The experience and motivations of Safe Motherhood Action Group volunteers in rural Samfya, Zambia: An exploratory study

Research Report

Rachael Brennan
Jaya Dantas
Anitha Menon

2016
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Cover page: SMAG volunteers perform educational dramas at community meetings

Title page: SMAG volunteer supports mother and child with transportation and information

Pictures in this report provide a Zambian context and include SMAG volunteers but do not represent those who participated in the research.

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Preface and Acknowledgements

This report presents the findings of a pilot study that was conducted by Rachael Brennan as part of her Masters of International Health at Curtin University, Australia. It was supervised by Professor Jaya Dantas, Curtin University, and Dr Anitha Menon, University of Zambia.

The study adds to the body of knowledge about Community Health Workers by providing a perspective from Safe Motherhood Action Group volunteers on their experience and motivations for participation in maternal health programs in Zambia. It is hoped that the information will help inform government, program partners, health workers and community health volunteers with the goal of strengthening partnerships, and improving program sustainability and volunteer satisfaction.

The lead author thanks her supervisors Professor Jaya Dantas and Dr Anitha Menon for guidance in the research process, and the cultural advisory team, Mr Musunga Nkandu, Ms Betty Kunda, Ms Frances Mbewe and Ms Ashley Riley. She also thanks the professional guidance team, Ms Maggi Machala, Dr Lisa Huff and Ms Linda White for their editorial review and medical and nursing input, as well as personal support.

Appreciation is extended to the US Peace Corps Response, SMGL partnership, Ministry of Health, Provincial Health office and District Health Office. Finally, and especially, she thanks the SMAG volunteers and other interviewees who participated enthusiastically and openly.

The project was self-funded by Rachael Brennan, as part of her Master’s in International Health course through the International Health Programme, School of Nursing, Midwifery and Paramedicine, Curtin University and conducted while serving as a US Peace Corps Response Volunteer on the Saving Mothers, Giving Life program.

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Experience and motivation of SMAGs, rural Samfya, Zambia

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Introduction

Community Health Workers (CHWs)

There is a long history of use of CHWs, popularised since the Alma Ata Declaration (WHO, 1978). They continue to play an important role in sub-Saharan Africa which faces under-resourced health systems, and have been utilised in programmes such as surveillance, vaccine and medicine distribution, HIV/AIDS and home based palliative care, community health, newborn and child health, family planning and maternal health. CHWs can be effective at health education, instigating behaviour change, surveillance and delivering basic preventative and curative services at community level. Use of well trained and supported CHWs has strengthened primary health care systems and helped reduce maternal and child mortality and numerous programmes relying upon CHWs are now being scaled up throughout sub-Saharan Africa (Ludwick, Brenner, Kyomuhangi, Wotton, & Kabakyenga, 2014; Perry et al., 2016).

Zambian Context

Zambia is a stable, democratic central sub-Saharan country that reached lower middle income-status largely as a result of copper exports (World Bank, 2014). Its population of nearly 15 million faces wide economic disparities with 60% of the population living below the poverty line (World Bank, 2014). Rural areas are most impacted by poverty, characterised by deprivations of food, water, sanitation, health, shelter, education and information and nationally malnutrition is the fourth leading cause of death, behind HIV, malaria and respiratory infections (CDC, 2013). Despite achievements in reducing maternal mortality rates by 45% from 1990 to 2013, currently maternal deaths still account for 10% of all deaths among women of child bearing age (CSO, 2015, p. 247) and Zambia did not meet the maternal health MDGs for 2015.

Zambia’s 10,996 person health workforce gap in 2010 (MOH Zambia, 2011) has been bridged with a myriad of government and non-government programmes supporting community health volunteers in various capacities including HIV/AIDS care, malaria control, under-5 care and growth monitoring (MOH Zambia, 2010). Use of trained traditional birth attendants (TBAs) and the introduction of community based maternal health volunteers in groups known as Safe Motherhood Action Groups (SMAGs) have been important for addressing the lack of trained midwives and nurses (Kruk & Galea, 2013; UNDP, 2013, p. 35). Since their introduction in Zambia in 2003, SMAGs have been utilized nationally (Ensor et al., 2014), but their training and provision of equipment has often depended on a range of external partners.

Safe Motherhood Action Groups

Essential roles that SMAGs perform include increasing community demand for maternal health services through community education, supporting access and transport to health centres and maintaining registers of pregnancies, births, referrals and maternal and newborn deaths (Ensor et al., 2014). They accomplish these through providing regular outreach and community sensitisation activities, encouraging birth plans, teaching pregnancy danger signs, accompanying or providing transport assistance for women to deliver at health centres, and encouraging antenatal attendance (Kruk & Galea, 2013). In an external evaluation of the maternal health programme Saving Mothers, Giving Life (SMGL) implemented in Luapula Province, demand creation for maternal health services by SMAGs was perceived to be the second most important success of the programme, and awareness of the outreach activities conducted by SMAGs was by far the most well-known maternal health intervention in the districts where they operated (Kruk & Galea, 2013, p. 26).

Understanding the experience and motivations of SMAG volunteers is important for programme design and sustainability and to minimise costs and impacts of dissatisfaction or attrition, and to avoid exploitation in the context of high levels of poverty. The present pilot study explored the experience and motivations of SMAG volunteers in rural Samfya District, within Luapula Province, Zambia. It described the demographic and socio-economic circumstances of male and female SMAG volunteers, identified roles and activities undertaken, and explored factors affecting motivation. Recommendations are provided based on current study in the light of current literature.
Literature Review

A range of studies in the past five years have reviewed motivations and experience of CHWs in family planning (Brunie et al., 2014), maternal health (Gisore et al., 2013; Mpembeni et al., 2015; Roberton et al., 2015), newborn and child health (Abbey et al., 2014; Kasteng, Settumba, Källander, & Vassall, 2016; Ludwick et al., 2014), as well as community health (Greenspan et al., 2013; Takasugi & Lee, 2012). Attrition rates for CHWs varies widely, from 40% after 3 months (Gisore et al., 2013), to 21.2% over 30 months (Abbey et al., 2014), to just 14% after more than 5 years (Ludwick et al., 2014).

