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The role of community health workers in the re-engineering of primary health care in rural Eastern Cape

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Background: Primary Health Care in South Africa is being re-engineered to create a model of integrated care across different levels of the health care system. From hospitals to clinics, in the community and in the home, health care will focus more on prevention, health promotion, and advocacy for healthy lifestyles and well-being, in addition to clinical services. We provide a best-practice model of integrating community health workers (CHWs) trained as generalists into a multi-level health system in the Oliver Tambo district of the rural Eastern Cape.

Methods: Based at Zithulele Hospital, a health care network between the hospital, 8 clinics, and 50 CHWs has been created. The functions of each tier of care are different and complementary. This article describes the recruitment, training, supervision, monitoring, and outcomes of CHWs who deliver maternal, child health, nutrition, and general care through home visits.

Results: CHWs, especially in rural settings, can find and refer new TB/HIV cases, ill children, and at-risk pregnant women; rehabilitate malnourished children at home; support TB and HIV treatment adherence; treat diarrhoea, worm infestation, and skin problems; and distribute vitamin A. CHWs provide follow-up after clinic and hospital care, support families to apply health information, problem-solve the health and social challenges of daily living, and assist in accessing social grants. Case examples of how this model functions are provided.

Conclusion: This generalist CHW home intervention is a potential model for the re-engineering of the primary health care system in South Africa.

Keywords: community health workers (CHW), HIV, malnutrition, Philani Mentor Mothers, pregnant mothers, primary health care, re-engineering, rural health care systems, South Africa, tuberculosis

Introduction

Primary health care (PHC) in South Africa is designed as a model of integrated care across hospitals, clinics, and in the home.^{1,2} The Department of Health has been encouraging the development of community health workers (CHWs) and is working on a policy framework to regulate their roles and working conditions.³ This article describes the current implementation of this vision in a deeply rural section of South Africa.

Access to health services in South Africa remains a challenge, especially for poor rural dwellers.^{4,5} Roads are poor or non-existent, transport is scarce and expensive, clinics are poorly staffed and lacking equipment and medication, and hospitals are isolated, with overwhelmed medical staff.⁶ There will be a global shortage of health care personnel until at least 2050.⁷ Shifting tasks and care responsibilities from professional physicians and nurses to trained CHWs is necessary in order to meet the need for health care services.^{7,8}

However, many challenges exist before the potential benefits of CHWs can be realised. CHWs are often poorly selected, trained, and supervised.⁹ They are not always respected by clinic and hospital staff and are often poorly linked to other members of the district health team.³ The Philani Mentor Mother model demonstrates how some of the challenges associated with CHWs can be met while integrating CHWs as one level of a multi-level health service system, linking homes with clinics and a hospital.

The Philani Mentor Mother Programme

Home visiting has been repeatedly demonstrated to be efficacious, especially for mothers living in poverty facing multiple challenges.^{10–14} Philani, a maternal, child health, and nutrition agency that has been operating in Cape Town for more than 30 years, has developed an effective CHW model^{15–19} adapted from home visiting programmes in the US and Brazil. Philani CHWs, called “Mentor Mothers” utilise the theories of “human ecology, self-efficacy, and human attachment”^{20–22} that characterise the approach of the nurses in David Olds’s intervention in the United States^{23–25} as well as the integration of CHWs into the local PHC system, as seen in Brazil’s home-to-health-facility programme, *Programa Saude da Familia*.^{26–32}

Innovative additions in the Philani model include the selection of Mentor Mothers based on a “positive deviant model” which utilises the knowledge and coping mechanisms of successful mothers with healthy children within a community to build role models of independence and problem-solving for struggling mothers.³³ The Philani intervention also adds greater support for and supervision of CHWs in the field. Trained nursing sisters, comprised of both staff and senior nurses, and experienced Mentor Mothers supervise and support Mentor Mothers on a daily basis, with a strong commitment to ongoing, in-service training. Finally, the Philani model stresses the importance of monitoring and accountability in the delivery of home visits. Each home visit and contact is documented and assessed by a supervisor based on specific outcome measures, such as

rehabilitation and improvement rates of malnourished children, HIV/TB testing and treatment adherence, antenatal clinic attendance, partner HIV testing, breast-feeding rates, PCR (Polymerase Chain Reaction HIV test) results of HIV-exposed children, and child support grant (CSG) uptake.

