests to exclude tuberculosis.
Case 4	Male 40 years old with severe toothache accompanied by headache	The patient was treated with Paracetamol for the pain, instructed on proper dental hygiene and instructed to use salted water to rinse his mouth after every meal. He was instructed to come back in case of further pain.
Case 5	Male 38-45 years old with general malaise, headache and body temperature of 38°C	On questioning the patient we found that he had walked all day on foot between three villages and had worked in the fields for more than 3 hours. The patient was treated with Paracetamol to reduce his body temperature since there were no other accompanying symptoms to suggest malaria or other diseases, and his temp. was checked at six hour intervals.

volving these committees in the planning stages of the study.

5. Health organisation cannot be considered apart from the construction and equipping of a working health centre, positioned on the outskirts of the village, where the nurse or CHW can work.
6. The village community does not understand the role of the CHW and was not informed

that there was a training program to help increase her technical know-how.

7. The concept of disease prevention is not widespread in the community.

The interviews carried out during this mission gave us the chance to obtain some suggestions on how to improve the effective results of the training of the CHW:

- Equip the health centre to make the functions of the CHW more tangible.

Table 6. Different conceptions of Disease (sickness) and treatment that coexist within the village of Diol Kadd

Disease:

- a. Disease is a consequence of the violation of a taboo or immoral behaviour (therefore something to be ashamed of and to be kept secret and hidden).
- b. It's God who chooses to inflict or cure certain pains.
- c. Respecting or not respecting certain norms of hygiene can positively or negatively influence one's health.

Treatment:

- a. Treatment by a Marabou who knows certain therapeutic formulae or prayers to address to God.
- b. Treatment by an elderly person in the village who knows how to produce "grigis" (amulets whose curative or protective powers lie in the verses written on the inside)
- c. Treatment by traditional healers who use traditional herbal medicine (which is in crisis due to the loss of many species caused by drought)
- d. Treatment by modern doctors and nurses who use modern medical drugs (turned to only when the disease or illness is in an advanced state).

- With the support of the health committee, organise a period of intensive practical internship for the CHW at a health centre where there is a nurse.
- At the end of the training period, issue a certificate to the CHW which attests to the skills she has obtained.
- Organise public events, for example open consultation days with a nurse or medical doctor with the CHW to officialise and publicise her role.

Discussion

This experience confirmed the important role of the CHW in rural areas in a poor region like the Thiès region in Senegal, in the absence of other professional healthcare figures readily accessible to the population. There are numerous experiences (9-11) that document the usefulness of what the WHO defines as "primary health care" and that involve not only developing countries but areas with more advanced healthcare models. Nonetheless, for the CHWs to carry out their role properly an adequate theoretical and practical training is necessary.

The Senegalese training model for CHWs is very valid "on paper", but is not adequately put into practice. This shortfall can be attributed to the lack of instructors, the lack of healthcare structures in which to carry out internships, the lack of mobility of those de-

signed to be CHWs due to the poor transport system, poverty, the fact that most of them have to run families, and the absence of a national economic plan for the training of the CHWs.

The final goal of our training program is to make available to those CHWs in that area who cannot take advantage of the Senegalese training model an integrative course that provides a deeper theoretical base. In order to meet this goal we tested this training program with the aim of finding its strengths and weaknesses in order to improve the didactic modalities and contents.

This initial training experience provided us with some ideas on how to move forward.

First of all, an experience has shown that the role of the CHW in a poorly-equipped health structure like that of rural areas in Senegal and in other difficult logistical conditions in those regions is very different from that attributed to this healthcare figure in literature.

In literature (11), CHWs are trusted community members who establish vital links between health providers and the community, with three interrelated goals. The first goal is a therapeutic alliance. Stronger relations between health care professionals and laypeople in the community are the primary reason for using CHWs. The next goal is to improve appropriate health care utilization with early access, prompt diagnosis and treatment, and greater use of primary care providers. The final goal is to reduce health risks of patients by educating them about prevention, early diagnosis and

treatment. These three goals provide for the presence of easily accessible healthcare staff. CHWs essentially have to carry out outreach activities such as networking with community peers and health screening, they have to provide services that link peers with health care providers, and they have to furnish cultural information to patients, families, and assistants.