The complex interplay of factors contributing to attrition can be analysed through a framework of internal factors, including personal circumstances and life events, and external factors, including community, society and government and programme related factors (Abbey et al., 2014). Factors that supported motivation include appropriate selection of volunteers (Abbey et al., 2014; Gisore et al., 2013; Maes, 2012) personal pride at skills and competence (Brunie et al., 2014; Mpembeni et al., 2015) and seeing health improvements (Brunie et al., 2014; Ludwick et al., 2014). External factors that were frequently found to contribute to frustration and demotivate included lack of transport (Brunie et al., 2014; Mpembeni et al., 2015; Takasugi & Lee, 2012), inadequate supplies and equipment (Greenspan et al., 2013; Mpembeni et al., 2015), inadequate reimbursements or allowances (Brunie et al., 2014; Kasteng et al., 2016; Mpembeni et al., 2015) and excessive workload (Brunie et al., 2014; Ludwick et al., 2014).

Community perceptions could be motivating where approval, recognition or prestige were earned (Abbey et al., 2014; Brunie et al., 2014; Mpembeni et al., 2015) or demotivating when community was demanding, had unrealistic expectations or devalued the work (Abbey et al., 2014; Greenspan et al., 2013). Adequate training and good supervision were also found to contribute to satisfaction (Brunie et al., 2014; Mpembeni et al., 2015) but could be demotivating when not provided appropriately (Brunie et al., 2014; Gisore et al., 2013).

Methods

Methodology and Conceptual Framework

This ethnographic research was conducted using a rapid participatory assessment approach, chosen to maximise the opportunity to partner with and empower study participants, and thereby reveal an emic or insider perspective and describe the cultural environment of SMAGs in rural Zambia. The conceptual framework utilized in the present study for the collection and analysis of data in the present study was articulated by Abbey et al. (2014) in a study of the motivations of community based newborn and child health workers in Ghana, and categorised motivations as internal or external factors each contributing to attrition among CHWs. The framework was utilised for development of the research tools, and analysis of the data necessitated expansion and further categories.

Setting

The study was conducted in predominantly rural Samfya District, in Luapula Province in north-western Zambia. In 2016 Samfya District had an estimated population of 206,338 and projected 11,136 pregnancies (Samfya District Health Office, 2016). At the time of the study the district had a level one district hospital, two mission hospitals, 27 health centres and two health posts. Since 2009, at least 20 SMAG volunteers had been trained at each of 26 of the health centres and one health post by numerous partners including Africare1, UNFPA2, ZISSP3, and Jhpiego4, and further training is planned for 2016 by CHAZ5.

1 Africare as part of Integrated Maternal and Child Health Project funded by New Zealand Aid Program
2 United Nations Population Fund
3 Zambia Integrated Systems Strengthening Programs, an Abt Associates led project funded by USAID (2010-2014).
4 Jhpiego, an affiliate of John Hopkins University
5 Churches Health Association of Zambia
Data Collection

Data collection was conducted in April and May 2016. Data was obtained from questionnaires, focus groups, in-depth interviews, direct observations, District Health Office records review, literature review and discussions with the professional and cultural reference group. Three rural health centres where SMAGs had been trained were selected to represent the northern, peninsula, and southern regions of the district. The three health centres served small (less than 5,000), mid-size (between 5,000 and 10,000), and large (over 10,000) catchment populations, and averaged 39 km from the nearest hospital.

Recruitment and participants. At each health centre, facility staff invited all active SMAG volunteers to participate. Each was informed about the study in English and local language, and all chose to participate and completed consent forms. Consistent with Zambian ethics guidelines, travel and/or lunch allowances of ZMW 30 (USD 3) were paid to participants.

Questionnaires were completed by 65 (32 male, 33 female) SMAG volunteers; 19 at the first centre, 20 at the second centre and 26 at the third centre. Participants had the opportunity to complete the questionnaire verbally in Bemba or English, or to have another volunteer assist or to complete it themselves, and most chose to complete themselves in small discussion groups. Focus group participants were all the female SMAG volunteers at one centre (9), all the male SMAGs at one centre (10), and 6 male and 4 female SMAGs, (selected randomly by drawing names), at the remaining centre. Focus groups were conducted in English with an interpreter translating and were audio-recorded.

In-depth interviews were conducted with five (3 male, 2 female) SMAGs purposively selected to represent both executive SMAG members and general members, male and female, trained and untrained and residing close to and more distant from their rural health centre. Interviews were conducted in English or with a Bemba interpreter at the interviewee's preference and audio-recorded. Key informant interviews were conducted in English and audio-recorded with a staff member from each of the health centres and a Master Trainer of SMAGs working in the district.

The research team. Prior to data collection, the primary researcher resided in Samfya District for 11 months as a Peace Corps Response Volunteer working on the SMGL programme. The research was self-funded, and supported by a seven-person Zambian and American professional and cultural reference team, including two research assistants.

Data Analysis

Data was collected in April and May 2016. All data from questionnaires, focus groups, interviews, observations and document review was compiled, translated as necessary, transcribed and checked, and has been retained for review. Emerging themes were identified by analysis of questionnaire data and iterative categorization of segments from transcripts. The conceptual framework of motivational factors for CHW articulated by Abbey et al., (2014) was used to initially categorize the data, and was expanded to accommodate data collected. SMAG volunteer information was triangulated with key informant interviews and document review, and findings were reviewed with the professional and cultural reference team and validated through a final member check with SMAG volunteers from the three centres.

Ethical Approval

Australian and Zambian ethics approval was sought and obtained through Curtin University Human Research Ethics Office (RDHS-20-16) and University of Zambia Biomedical Research Ethics Committee (012-02-16). Authority to conduct research was obtained from the Zambian National Health Research Authority through the Ministry of Health, and approvals obtained from Provincial and District Health Offices. To protect participant anonymity the health centres participant information has been de-identified.
Findings

This section presents the research findings organised by internal and external factors outlined in the conceptual framework, and outlines key themes emerging from the data.

Internal Factors: Personal

Demographic data is summarised below in Table 1.