While the Philani intervention has been working in Cape Town, a densely populated peri-urban setting with substantial access to resources, delivery is far more challenging in rural settings. In part of the remote King Sabata Dalindyebo sub-district of the OR Tambo District in the Eastern Cape, an integrated system of care has been established with a district hospital, area clinics, and Philani Mentor Mothers to create a quality, fully integrated, PHC system.³⁴

The context

Zithulele hospital is a 120-bed district hospital with a catchment area inhabited by approximately 135 000 people in the King Sabata Dalindyebo sub-district of OR Tambo, known to be one of the poorest areas in South Africa.³⁵ Unemployment is high, and most households live in dire poverty, dependent on government grants, remittances, and subsistence farming for survival.^{36,37} Many young men work in the Rustenburg platinum mines, and young women often leave their children with grandmothers to look for work in cities. Education levels are low, especially in members of the older generation, who frequently become the caregivers of young children.^{37,38} Given the environmental context of poverty, almost no access to electricity, safe running water, or sanitation, health outcomes are poor.³⁹ Few and poorly maintained roads with limited public transport make access to health services both expensive and difficult. Patients in some areas must walk over an hour to reach a clinic and several hours to reach the hospital.³⁴ The undulating geography and deep river valleys further complicate access, especially in the rainy season when rivers may be too full to cross for several days.

Historically understaffed and underdeveloped, the hospital and its services have been vastly improved in the past 10 years.^{36,40} Now staffed by a multidisciplinary team including doctors, pharmacists, nurses, physiotherapists, occupational therapists, dieticians, a social worker, a dentist, speech therapist, and two audiologists, the hospital receives referrals from 13 clinics, whose facilities and staffing levels are variable. Some have no phone lines, water and electricity can be unreliable, and drug supplies are frequently inadequate. Staff turnover is high, due partly to isolation and lack of support.³⁶ Although most clinics have CHWs assigned to them, these workers receive little guidance, training or support, except when specifically working in TB or HIV treatment. Some CHWs receive stipends, which only cover their telephone and transport costs, discouraging CHWs from ranging too far.

As would be expected in such a setting, maintaining good maternal and child health are significant challenges. In 2010, the Philani Maternal, Child Health, and Nutrition Project began to pilot their CHW model: a home-based maternal, child health, nutrition, and early childhood development (ECD) intervention programme, in the area surrounding the Zithulele Hospital. At the time of writing, 50 Mentor Mothers are visiting homes in 50 geographically defined areas.

Methods

The Philani model of home visits by CHWs trained as generalists has been effective in improving nutrition and HIV-related outcomes in the Cape Town context^{16–19}; however, designing a model that is sustainable in a rural setting, integrated into the

health care system, and sustained over time is a greater challenge. We describe how we have addressed these challenges in Zithulele in the Eastern Cape of South Africa over the last three years.

Programme initiation, community support and integration with the district health system

Integral to the success of the Philani programme is the support of the members of the community being served. Local chiefs and headmen, clinic staff, nurses, doctors, and administrators must participate in and benefit from the programme for it to be successfully integrated into the district health system.

At project initiation, local headmen and chiefs were integrally involved in the process of Mentor Mother recruitment. Strong relationships have been maintained through regular contact to discuss the programme and local challenges. The chiefs and headmen requested and participated in successful health information workshops.

Along with the home-based intervention, Mentor Mothers screen family members for danger signs of illness and refer to the local clinic or, in more severe cases, the hospital. This requires good relationships and support from clinic staff, nurses, and doctors. We achieved this through various means: some CHWs stationed at the government PHC clinics in the area and paid by the Department of Health have been trained on the Philani Model; nurses at the hospital, typically overstretched with work, are supported by Mentor Mothers taking turns offering counselling and support in the maternity ward at the hospital, including crucial support for the establishment of breast-feeding by new mothers; and doctors willingly offer advice by telephone during supervision of difficult cases and volunteer feedback on referrals made.