In the villages of rural Senegal CHWs face difficulties in carrying out their expected duties because, as clearly shown by the results of this study, the village population does not recognize in the CHW the skills necessary to carry out outreach activities. These difficulties are further accentuated by the fact that, in the almost total absence of healthcare professionals the CHW has to carry out medical duties: she has to treat the common cold, mild malaria and cuts and wounds, assist in childbirth and administer drugs. The training of the CHW has to take into consideration all of these peculiarities of the local situation. For this reason, some of the changes made during the development of the training program went in the direction of making the program more medical.

Another observation that emerged from this initial experience is that choosing to carry out the training of the CHW directly within the rural reality was seen to be positive since the person given this role, usually a young woman, has also to take care of the needs of their home and family. In this case the designated CHW willingly undertakes the training for a few hours a day without having to travel long distances.

An analysis of the results, however, highlights some defects of the training experience that require corrective measures for going forward with this project.

The results highlight the fact that for a CHW who has to carry out direct medical assistance it is not enough to provide just a theoretical training program and that the internship carried out by this figure is absolutely insufficient. This deficit in practical training also has consequences in the lack of confidence on the part of the population in the abilities of the CHW. A person chosen from and by the village population, with a primary education background, who undertakes theoretical training for a month or two and goes to a health centre once a month or once every other month will hardly gain the confidence of those who have to put their health in her hands.

It was further observed that the absence of a minimally equipped health centre, and of a means of transportation which would allow for the evacuation of patients considered to be in need of care by more qualified health personnel, make the training program less effective.

Finally, it emerged from the interviews carried out on the population that there was a lack of its involvement in the planning and carrying out the training program. The village inhabitants, who among other things do not have a lot of confidence in western medicine, see the training program as a personal gift to the person who receives it and its family instead of something aimed at improving the living conditions of the entire community. The process of improving the health of the community must be a collective process and the attention of the project should be directed to the whole community and not just to an individual person.

On the basis of these considerations, some corrections have been made and these will represent the basis on which the study will move forward.

Firstly, agreements have been made with the local authorities (Mayor of Khombole) and the health officials (district medical officer and nurse) to ensure that the CHWs who have received or are going to receive the training are able to carry out a six(6)-month internship at a well-equipped health post active in the district. During one of our missions in loco some of the authors (LS, EE, KB) visited these health posts and found that they work well and receive a good number of patients every month.

In collaboration with the mayor of the district, the village authorities of Diol Kadd and the four other villages that will use it, the restructuring and equipping of a health centre has been planned in a structure that used to serve as a workshop for the blacksmiths of Diol Kadd. The building will be fenced in order to guarantee the privacy of those wishing to come to see the CHW. When the structure is completed, the village will be furnished with an adequate means of transportation to move patients and the CHW when necessary. This should also help in extending the training program to other CHWs who operate in other neighbouring villages who, with the presence of a means of transportation, would be able to come together to undertake the activities of the training course. The project

envisions trying out the training program on other CHWs in other rural areas in Senegal, with the goal of turning it into a course for distance learning.

Finally, it would be necessary to intensify the activities aimed at increasing awareness in the villages involved in the study through meetings with the “comité de Santé”, also made up of village inhabitants, with the goal of meticulously informing them about the initiative and its purpose.

These meetings could be used like opportunities for health publicity or days for free medical and nurse visits at the village health centre in the presence of the CHW in training and like moments for hygiene education in collaboration with the village school.

In conclusion, this initial experimental training experience of a CHW in a Senegalese village has provided us with a great deal of information onsite for the changes to be made to the training program in order to make it useful and easily usable by more CHWs in other villages. The experience has yielded information on how best to direct the financial resources of the project towards other interventions collateral to the formation of the CHW, all geared towards the full achievement of the aims of this project.

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