Table 1: SMAG volunteer demographics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>Number and proportion of SMAG volunteers (n=65)</th>
<th>Male (n=32)</th>
<th>Female (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td>100%</td>
<td>49%</td>
</tr>
<tr>
<td>Age (mean years, SD, range)</td>
<td>45.2, 10.9, 26-87</td>
<td>45.1, 11.9, 26-87</td>
<td>45.2, 10.0, 29-62</td>
</tr>
<tr>
<td>&lt;30</td>
<td>(3) 5%</td>
<td>(1) 3%</td>
<td>(2) 6%</td>
</tr>
<tr>
<td>30-39</td>
<td>(19) 29%</td>
<td>(9) 28%</td>
<td>(10) 30%</td>
</tr>
<tr>
<td>40-49</td>
<td>(22) 34%</td>
<td>(14) 44%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>50-59</td>
<td>(15) 23%</td>
<td>(5) 16%</td>
<td>(10) 30%</td>
</tr>
<tr>
<td>&gt;59</td>
<td>(6) 9%</td>
<td>(3) 9%</td>
<td>(3) 9%</td>
</tr>
<tr>
<td>Children (mean number, SD, range)</td>
<td>6.5, 3.0, 0-18</td>
<td>7.0, 3.3, 1-18</td>
<td>6, 2.7, 0-12</td>
</tr>
<tr>
<td>0-3</td>
<td>(11) 17%</td>
<td>(6) 19%</td>
<td>(5) 15%</td>
</tr>
<tr>
<td>4-6</td>
<td>(22) 34%</td>
<td>(10) 31%</td>
<td>(12) 36%</td>
</tr>
<tr>
<td>7-9</td>
<td>(23) 35%</td>
<td>(11) 34%</td>
<td>(12) 36%</td>
</tr>
<tr>
<td>10+</td>
<td>(9) 14%</td>
<td>(5) 16%</td>
<td>(4) 12%</td>
</tr>
<tr>
<td>Household size (mean number, SD, range)</td>
<td>8.7, 3.1, 2-21</td>
<td>9.2, 3.6, 4-21</td>
<td>8.2, 2.5, 2-13</td>
</tr>
<tr>
<td>0-6</td>
<td>(12) 18%</td>
<td>(4) 13%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>7-9</td>
<td>(28) 43%</td>
<td>(15) 47%</td>
<td>(13) 39%</td>
</tr>
<tr>
<td>10-12</td>
<td>(22) 34%</td>
<td>(11) 34%</td>
<td>(11) 33%</td>
</tr>
<tr>
<td>&gt;12</td>
<td>(3) 5%</td>
<td>(2) 6%</td>
<td>(1) 3%</td>
</tr>
<tr>
<td>Education* (mean years, SD, range)</td>
<td>8.2, 2.4, 0-14</td>
<td>9.0, 2.3, 3-14</td>
<td>7.5, 2.2, 0-12</td>
</tr>
<tr>
<td>None</td>
<td>(1) 2%</td>
<td>0%</td>
<td>(1) 3%</td>
</tr>
<tr>
<td>Grade 1-6</td>
<td>(8) 12%</td>
<td>(2) 6%</td>
<td>(6) 18%</td>
</tr>
<tr>
<td>Grade 7</td>
<td>(18) 28%</td>
<td>(8) 25%</td>
<td>(10) 30%</td>
</tr>
<tr>
<td>Grade 8-9</td>
<td>(22) 34%</td>
<td>(11) 34%</td>
<td>(11) 33%</td>
</tr>
<tr>
<td>Grade 10-12</td>
<td>(14) 22%</td>
<td>(10) 31%</td>
<td>(4) 12%</td>
</tr>
<tr>
<td>College</td>
<td>(1) 2%</td>
<td>(1) 3%</td>
<td>0%</td>
</tr>
<tr>
<td>Main household income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farming</td>
<td>(51) 78%</td>
<td>(26) 81%</td>
<td>(25) 76%</td>
</tr>
<tr>
<td>Farming and other</td>
<td>(9) 14%</td>
<td>(5) 16%</td>
<td>(4) 12%</td>
</tr>
<tr>
<td>Other</td>
<td>(5) 8%</td>
<td>(1) 3%</td>
<td>(4) 12%</td>
</tr>
</tbody>
</table>

SD= Standard Deviation
* Two female participants noted "secondary" for education and it was assumed to be grade 8 which is the first year of secondary school. College was assumed to be a 2 year diploma. One female did not respond to the question.
** One female participant did not respond to the question. Other stated occupations were fishing, business, trading, casual daily employment, beer brewing, volunteer or counterpart, security, teacher, housewife and counsellor
*** One male participant did not respond to the question

Questionnaires were completed by 33 female and 32 male SMAG volunteers. The age range was from 26 to 87; both males and females had an average age of 45 years. All but 7 of the 65 participants were married; 3 were single, 2 were divorced and 2 were widowed. SMAG volunteers had an average of 6.5 children each (male n=7, female n=6), with a range from 0 to 18 children. The average household size was 8.7 people and usually included spouse, children and sometimes grandchildren or other family members. The smallest household was two people and the largest was 21. Housing, typical of rural Zambia, was on small family compounds, with buildings of handmade brick with grass thatching, with water obtained from wells, rivers, lakes and boreholes. The staple food is nshima, made from cassava or maize, consumed with relish made with greens or vegetables. Participants noted limited consumption of fish and meat due to the expense.
Education levels ranged from "no education" to "college". The mean years of education was 8.2 (male 9 years, female 7.5 years). Farming was the main source of income for 60 of the 65 participants. Other sources of household income were fishing (n=6), teaching, business, government employee, cleaner, hair plaiting, children, brewing beer and making traditional drink (n=1 for each). SMAG volunteers reported basic subsistence income; a good monthly household income was ZMW 1,000 (approximately USD 100) and others reported usually earning less than half of that. Challenges reported included raising money to pay school fees, to purchase fish or meat, or buy fertiliser for crops. Such findings are consistent with high levels of extreme poverty in rural Luapula.