In addition to referring to the hospital, the Mentor Mothers also follow up on referrals from the hospital. The Mentor Mothers working on the wards are responsible for identifying discharged patients returning to an intervention area and matching them with their local Mentor Mother for home follow-up. Mentor Mothers attempt to visit new mothers within 48 h of returning home, and “non-urgent” cases within 1 week. Doctors and allied health professionals are also able to refer outpatients needing follow-up via the same system.

Recruitment, selection, and training

Considerable time is spent on the recruitment process and training. In Zithulele, Mentor Mothers were recruited using a combination of nomination by community leaders, interviews, written assessments, and observation of commitment and attitude during training. A Mentor Mother candidate must be a “positive deviant”³³ i.e. have raised a healthy child despite poverty, and be respected by her community. The final decision regarding whether a Mentor Mother candidate is suitable for the position is made only after the supervisor has had a chance to observe the candidate during a six-week training period in which, for example, punctuality, empathy, attitude towards peers, social competence, engagement, and desire to help others are observed. Though Mentor Mothers are not required to meet a specific academic standard to be selected, Mentor Mothers must be able to complete brief contact reports, which include the results of weighing the children, mother’s report of any alcohol use, depression, and risk signs of problematic pregnancies. Mentor Mothers are selected predominantly for their exceptional social skills, organisational abilities, and abilities to bond with peers. Mentor Mothers must possess basic reading comprehension skills in order to complete forms and checklists.

The training is a combination of theoretical in-classroom training and practical field-work that addresses three areas: (1) how to engage and establish a good relationship with a family, (2) content addressing the health problems that affect their clients, and (3) cultural tailoring that is relevant to the local community. Candidates are trained in how to enter a household, build a relationship, and work with a mother and father (if present) to change behaviours to benefit their family. Mentor Mothers are taught specific knowledge of maternal and child health and nutrition, HIV and TB, mental health, and early childhood development. Mentor Mothers continue to attend monthly follow-up training sessions, receiving continuous in-service training in the field by supervisors.

Implementation

Each Mentor Mother is allocated a geographical area with about 500 households, usually where the Mentor Mother lives. They go from house to house carrying robust electronic scales and offer to weigh children in each household. Weights are plotted on a growth chart, which enables the Mentor Mother to identify underweight children. These and other children with special needs, as well as pregnant mothers, are invited to participate in the intervention programme, an invitation which is accepted in 98% of cases. Use of scales makes entry into the homestead easier, as mothers are often keen to weigh their children, and discussions about the growth curve initiate talks about child health in general.

Underweight children are followed closely with regular home visits until fully rehabilitated. Rehabilitation is achieved by supporting mothers and giving them advice about using available resources in the best possible manner for their children; food supplements or other "hand-outs" are given only in emergencies. Mentor Mothers aim to prevent the occurrence of severe malnutrition through early identification and intervention. Initial evidence indicates that although home-based rehabilitation of malnourished infants may be slower than inpatient programmes, it is ultimately better sustained.⁴¹ In Cape Town, after a year of intervention, the malnutrition rates in the Philani intervention areas were half those of the control areas.^{17,19}

Pregnant women are given information on mother and child nutrition, birth preparation, and, above all, the importance of attending antenatal care. The importance of HIV testing and participation in HIV treatment programmes during pregnancy is stressed. After the birth, the newborn and mother are followed up for a minimum of two years, in order to support appropriate feeding choices, with exclusive breast-feeding strongly encouraged, and to monitor growth. If the mother is approached with respect, and trust is built between a Mentor Mother and the community, it is possible to change behaviour at home that benefits the health of the mother and child.¹⁶⁻¹⁹

Although the entrance to a family is through a child or pregnant woman, other health issues and social problems in that family are addressed. For example, Mentor Mothers treat diarrhoea, worm infestation, and skin problems as well as distribute vitamin A and assist in accessing social grants. They refer children to clinics for immunisations, and adults and children to local clinics or the hospital for TB and HIV testing as appropriate; they encourage TB and HIV treatment adherence and hospital attendance for other serious illnesses. They provide follow-up after clinic and hospital care, help families understand health information given, and assist with problem-solving the health and social challenges of daily living. An evaluation of the Cape Town-based Philani Mentor Mother

Programme shows statistically significant better health outcomes for mothers and children in homes visited by Mentor Mothers.^{17,19}