Internal Factors: Life Events

Moving for work, livelihood or school was identified as a life event that affected volunteering. For fishing families, which was estimated at 30-50% of the population in the peninsula area, entire families would camp for a month or more at a time to fish. The nomadic fishing lifestyle raised many volunteer, programmatic and transport issues and identified a need for further research on the needs of SMAG volunteers and community based maternal health programmes in water-based districts such as adjoining Lunga District. However as the majority of volunteers in this study were farmers it was outside the scope of the current study.

External Factors: Community

Approval by community. Community responses to the SMAG programme were largely positive and improved over time as the programme was established. SMAG volunteers reported that community approval and appreciation was a positive factor for their service.

"One thing I love about being a SMAG is that when you are passing around in the community, people really appreciate you." -- Female focus group

Having an impact upon community was also found to be motivating, tapping into the volunteers’ passion for the programme and making a difference in the community. Even when the community was less supportive, strong personal beliefs in the benefits of the programme helped some volunteers maintain high levels of motivation.

"We don't really care whether they laugh at us or not, because sometimes you come here, you'll be here for three days without food or anything to eat, and just be here. And we are going to eat when you go back home. But we don't care." --- Female focus group

Approval by friends and family. Supportive family members were important, and sometimes made the difference between volunteering or not. Within the female focus group a number of women reported very supportive husbands, an important factor in Zambian culture where males
hold decision making power in relationships. Support and teamwork among the SMAG volunteers was also a positive factor.

**Job opportunities.** There was little expectation among the SMAG volunteers that their role would lead to a job opportunity or career development. However, the possibility of being sent to trainings, especially where it included transport and lunch allowances was a motivation recognized by SMAG volunteers and clinic staff alike. Some SMAG volunteers, especially those with overlapping roles as CHWs or child growth monitors appreciated ad-hoc work at activities such as Child Health Week or malaria activities where they received daily allowances.

**External Factors: Society and Government**

**Culture.** Strong Christian values and close family connections served as motivation for SMAG volunteers. Many volunteers embraced shifting cultural norms, becoming agents for change, and addressing traditional beliefs such as death in childbirth being a sign of paternal infidelity:

"We also go in the community to teach about the importance of leaving those old ideas of doing things and coming to the new healthy and medical way of life." -- Male focus group

Although strongly defined culturally appropriate gender roles meant that the support provided by male and female SMAG volunteers differed, the inclusion of both male and females was universally popular, with all acknowledging the importance and value of working together.

**Policies.** Since 2006, Zambia has implemented free health care to reduce barriers to accessing services. Although recognized as a positive step for addressing maternal health needs, especially in impoverished rural areas, the increased access to health care has increased staff workloads, and reduced available resources in health facilities (Carasso, Lagarde, Cheelo, Chansa, & Palmer, 2012).

This policy has direct impacts on SMAG volunteers because community members see them as part of the health system and therefore obliged to provide free services.

Previously, when TBAs conducted home deliveries they were paid a small fee from the community, or sometimes in-kind through gifts or labour in the fields. However, the policy changes has meant that neither SMAG volunteers nor TBAs can now expect payment from the community.

**External Factors: Programme Related**

Participant questionnaire responses regarding transport, equipment and trainings are summarized in Table 2 below.

**Distance to health centre and transport.** Participants lived between 100 metres to 15 kilometres from the nearest health centre, with a mean distance of 4.5 kilometres (male 4.4km, female 4.7km). None had motor vehicles or motor cycles, and sometimes bicycle access was shared or rented. 66% of SMAG volunteers (72% male, 61% female) usually travelled by foot.

**Selection and training.** The training provided at the three health centres were all conducted at different times by different partners, but each was based on the standardized National SMAG Training Manual. SMAG trainings were conducted over five days at the health centre by a team of SMAG trainers, accompanied by a SMAG Master Trainer, who is both a SMAG trainer, and a trainer of trainers. The partners and District Health Office staff usually work with the centre staff to identify 20 community members for training. Selection criteria include people who are already active in the community, have an interest in health, such as TBAs and traditional healers are willing to work without pay. Groups are gender balanced and include representatives from each zone of the health centre catchment area.
At one centre all of SMAG volunteers had been trained; 8 initially in 2009 by Africare, with follow-up training from Jhpiego in 2014; 11 reported their first training was with Jhpiego in 2014. At the second centre, 7 were first trained in 2009 by Africare, with 5 of them attending follow up training in 2011 or 2013 from UNFPA, and only one person receiving two follow-up trainings. 7 more were first trained in 2011, and all received follow up training in 2013. A further 5 were first trained in 2013 and one was untrained. At the third centre, 1 reported being first trained in 2013, 21 in 2014 by Jhpiego, and 4 were untrained with no follow up training.

At only one of the centres was the current staff involved with the selection and training of the SMAGs and that involvement was reported as positive, and assisted with the ongoing supervision and selection of replacement SMAG volunteers as needed. Staff reported that the selection criteria included youths (between 15 and 35), but the youths selected were lost to the group when they left for school. The importance and retention of young volunteers may be an area for further research and follow-up.

### Table 2: SMAG programme related factors

<table>
<thead>
<tr>
<th>Distance (km) to health centre</th>
<th>Proportion of SMAG volunteers (n=65)</th>
<th>Male (n=32)</th>
<th>Female (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (mean distance, SD, range)</td>
<td></td>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td>0-2 km</td>
<td>4.5, 3.7, 0.1-15</td>
<td>4.4, 3.2, 0.2-15</td>
<td>4.7, 4.1, 0.1-15</td>
</tr>
<tr>
<td>3-4 km</td>
<td>(32) 49%</td>
<td>(12) 38%</td>
<td>(10) 30%</td>
</tr>
<tr>
<td>5-7 km</td>
<td>(19) 29%</td>
<td>(11) 34%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>&gt;8 km</td>
<td>(14) 22%</td>
<td>(6) 19%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>Usual transport *</td>
<td>(10) 15%</td>
<td>(5) 16%</td>
<td>(5) 15%</td>
</tr>
<tr>
<td>Foot</td>
<td>(43) 66%</td>
<td>(23) 72%</td>
<td>(20) 61%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>(14) 22%</td>
<td>(6) 19%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>Foot/bicycle</td>
<td>(7) 11%</td>
<td>(2) 6%</td>
<td>(5) 15%</td>
</tr>
<tr>
<td>When attended first SMAG training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>(5) 8%</td>
<td>(2) 6%</td>
<td>(3) 9%</td>
</tr>
<tr>
<td>2009</td>
<td>(15) 23%</td>
<td>(8) 25%</td>
<td>(7) 21%</td>
</tr>
<tr>
<td>2011</td>
<td>(7) 11%</td>
<td>(4) 13%</td>
<td>(3) 9%</td>
</tr>
<tr>
<td>2013</td>
<td>(6) 9%</td>
<td>(3) 9%</td>
<td>(3) 9%</td>
</tr>
<tr>
<td>2014</td>
<td>(32) 49%</td>
<td>(15) 47%</td>
<td>(17) 52%</td>
</tr>
<tr>
<td>Follow-up training(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>(43) 66%</td>
<td>(20) 63%</td>
<td>(23) 70%</td>
</tr>
<tr>
<td>Attended (2011-2014)</td>
<td>(22) 34%</td>
<td>(12) 37%</td>
<td>(10) 30%</td>
</tr>
</tbody>
</table>

SD=standard deviation  * One male did not respond

**Communication.** Participants were asked if they could be contacted by phone and 61.5% could. There was a disparity between the percentage of males (81%) and females (42%) contactable by phone.

**Supervision.** Supervision from partners and from health centre staff were reported as motivating for the SMAG volunteers, even when the supervision meant correcting their errors or requesting monthly reports. The SMAGs reported different levels of supervision and support at the different health centres and greater supervision and involvement of staff was perceived positively. Attendance and public support at community meetings was positive, as was being recognized by staff at the health centre.

At one health centre the staff was only involved with quarterly planning meetings, at the second they attended monthly meetings but at both those centres the staff had not attended SMAG training. At the third centre there was more regular involvement, including attending zonal community meetings with the SMAG volunteers. The health centre where staff had trained with the SMAG was the most involved and retained the highest number of active SMAGs.

Lack of supervision and lack of follow-up from partners was perceived as negative. At the time of the research, there had been a lapse in partner involvement in the programme for nearly 12 months.
**Remuneration.** The SMAG programme does not provide remuneration to the volunteers, beyond that of travel and lunch allowances during training and the provision of some equipment and essentials for work. During focus groups and interviews participants acknowledged and accepted the volunteer status of their role.

"Another thing that demotivates, is after training us in 2014, they never came back. They left and they left for good. They just left the jackets with us and everything. And they left and they never came back. So it would be nice if they visited us once in a while just to encourage us." -- Female focus group

However, provision of food, travel and meal allowances during trainings was a very much appreciated and a sought after benefit and many requested support through allowances, income generating activities or assistance with fertiliser for crops.

"It's like this, because we chose this work. Because we chose this, we are volunteering so we don't really expect payment in any way, whether you spend a week at the health facility or hospital waiting for someone to deliver, it doesn't matter." -- Female focus group

**SMAG activities.** Participant responses regarding their level of SMAG activity and types of activities regularly undertaken are summarised below in Table 3.

*Table 3: SMAG volunteer programme activities and levels*

<table>
<thead>
<tr>
<th>Programme Related Characteristics</th>
<th>Proportion of SMAG volunteers (n=65)</th>
<th>Male (n=32)</th>
<th>Female (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity level in past three months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely active (some SMAG work most days)</td>
<td>(25) 38%</td>
<td>(14) 44%</td>
<td>(11) 33%</td>
</tr>
<tr>
<td>Very active (some SMAG work most weeks)</td>
<td>(23) 35%</td>
<td>(10) 31%</td>
<td>(13) 39%</td>
</tr>
<tr>
<td>Active (some SMAG work most months)</td>
<td>(16) 25%</td>
<td>(8) 25%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>Slightly inactive (occasional SMAG work)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Inactive (little or no SMAG work)</td>
<td>(1) 2%</td>
<td>0%</td>
<td>(1) 3%</td>
</tr>
<tr>
<td><strong>SMAG programme activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organise community health meetings</td>
<td>(50) 77%</td>
<td>(26) 81%</td>
<td>(24) 73%</td>
</tr>
<tr>
<td>Assist at the clinic</td>
<td>(41) 63%</td>
<td>(17) 53%</td>
<td>(24) 73%</td>
</tr>
<tr>
<td>Escort pregnant women to the clinic</td>
<td>(58) 89%</td>
<td>(29) 91%</td>
<td>(29) 88%</td>
</tr>
<tr>
<td>Refer women to the clinic</td>
<td>(46) 71%</td>
<td>(22) 69%</td>
<td>(24) 73%</td>
</tr>
<tr>
<td>Visit to check on pregnant women, mothers and babies</td>
<td>(56) 86%</td>
<td>(28) 88%</td>
<td>(28) 85%</td>
</tr>
<tr>
<td>Community members visit your home for help (day and night)</td>
<td>(47) 72%</td>
<td>(23) 72%</td>
<td>(24) 73%</td>
</tr>
<tr>
<td>Maintain registers for your zone</td>
<td>(45) 69%</td>
<td>(23) 72%</td>
<td>(22) 67%</td>
</tr>
<tr>
<td>Attend monthly SMAG meetings and provide SCARF reports</td>
<td>(57) 88%</td>
<td>(30) 94%</td>
<td>(27) 82%</td>
</tr>
<tr>
<td>Work on income generating activities for your SMAG group</td>
<td>(34) 52%</td>
<td>(17) 53%</td>
<td>(17) 52%</td>
</tr>
<tr>
<td>Other tasks*</td>
<td>(13) 20%</td>
<td>(6) 19%</td>
<td>(7) 21%</td>
</tr>
</tbody>
</table>

SCARF=SMAG Community Activity Reporting Form

* Participants listed other activities including education in the community, discouraging home delivery, giving medicine to children under-five, PMTCT, cleaning the clinic and growing groundnuts

Participants were asked to describe their level of activity in the preceding three months, selecting from five categories ranging from extremely active to inactive. Only one participant responded that she was inactive (although she still reported escorting patients in past three months), and 64 others reported being active, very active and extremely active. All but one participant identified their regular SMAG activities. Although there was some variation by centre, the activities most undertaken were escorting pregnant women to the centre (89% of volunteers), attending monthly meetings and
provision of monthly zonal reporting (88%) and visiting to check on pregnant women, mothers and babies (86%).