Results

At present, the Zithulele programme has 50 Mentor Mothers working in the Zithulele hospital's catchment area. Between February 2013 and July 2014, these Mentor Mothers have admitted close to 2 000 families with either pregnant women or children with special needs (underweight for age, affected or infected by HIV, abandoned, abused, etc.) to the programme. These Mentor Mothers carry out close to 5 000 home visits per month. Nearly half (45%) of the pregnant mothers in the programme have one or more risk factors, such as being HIV-positive, under the age of 18, using alcohol during pregnancy, or presenting with high blood pressure or diabetes. Nearly a third (31%) of pregnant women are HIV-positive, and almost all of them (99.5%) are on antiretroviral (ARV) therapy during pregnancy. By the age of three months, 71.5% of HIV-exposed children have been tested for PCR. The exclusive breast-feeding rate at 3 months is 26.5%, which, although low, is much higher than the South African national rate of 4%–8%. Only 6% of children were born with a low birth weight. After 3 months in the programme, 32.5% of the underweight for age children were fully rehabilitated, and another 44% were improved.

Case studies (names used are not the participants' real names)

Ntombi's family outlines a typical case, in which a range of factors are seen to impact the child's health. As can be seen, she was transferred smoothly and quickly to a higher level of care as needed and followed up at the community level on her return. The immediate medical needs as well as long-term social challenges were dealt with, and the result was a healthier, normal-weight child and the prevention of repeat admissions.

Ntombi's family

Ntombi is an 18-month-old girl cared for by her grandmother, with whom her mother left her when she was a baby. She was never breast-fed, and now lives on a diet of isidudu (watery maize porridge). The grandmother does not yet receive a pension and cannot apply for a child support grant (CSG) for Ntombi, as the child has no Road to Health Card. There is no regular household income, although the grandmother occasionally gets "piece jobs" helping neighbours do washing and make bricks. Ntombi, her two older siblings aged three and five, and her grandmother frequently go hungry.

A Mentor Mother visited the family and immediately referred Ntombi to the clinic for being underweight. She was dewormed, diagnosed with TB, and started on treatment. The Mentor Mother provided the grandmother with information about healthy food and hygiene, but the family did not have the necessary resources to follow her advice.

Following up with Ntombi, the Mentor Mother noticed that the child had diarrhoea, was listless, and showed signs of swelling of both legs. She phoned her supervisor, who discussed the case with a doctor at the hospital. It was agreed that the child should come in to the hospital, and the Mentor Mother wrote a referral note for her. On examination, the doctor diagnosed Ntombi with early kwashiorkor and admitted her to the ward, where she stayed with her grandmother for two weeks, while a relative cared for the other children at home.

While Ntombi was in the ward, the hospital arranged a replacement for her lost Road to Health Card, and her grandmother was able to apply for a birth certificate when Home Affairs visited

the hospital on its weekly outreach. She was subsequently able to apply for the CSG, and the Mentor Mother advised her on alternative documentation needed to get birth certificates for the older two children, who also did not have Road to Health Cards.

On discharge, Ntombi was referred back to her local Mentor Mother for follow-up and was visited within a week. A food parcel was delivered to tide the family over until the CSG grant was paid. Eventually all three children were receiving grants. The Mentor Mother helped the grandmother to include nutritious food in their monthly budget and make sure Ntombi finished her TB treatment.

Although it was some time before Ntombi reached a normal weight, her growth was sustained from the time of her return from hospital. Having been taught good hygiene by the Mentor Mother, the grandmother was able to prevent Ntombi's diarrhoea from returning too frequently, which also supported her growth.

Mrs Dyakophu

Mrs Dyakophu is HIV-positive, suffering from spinal TB, and bedridden. She is the mother of a 17-year-old daughter, Masini, and has a granddaughter, Anelisiwe, who is seven months old. Their one-room hut had holes in the roof and was in a state of disrepair. Masini did not have enough clothing to keep her daughter warm, dry, and clean, and she was not coping well.