One of the practices addressed by the programme was to discourage home births with traditional birth attendants (TBAs) in favour of skilled facility deliveries. Although male and female SMAG volunteers received the same training, different expectations of each remained and the focus groups and interviews revealed that female SMAG volunteers, not just TBAs, were frequently present, involved or conducting deliveries. Review of Samfya District Health Office records supported these claims. In 2015, 59% of deliveries district-wide were conducted at health facilities, but only 42% of deliveries were attended by skilled personnel.

The reported activities performed by male and female SMAG volunteers were similar although all reported appreciation for mixed gender teams. More women assisted at the clinic than men and men were slightly more likely to attend the monthly meetings and provide reporting. An area for further research might include analysing the differing roles and number of hours spent on SMAG activities by male and female volunteers.

Other community based roles and responsibilities. Participants were asked if they held additional volunteer or paid roles and all but one male and one female listed up to five additional responsibilities, with most holding two or more additional community based health roles: These are summarised below in Table 4.

More than two-thirds of the SMAG volunteers (male and female alike) served on a neighbourhood health committee (NHC). Other roles included community health workers (CHW), community based distribution of family planning (CBD), traditional birth attendant / tuberculosis agent (TBA6), mothers support group, lay counsellors and adherence counsellors (for HIV treatment). Roles noted under "other" included participation in nutrition and infant growth monitoring programmes, being a traditional healer or village headman.

Table 4: Additional community based health roles held by SMAG volunteers

<table>
<thead>
<tr>
<th>Community Responsibilities</th>
<th>Proportion of SMAG volunteers (n=65)</th>
<th>Male (n=32)</th>
<th>Female (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>(2) 3%</td>
<td>(1) 3%</td>
<td>(1) 3%</td>
</tr>
<tr>
<td>Adherence counsellor</td>
<td>(4) 6%</td>
<td>(4) 13%</td>
<td>0%</td>
</tr>
<tr>
<td>CBD</td>
<td>(9) 14%</td>
<td>(4) 13%</td>
<td>(5) 15%</td>
</tr>
<tr>
<td>CHW</td>
<td>(20) 31%</td>
<td>(12) 38%</td>
<td>(8) 24%</td>
</tr>
<tr>
<td>Lay counsellor</td>
<td>(9) 14%</td>
<td>(5) 16%</td>
<td>(4) 12%</td>
</tr>
<tr>
<td>Mothers support group</td>
<td>(6) 9%</td>
<td>0%</td>
<td>(6) 18%</td>
</tr>
<tr>
<td>NHC</td>
<td>(44) 68%</td>
<td>(22) 69%</td>
<td>(22) 67%</td>
</tr>
<tr>
<td>TBA</td>
<td>(18) 28%</td>
<td>(4) 13%</td>
<td>(14) 42%</td>
</tr>
<tr>
<td>Other*</td>
<td>(15) 23%</td>
<td>(9) 28%</td>
<td>(6) 18%</td>
</tr>
</tbody>
</table>

CBD = Community Based Distributor of family planning; CHW = Community Health Worker; NHC = Neighbourhood Health Committee member; TBA = Traditional Birth Attendant or Tuberculosis Agent

* Participants listed other roles including nutrition and infant growth monitoring programmes, being a traditional healer or village headman.

Attrition and retention

Calculation of accurate attrition rates requires start and finish dates of all SMAG volunteers, and the pilot study was limited to information from currently active volunteers. However, an estimate of attrition can be made, based on assumptions of typical training group sizes of 20-25 people, and excluding untrained volunteers. Across the three centres, the estimated overall attrition was 42% of all new volunteers trained in the period from 2009-2016. Predictably, attrition was highest from

6 The questionnaire ambiguously listed "TBA" without specifying "traditional birth attendant" or "TB agent" and the men who checked TBA were likely TB agents. Traditional birth attendants are always female.
earliest trainings, with estimated 63% attrition from trainings held in 2009, 60% from 2011, 15% from 2013 and 9% from 2014.

Of the trained SMAG volunteers who were still active at the three centres in 2016 (n=60), 25% (n=15, 8 male, 7 female) had a retention period of 7 years (first trained in 2009); a further 22% (n=13, 7 male, 6 female) between 3-5 years (first trained 2011-2013), and 53% (n=32, 15 male, 17 female) for less than 2 years.

Key themes

Three key themes that emerged from the research were:
- "Saving mothers" -- the high intrinsic motivation of the volunteers for the programme.
- "Bikes, torches, gumboots and uniforms" -- the need for tools to do the work.
- "SMAGs, NHC, CHW, TBAs, and more …" -- the many volunteer health-care roles.

"Saving mothers" -- high intrinsic motivation of the volunteers

The powerful underlying drive expressed by all the SMAG volunteers at all the centres was the importance of the programme to them. The strong motivation to save mothers' and babies' lives, fired a passion around both learning and teaching the community. Other motivating factors included overcoming ignorance and myths in the community, and causing behaviour change. In each of the focus groups, SMAG volunteers eagerly expressed different elements that inspired them about the programme, from reducing maternal and child deaths, to taking women to antenatal care, to stopping mothers from delivering at their homes. Family planning, spacing children, role-modelling, teaching mothers how to take care of children, rushing bleeding mothers to hospital, all energised and motivated the volunteers in the discussions. The need for the services, combined with a recognition of the limitations within the current health systems was highlighted by some of the SMAG volunteers.

"And another reason why we became SMAGs is because the health workers employed by the government can’t do it all alone so they need people like us to partner with them and just help out in the little way that we can." -- Male, mixed focus group

Although the SMAG programme is secular, for many volunteers, the importance of the programme took a religious dimension.

There was a high level of commitment and programme activity reported. This was evidenced by

"For me, why I wanted to be a SMAG was, I likened it to what we do at church. At church we minister to people so that they give their lives to God and lead them to the truth. And also when it comes to SMAG work, it's similar to that because it's like you are taking people from being ignorant to knowledge, and saving them from bleeding and not knowing the things that they should do, and those complications that come about when you're pregnant. So it's a way of serving people and leading them to the truth." -- Male, mixed focus group

SMAG volunteers walking long distances, working very long hours, including staying overnight at the health centre with patients as needed, working entire days without food, and using their own resources, such as renting bicycles to assist patients. SMAG volunteers' self-reported high levels of programme activity were validated by monthly reports submitted to the Samfya District Health Office. With the exception of one missing report, the three centres submitted monthly SMAG reports to the District Health Office in 2015 and for the first quarter of 2016. In 2015 SMAGs from the three centres conducted over 300 community meetings, with over 7,800 attendances from community members at those meetings. They also reported making over 3,400 referrals to their respective health centres in 2015 for family planning, antenatal visits, delivery, postnatal visits and reported danger signs.

The commitment and passion of the volunteers was evidenced not just in the work they were doing, but also in their enthusiasm for more knowledge for themselves and to share with the
community. That desire to make a difference and reduce maternal deaths under the programme also underpinned the corresponding frustration at inadequate support and equipment to work effectively.

"Bikes, torches, gumboots and uniforms" -- need for tools to do the work

There was inconsistent provision of bicycles, uniforms and equipment by different partners and at different health centres. In the three centres, one bicycle was provided for each zone, and each of the centres had six or seven zones in their catchment area. Some SMAGs received gumboots and tee-shirts and reflective vests which advertised (in English) the role and key topics that SMAGs could assist with, battery operated torches and bags to carry registers and teaching materials, but provision of equipment was inconsistent across the centres, and equipment was not replaced as needed, and no processes were in place for reprovisioning.

Universally, the SMAG volunteers expressed frustrations related to transportation, lack of personal and protective equipment and resources necessary to work effectively. Transportation was the most frequently expressed need, both for transporting patients and attending community meetings.

Insufficient and poor quality bicycles provided by partners added to frustrations. Even if the bicycle functioned, poor quality made their use in transporting patients unsafe, and every group expressed a preference for sturdy Buffalo brand bicycles.

SMAG volunteers were resourceful in finding solutions to transportation issues, borrowing bicycles within the community, encouraging the family of the pregnant woman to find transport, and sometimes walking slowly with the patient. Shared bicycles, especially in large zones caused frustrations and delays. Clinic staff recommended provision of a good quality bicycle to each SMAG volunteer, both to serve the programme, and to be used for personal purposes as well as for SMAG work, thereby motivating and encouraging responsibility for maintenance and upkeep.

The SMAG Master Trainer noted that in other districts where every SMAG volunteer received a bicycle instead of sharing, there was a substantially lower drop-out rate, and the SMAG volunteers were more willing to attend SMAG meetings and conduct community meetings, and to repair the bicycles. They also observed during mentorship programmes in Samfya District that SMAG attrition rates were higher and SMAGs more frequently reported being demoralised, and attributed this to the limited equipment provided in Samfya District.

Protective gumboots, wet weather clothes, bags and torches were also emphasised as important at all the health centres.

"And it is important that even as they are giving us bicycles they should give us good quality bicycles not whereby a really heavy woman sits on top of it and it bends, the carrier bends." -- Male, mixed focus group

"We need gumboots because the distances we move are really long distances, so we need bicycles and also gumboots. We might be bitten by snakes. We even walk in the bush. Sometimes we fail to escort people because there are really dangerous snakes, especially at night. Somebody was bitten by a cobra the other day, and he is late now. Buried. So that demotivates you. So when people come at night sometimes you are not that willing to escort them because anything might happen." -- Female focus group
Solar torches were identified as more appropriate than battery operated torches because the batteries were expensive, and didn't last long. Solar lamps also provide an opportunity for recharging a mobile phone also. Another priority was mobile phones for improved communication about meetings, and to contact each other or the health centre for urgent cases.

Uniforms were considered important for many reasons, including conferring authority, assisting community recognition and helping break down suspicions about intent when cross-gender conversations were taking place. At some of the trainings uniforms were provided and SMAG volunteers wore them with pride, but at others they were not and it was a source of dissatisfaction.

There were numerous ongoing costs for photocopying of reporting, papers, pens and registers, and communication costs such as talk time that were not provided by the programme or health centre. Further, uniform replacement, bike repairs, replacement torches or other ongoing needs were not planned for at the time of training. In addition to the need for basic equipment and supplies, even food while working was a challenge in the context of extreme poverty in Samfya District:

"Last week, Thursday, we came for antenatal. I found a pregnant woman and then I was asked to help the lady in the labour ward. She was just alone, the Clinical Officer wasn't around. She came around 7.00am and she delivered around 2.00am and I stayed here the whole day without eating anything. And in the morning I left. I just went to help." -- Female focus group

Income generating opportunities to meet ongoing needs for supplies and maintenance costs, and provide food for delivering mothers were of interest to the SMAG volunteers. One of the groups had tried a membership scheme with each volunteer contributing K5 to cultivate ground nuts and maize, but the small scale meant that after a year only K60 was raised. In another group goat rearing was being done through member contributions. In the third, a hammermill and poultry project had previously been effective but wasn't currently active. SMAG volunteers were very interested in reviving such activities but needed further support in terms of skills and management.

"SMAGs, NHC, CHW, TBAs, and more …" -- many health-care roles

Perhaps even more remarkable than the high volume of work being performed by the SMAG volunteers in that role, was the number of other community based health care roles that they each held concurrently. 97% of the volunteers had at least one other role, and 52% of them had two or more other volunteer health-care roles. 68% of the SMAG volunteers also served on their local Neighbourhood Health Committee (NHC). The NHC functions zonally to work with the community and Health Centre to identify, plan and respond to health problems, and to spearhead and monitor health activities in the community, as well as maintain community registers and records.

42% of the female SMAG volunteers also reported working as traditional birth attendants, and many made little distinction between the two roles, and saw the SMAG training as extension of their TBA role.