A Mentor Mother visited the household and weighed Anelisiwe, who looked hungry and wet. Anelisiwe was suffering from kwashiorkor, TB, asthma, had sores all over her body, and her feet and face were swollen. She was taken to hospital and admitted. The Mentor Mother also discussed Mrs Dyakophu with the hospital staff, and was encouraged to bring her in for assessment. Both the grandmother and grandchild were in the hospital for two months.

Mrs Dyakophu had no ID book and no means to support her family. The Mentor Mother connected her with a social worker who helped her get a birth certificate and ID and apply for a disability grant. Masini also applied for her birth certificate and ID, and a CSG for Anelisiwe.

With this income they have been able to improve their hut and are now living in better conditions. They have applied for a house closer to the road to be able to get to the clinic more easily to collect their treatments. Mrs Dyakophu now has a wheelchair and is looking healthy. Anelisiwe is no longer malnourished, and Masini is coping much better.

The Makhwenkwana family

The Makhwenkwana family lived in a single-room home in the remote rural village of Sizendeni. A pregnant, HIV-positive, 20-year-old woman taking ARVs, a 16-year-old with TB, and a small child suffering from TB lived with both their mother and a violent and abusive father.

A Mentor Mother visited the family and started to open folders for the pregnant woman and the child but could not finish on that day because the daughters were nervous their father would arrive home. He did not want any people entering the house, especially if they were perceived to be part of the health department. However, the Mentor Mother returned with her supervisor the next day, and they were able to admit both daughters and the child to the Philani programme.

The 20-year-old woman had multiple health problems and was referred to the hospital, where she was admitted and stayed for more than two weeks. On the follow-up visit she appeared healthier and looked less pale and weak.

On another visit, the 16-year-old disclosed she had defaulted on her TB treatment due to lack of money to get to the clinic, and her child was discovered to be underweight for its age. Through the Philani programme, the Mentor Mother arranged and paid for her transport to the hospital. There, the teenage mother was restarted on TB treatment, and the child was admitted for 10 weeks.

Finally, arrangements were made and funding provided for the mother, her two daughters, and grandchild to move to Zidindi, the village where the mother had grown up, and over an hour away from the abusive father, who did not want anything to do with the Philani programme or Department of Health. The women are now taking their treatment, no longer defaulting, and have a chance for a normal and healthy life.

Nosiphelo

A Mentor Mother was phoned in the middle of the night by the family of Nosiphelo, who had just delivered at home and was bleeding heavily. At this time of night, there was no transport available to the woman at all. The Mentor Mother woke up the Philani programme manager, and they drove to Nosiphelo's house and brought her to the hospital. Once there, doctors attended to her urgently, and they were able to stop the blood loss. Her life was saved, and her baby now has a mother and a better chance to live a healthy life.

Conclusion

This article has outlined a model for integrating CHWs with PHC clinics and hospital health teams to improve maternal and child health that has had success in its early stages in a rural area. In rural sites, especially in low-income countries, care is often fragmented between a free-standing hospital and independent clinics, with no community outreach services.^{39,42} In contrast, Zithulele Hospital "stands out for its commitment and excellence in health delivery" by integrating care and training within the district.^{39,42–45} Nine years ago, fewer than 50% of women in this area delivered in hospital; now the number of women delivering in the hospital has reached 89%, and perinatal mortality has dropped by almost 50%.³⁴

While it is hoped that this model might be replicable elsewhere, it is important to acknowledge factors unique to Zithulele which contribute to its feasibility. Success can be attributed to work done building relationships with health teams at different levels of the health care system, as well as having shared goals and supportive clinic and hospital leadership.^{34,39} In this instance, the intervention was supported by the Department of Health and requested by the senior hospital doctors, who have led a focused effort to improve perinatal outcomes.³⁴ The enthusiastic support by chiefs and headmen for the programme and the welcoming attitudes of families in the area have made Mentor Mothers feel respected and appreciated, easing the burden of a difficult job.

This programme is highly dependent on the knowledge of the Mentor Mother, the quality of the intervention, and the ability of the Mentor Mother to build relationships with the families in her care. Mentor Mothers walk long distances on foot to reach vulnerable and marginalised homes, and face illnesses, destitution, and great hardship. Careful recruitment, continuous training, supervision, and support are essential factors in making it possible for Mentor Mothers to fulfil their role within the PHC system effectively.

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