In the one centre where nutrition programmes had been implemented with the SMAG volunteers, they saw their role as far broader than maternal and neonatal health and extended their teaching to a wide range of health care messages. Similarly, others when asked about their work and activities as SMAG volunteers, gave extensive explanations of responsibilities far outside the SMAG volunteer role, indicating they didn't have clear demarcation between the many different community health roles they performed.

"I became a SMAG because initially I was a TBA and when I said to add on and become a SMAG and that made it even better." Female focus group

The SMAG Master Trainer, who had experience training and mentoring in Samfya, as well over seven years' experience with SMAG curriculum, noted that the role of traditional birth attendant was no longer trained nor encouraged. The historical practice of providing supplies for TBA assisted deliveries either at home or at the facility was no longer approved within the health system. SMAG
trainings were intended to include a focal person at the facility to help clarify scope and enforce the limits of the SMAG role, but the study showed that the boundaries were not well kept.

"Actually they're being overused and their role ends by referring the client and just getting a feedback like, 'Your client has been admitted. She's in labour, if the family can come and check if she's delivers, and if they can prepare in case there is a referral.' That's where it ends. So we have a lot, actually, to do to help and sensitize the facility staff on how to know the role of the SMAGS and the boundaries of the SMAGs." -- SMAG Master Trainer

Recommendations

The study indicates that volunteers' motivations are strong and intrinsically motivated, and that they were frustrated by lack of and inconsistent support. The following long-term and immediate recommendations were revealed from the research as well as review of recent literature. They fit within three broad categories: (1) addressing identified needs and further developing SMAG guidelines, and (1) further development of a standardized national CHW framework (3) research into cost, valuation and appropriate incentives for SMAG volunteers.

Addressing identified needs, standardized SMAG guidelines, strengthening partnerships

The study suggests that in rural agricultural areas, minimum equipment includes a sturdy bicycle for transport for each SMAG volunteer, uniform and/or identification, protective equipment (such as a raincoat, gumboots and waterproof bag for carrying registers and reports) and a solar powered torch. Provision should be made to meet ongoing supply needs such as reporting materials and equipment replacement. There is already an effective national SMAG training curriculum and it is recommended that it be further developed to include guidelines for essential equipment to be provided to all SMAG volunteers, along with planning for equipment maintenance, and resupply as needed. Although development of guidelines for consistent standards is important, it should not delay acting upon the identified immediate needs and the provision of equipment in current programmes. Strengthening partnerships between SMAG volunteers, health facility staff, program partners and Ministry of Health and improved information exchange would help guard against lack of continuity and leaving volunteers unsupported.

Within the current national SMAG training manuals (MOH Zambia, 2016a, 2016b), the curriculum focuses on the training of SMAG volunteers, but there is little emphasis on training supervising health centre staff, nor clarification of the scope and limits of SMAG volunteers' roles. Further development of guidelines for inclusion and training of health facility staff, clarification of roles and responsibilities, including monitoring and evaluation of work done, supportive supervision, reporting, acknowledgement and other official recognition of SMAG volunteers is recommended.

Further development of national CHW framework

The Zambian government has long recognized the benefit of the formal incorporation of CHWs within the health care system, and the 2010 introduction of the hybrid role of Community Health Assistants, who receive at least a year of training and receive government compensation has provided a framework for standardization (MOH Zambia, 2010). The goal of the national strategy is to have adequately trained and motivated community-based workforce, but full implementation of the CHA programme only represents a small percentage of the total CHWs. As the essential work performed by unpaid CHWs such as SMAG volunteers remains critical to addressing national health priorities and Millennium Development Goals, it is recommended that the National Community Health Worker Strategy be expanded to provide guidelines to standardize all CHW programmes to further support the national strategy and provide guidance for implementing partners and programmes. Although not all CHWs can meet the criteria for CHA's and they serve numerous different health roles, it is recommended that the guidelines include minimum training and supervision criteria, address minimum transport needs, expenses, incentives, and ensure initial and ongoing equipment needs are addressed. It would require quality assurance mechanisms and defined scope of work, as well as standardised monitoring, evaluation and reporting criteria to integrate programmes within the health care system. Such standardisation can help avoid disparities across programmes,
minimise duplication and dissatisfaction, ensure that information is retained within the health system, and also avoid underfunded programmes shifting burdens to volunteers.

**Research into cost, valuation and appropriate incentives for SMAG volunteers**

When implementing or scaling up existing SMAG programmes, the recommendations outlined by Kasteng et al. (2016) for valuing the work of CHW should be considered to avoid underestimating sustainable programme costs. Determination of workloads of SMAG volunteers in their SMAG capacity while recognising other overlapping CHW roles is necessary in order to cost and appropriately value the contribution. Costing of CHW contribution may be calculated using an opportunity cost, and CHW-elicited replacement wage or through a minimum public sector salary rate, (Kasteng et al., 2016) and an appropriate balance reached between those calculations to design a sustainable and ethical programme.

Further research is also recommended to determine the most appropriate form of incentives for SMAG volunteers, including regular allowances, performance-based payments, income-generating opportunities, savings groups or other incentives. Determination of appropriate incentives involves consideration of complex and nuanced factors, and involving CHWs in the policy innovation and assessment is optimal (Maes & Kalofonos, 2013; Mpembeni et al., 2015).

**Conclusion**

Zambia needs the support of community health workers to meet its health workforce gaps and address high maternal mortality rates. SMAG volunteers are highly motivated to reduce maternal and child mortality, and are active in a range of community health roles. Their motivation and work is undermined by lack of transport, equipment and supplies, and their multiple community health have unclear boundaries, with inconsistent and inadequate support. More effective utilisation of SMAG volunteers might be achieved by addressing their equipment needs, strengthening key areas in the SMAG training curriculum, broadening of national CHW guidelines and conducting further research into cost, valuation and incentives for SMAG volunteers.

*Figure 2* SMAG volunteer carries clinic staff on Buffalo bicycle to conduct community mobilisation
References


Kasteng, F., Settumba, S., Källander, K., & Vassall, A. (2016). Valuing the work of unpaid community health workers and exploring the incentives to volunteering in rural Africa. 31(2), 205-216. http://dx.doi.org/10.1093/healp/czv042


